Disclaimer

The following report(s) provides findings from an FDA-initiated query using Sentinel. While Sentinel queries may be undertaken to assess potential medical product safety risks, they may also be initiated for various other reasons. Some examples include determining a rate or count of an identified health outcome of interest, examining medical product use, exploring the feasibility of future, more detailed analyses within Sentinel, and seeking to better understand Sentinel capabilities.

Data obtained through Sentinel are intended to complement other types of evidence such as preclinical studies, clinical trials, postmarket studies, and adverse event reports, all of which are used by FDA to inform regulatory decisions regarding medical product safety. The information contained in this report is provided as part of FDA's commitment to place knowledge acquired from Sentinel in the public domain as soon as possible. Any public health actions taken by FDA regarding products involved in Sentinel queries will continue to be communicated through existing channels.

FDA wants to emphasize that the fact that FDA has initiated a query involving a medical product and is reporting findings related to that query does not mean that FDA is suggesting health care practitioners should change their prescribing practices for the medical product or that patients taking the medical product should stop using it. Patients who have questions about the use of an identified medical product should contact their health care practitioners.

The following report contains a description of the request, request specifications, and results from the modular program run(s).

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Overview for Request: cder_mpl2p_wp055, Report 2 of 2

Request ID: cder_mpl2p_wp055_nsdp_v01

Request Description: In this report we examined the association between use of proton pump inhibitors (PPI) versus famotidine and development of COVID-19 related outcomes (1) hospitalization and 2) severe clinical course of COVID-19 defined as hospitalization with any one of the following: intubation, mechanical ventilation, ICU care or inpatient death) among patients with gastroesophageal reflux disease (GERD) in the Sentinel Distributed Database (SDD).

Sentinel Routine Querying Module: Cohort Identification and Descriptive Analysis (CIDA) module, version 13.1.2, with the Propensity Score Analysis (PSA) module and custom programming

Data Source: We distributed this query to 12 Sentinel Data Partners on August 12, 2024. We included data from 6 Data Partners where the propensity score models converged. The Data Partners that were not included in the analysis lacked sufficient exposures to ensure propensity score model convergence.
This report is 2 of 2 and contains data from the Center for Medicare and Medicaid Services (CMS). Report 1 contains data from 5 Data Partners. The query period in both reports included data from April 1, 2020 through the latest available data (January 31, 2024 in Report 1 and June 30, 2023 in Report 2). Please see Appendix A for dates of available data for CMS.

Study Design and Analysis: This study used a retrospective, active comparator, new user cohort design. We identified individuals aged 18 years and older with incident use of PPIs and famotidine from April 1, 2020 through March 31, 2023 and evaluated the occurrence of various COVID-19-related outcomes. These individuals were required to have evidence of gastroesophageal reflux disease (GERD) diagnosis in the 3-months prior to cohort entry as well as no evidence of COVID-19 infection in the 6-months prior to cohort entry. We followed patients from their index dispensing until the earlier of the following: outcome of interest, death, treatment discontinuation or switching to another drug of interest, Data Partner end date, query end date, or disenrollment.

We then conducted the following Propensity Score (PS) analyses to adjust for confounding. We conducted all five analyses for the outcome of COVID-19 hospitalization and the first two analyses for the outcome of severe clinical course of COVID-19 infection.
- Inverse probability of treatment weighting (IPTW), estimating the average treatment effect among the treated (ATT) using PS estimated from a conventional user-specified model.
- IPTW, estimating the ATT effect using PS estimated via a high-dimensional (hdPS) approach.
- Overlap weighting, estimating the average treatment effect among the overlapping population (ATO) using hdPS.
- Propensity score fine stratification, estimating the ATT effect using hdPS.
- IPTW, estimating the average treatment effect among the population (ATE) using hdPS.

We evaluated the occurrence of COVID-19-related outcomes and estimated hazard ratios (HRs) and 95% confidence intervals (CIs) comparing PPI new users to famotidine new users. This is a Type 2 analysis using the PSA module with custom programming in the Query Request Package (QRP) documentation.

Exposures of Interest: We defined the exposures of interest (PPIs or famotidine) using pharmacy dispensing data. We defined incident use as no prior use of PPIs or any H2 receptor antagonist (H2RA) in the 183 days prior to the first qualifying dispensing of the exposure of interest. Only the first qualifying (index) dispensing in the query period for each member was included; cohort re-entry was not allowed. For a list of generic and brand drug names used to define the exposure drugs, please see Appendix AV. For a list of generic and brand drug names used to define the exposure washout criteria, please see Appendix AW.

Overview for Request: cder_mpl2p_wp055, Report 2 of 2

Outcomes of Interest: We defined two outcomes of interest:

1) inpatient hospitalization with COVID-19 (defined as a COVID-19 diagnosis in the inpatient care setting in any diagnosis position),

2) severe clinical course of COVID-19 infection - composite outcome of severe COVID-19 infection (defined as the presence of a mechanical ventilation procedure or ICU admission in the inpatient care setting during a COVID-19 hospitalization), or inpatient hospital death during a COVID-19 hospitalization (defined using custom programming as:

a) a COVID-19 diagnosis in the inpatient care setting in any diagnosis position, and

b) an inpatient encounter with a discharge disposition of "expired" in the same hospitalization).

We defined outcomes of interest using International Classification of Diseases, Tenth Revision, Clinical Modification diagnosis codes (ICD-10-CM); International Classification of Diseases, Tenth Revision, Procedure Coding System codes (ICD-10-PCS); Current Procedural Terminology, Fourth Edition (CPT-4) codes; Healthcare Common Procedure Coding System (HCPCS) codes; Current Procedural Terminology, Second Edition (CPT-2) codes; Current Procedural Terminology, Third Edition codes (CPT-3); and Revenue codes. Please see Appendix AX for the details of the codes used to define the outcomes in this report.

Cohort Eligibility Criteria: We required members to be enrolled in health plans with medical and drug coverage in the 183 days prior to their index date in order to be included in the cohort; a gap in coverage of up to 45 days was allowed and treated as continuous enrollment. The following age groups were included in the cohort: 18-49, 50-64, 65-74, 75+ years of age.

Inclusion/Exclusion Criteria : We also required evidence of a GERD diagnosis in the 90 days prior to the index dispensing using ICD-10-CM, CPT-2, CPT-3, CPT-4 and HCPCS codes. We excluded individuals with evidence of COVID-19 infection, defined using COVID-19 or SARS-CoV-2 diagnosis code or a positive SARS-CoV-2 nucleic acid amplification test (NAAT) laboratory test result, in the 183 days prior to index using ICD-10-CM diagnosis codes and laboratory codes. Please see Appendices AY and AZ for the diagnosis and procedure codes used to define GERD and COVID-19/SARS-CoV-2 diagnosis, and for the laboratory information used to define positive SARS-CoV-2 NAAT lab tests.

Follow-up Time: We created PPI and famotidine exposure episodes based on the number of days of product supplied per dispensing in the pharmacy dispensing data. We bridged together episodes less than or equal to 15 days apart and added 15 days to the end of each episode for a maximum episode duration of 184 days. These "modified as-treated" episodes are the periods of time during which we identified COVID-19-related outcomes.

For this analysis, we delayed the start of the outcome at-risk period by 1-day (in other words, instead of follow-up time starting on the day of index (Day 0), the beginning of the at-risk period occurred on Day 1). Individuals with outcomes that occurred on index date were excluded from the analysis.

Follow-up time continued until the first occurrence of any of the following: 1) occurrence of outcome; 2) death; 3) treatment discontinuation (up to a maximum episode duration of 184 days) or switching to another drug of interest (for PPI users - switching to any H2RA; for famotidine users - switching to PPIs or any other H2RA); 4) disenrollment from medical and/or pharmacy coverage; 5) the end of the data provided by each Data Partner; or 6) the end of the query period.

Note: The maximum episode duration of 184 days translates to a maximum follow-up time at risk for individuals in the study of 183 days or 6 months.

Overview for Request: cder_mpl2p_wp055, Report 2 of 2

Baseline Characteristics: We assessed the following demographic characteristics on the day of index: age, sex, race, Hispanic ethnicity, quarter-year of index and quartiles of Social Deprivation Index[1]. Additionally, we evaluated the following health characteristics in the 183 days prior to and including the day of index: combined comorbidity score[2], health service and drug utilization, diabetes, obesity, hypertension, hospitalized stroke/transient ischemic attack, coronary revascularization, atrial fibrillation, congestive heart failure, hospitalized acute myocardial infarction, other cerebrovascular disease, chronic obstructive pulmonary disease (COPD), asthma (without COPD), chronic liver disease, chronic kidney disease, any malignant neoplasm, hemiplegia, neurological/neurodegenerative conditions, dementia, depression, schizophrenia, rheumatic disorders, multiple sclerosis, Human Immunodeficiency Virus (HIV), coronary artery disease, immunodeficiency, smoking or nicotine use and hyperlipidemia using ICD-10-CM, ICD-10-PCS, and CPT-4 codes. We included a measure of frailty, defined using a claims-based frailty index[3] assessed over the same period.

We also evaluated the following medications in the 183 days prior to and including the day of index: angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin II receptor blockers (ARBs), Non-steroidal anti-inflammatory drugs (NSAIDs), aspirin, antidepressants, statins, insulin, antidiabetic oral drugs, antihypertensive drugs, anticoagulants (oral and injectable), systemic glucocorticoids, acetaminophen, tumor necrosis Factor (TNF) inhibitors, immunosuppressants and inhaled corticosteroids. Additionally, we assessed for the dispensing or administration of COVID-19 vaccine in the same period.
Please see Appendix BA for the diagnoses and procedure codes (ICD-10-CM, ICD-10-PCS, CPT-2, CPT-3, CPT-4 and HCPCS and vaccine administered (CVX) codes), Appendix BB for the list of generic and brand drug names used to define the above characteristics and medication use.

Propensity Score Estimation:

We used two approches for estimating propensity scores (PS) for confounding adjustment:
• User-specified PS model: A conventional approach where we fit a logistic regression model to estimate the PS based on user-specified potential confounders listed in Appendix BD.
• High dimensional PS (hdPS) model: This approach included the same potential confounders as the user-specified PS model, in addition to using covariates at each Data Partner identified by the hdPS algorithm as proxy confounders using a data-driven approach. We considered the top 300 codes for inclusion (truncating ICD-10 codes to the 3rd level) in the [-183, -1] days around the index date from each data dimension (i.e., diagnosis, procedure and drug classes). Based on the strength of the relationship of the proxy confounder with both exposure and outcome, the algorithm selected the top 100 to include in the hdPS model. Please see Appendices B to W for the top 100 codes selected from each Data Partner for each of the specified analyses.
After PS estimation with both approaches as well as exclusion (i.e., trimming) of patients in non-overlapping regions of the PS distributions (for all analyses except overlap weighting), the PS was used to calculate the cohort balancing weights for each individual. The details of the weighting approaches are in the next section.

Overview for Request: cder_mpl2p_wp055, Report 2 of 2

Weighting:

We used weights to estimate the following effect estimates of interest. We conducted all five analyses for the outcome of COVID-19 hospitalization and the first two analyses for the outcome of severe clinical course of COVID-19 infection.

- Inverse probability of treatment weighting (IPTW), estimating the average treatment effect among the treated (ATT) using PS estimated from a conventional user-specified model.
- IPTW, estimating the ATT effect using PS estimated via a high-dimensional approach (i.e., hdPS).
- Overlap weighting, estimating the average treatment effect among the overlapping population (ATO) using hdPS.
- Propensity score fine stratification (50 strata), estimating the ATT effect using hdPS.
- IPTW, estimating the average treatment effect among the population (ATE) using hdPS.

We initially applied three candidate weight truncation percentile thresholds for the IPTW ATT and IPTW ATE weights to deal with potential extreme weights : 0% (no truncation), 1%, and 2.5%. Truncation was operationalized symmetrically, in that weights smaller than the weight at the specified percentile of the weight distribution were re-assigned the value of the weight at the specified percentile of the weight distribution, while weights larger than the weight at the (100 - specified percentile) of the weight distribution were re-assigned the value of the weight at the (100 - specified percentile) of the weight distribution. After a review of the distribution of IPT weights for the three truncation thresholds that was blinded to effect estimates, we applied the 1% percentile threshold to all analyses. We also included results of analyses with the 0% truncation threshold, as a sensitivity analysis.

Overlap weights and PS fine stratification weights did not require any truncation.

See Appendices X-AU for the distribution of weights for each of the weighting approaches in the overall population, as well as in each subgroup of interest.

Statistical Analysis: After receiving aggregate risk set-level data from each Data Partner, we used case-centered logistic regression to generate HRs and associated robust 95% CIs for analyses adjusted only for the Data Partner and the hybrid quasi-Newton least squared method to generate estimates for conditional fully-adjusted analyses.

Subgroup analyses for effect estimation included the following age groups: 18-49, 50-64, 65-74, 75+ years of age. Subgroups were formed out of the post-PS trimming population to ensure only those patients contributing to the overall analysis contributed to a subgroup analysis.

Additionally, in order to understand the potential heterogeneity of the effect estimates across all 6 Data Partners, we estimated a measure of statistical heterogeneity, the I^2, for the effect estimates in the overall population estimated using all weighting approaches (IPTW ATT, IPTW ATE, ATO, and PS fine stratification). This value is reported in the tables reporting the effect estimates.

Please see Appendices BC - BG for the specifications of the parameters used in this request and Appendix BH for a diagram detailing the design of this request.

Limitations: Algorithms to define exposures, outcomes, inclusion and exclusion criteria, and covariates are imperfect and may be misclassified. Therefore, data should be interpreted with this limitation in mind.

Overview for Request: cder_mpl2p_wp055, Report 2 of 2

[1]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[2]The Combined Comorbidity Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date. (Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A Combined Comorbidity Score Predicted Mortality in Elderly Patients Better Than Existing Scores. J Clin Epidemiol. 2011;64(7):749-759; Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and Validation of the Combined Comorbidity Score for ICD-10-CM. Med Care. 2017;55(12):1046-1051).

[3]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

Sentinel

Table of Contents

Glossary (CIDA) List of Terms to Define the Cohort Identification and Descriptive Analysis (CIDA) Found in this Report

Glossary (PSA) List of Terms to Define the Propensity Score Analysis (PSA) Found in this Report

Table 1a Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

Table 1b Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

Table 1c Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

Table 1d Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

Table 1e Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

Table 1f Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

Table 1g Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

Table 1h Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

Table 1i Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

Table 1j Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

Table of Contents

Table 1k Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

Table 1l Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

Table 1m Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

Table 1n Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

Table 1o Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

Table 1p Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

Table 1q Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

Table 1r Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

Table 1s Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

Table 1t Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

Table 1u Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

Table 1v Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

Table 1w Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

Table of Contents

Table 1x Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

Table 1y Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

Table 1z Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

Table 1aa Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

Table 1ab Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

Table 1ac Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1ad Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1ae Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1af Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1ag Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

Table of Contents

Table 1ah Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1ai Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1aj Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

Table 1ak Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

Table 2a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 2b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 3a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 3b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 4a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 4b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 5a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 5b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 6a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table of Contents

Table 6b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 7a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 7b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 8a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 8b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 9a Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 9b Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 10a Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 10b Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 11a Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 11b Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 12a Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 12b Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 13a Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Table 13b Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Table 14 Summary of Patient Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Table of Contents

Figure 1a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 1b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 1c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 1d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 1e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 2a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 2b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 2c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 2d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 2e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 3a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 3b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Table of Contents

Figure 3c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 3d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 3e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 4a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 4b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 4c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 4d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 4e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 5a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 5b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 5c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 5d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Table of Contents

Figure 5e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 6a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 6b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 6c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 6d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 6e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 7a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 7b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 7c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 7d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 7e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 8a Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 8b Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Table of Contents

Figure 8c Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 8d Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 8e Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 9a Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 9b Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 9c Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 9d Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 9e Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 10a Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 10b Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 10c Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 10d Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Table of Contents

Figure 10e Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 11a Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 11b Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 11c Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 11d Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 11e Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 12a Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 12b Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 12c Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 12d Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 12e Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 13a Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Site-Adjusted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 13b Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Propensity Score Stratum Weighted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Table of Contents

Figure 13c Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Inverse Probability of Treatment Weighted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 13d Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Overlap Weighted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 14a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 14b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 14c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 14d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 14e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 14f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 14g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 14h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 14i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 14j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 15a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Table of Contents

Figure 15b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 15c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 15d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 15e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 15f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 15g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 15h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 15i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 15j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 16a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 16b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 16c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Table of Contents

Figure 16d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 16e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 16f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 16g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 16h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 16i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 16j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 17a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 17b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 17c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 17d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 17e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Table of Contents

Figure 17f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 17g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 17h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 17i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 17j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 18a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 18b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 18c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 18d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 18e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 18f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 18g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Table of Contents

Figure 18h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 18i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 18j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 19a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 19b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 19c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 19d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 19e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 19f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 19g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 19h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 19i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Table of Contents

Figure 19j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 20a Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 20b Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Figure 20c Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 20d Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Figure 20e Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 20f Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Figure 20g Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 20h Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Figure 20i Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Figure 20j Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Appendix A Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date

Appendix B Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Table of Contents

Appendix C Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Appendix D Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Appendix E Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Appendix F Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Appendix G Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Appendix H Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Appendix I Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Appendix J Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Appendix K Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Appendix L Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Appendix M Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Appendix N Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Table of Contents

Appendix O Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Appendix P Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Appendix Q Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Appendix R Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Appendix S Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Appendix T Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Appendix U Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Appendix V Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Appendix W Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Appendix X Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Appendix Y Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Appendix Z Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Table of Contents

Appendix AA Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Appendix AB Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Appendix AC Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Appendix AD Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Appendix AE Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Appendix AF Distribution of Propensity Score Stratum Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Appendix AG Distribution of Propensity Score Stratum Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Appendix AH Distribution of Overlap Weights for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Appendix AI Distribution of Overlap Weights for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Appendix AJ Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect (ATE)

Appendix AK Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect (ATE)

Appendix AL Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect (ATE)

Table of Contents	
Appendix AM	Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect (ATE)
Appendix AN	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)
Appendix AO	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)
Appendix AP	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)
Appendix AQ	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)
Appendix AR	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)
Appendix AS	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)
Appendix AT	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)
Appendix AU	Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)
Appendix AV	List of Generic and Brand Names of Medical Products Used to Define Exposures in this Request
Appendix AW	List of Generic and Brand Names of Medical Products Used to Define Exposure Incidence Criteria in this Request
Appendix AX	List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request
Appendix AY	List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Inclusion Criteria in this Request
Appendix AZ	List of SARS-CoV-2 Laboratory Tests Used to Define Exclusion Criteria in this Request

Table of Contents

Appendix BA List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Appendix BB List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Appendix BC Specifications Defining Parameters Used in this Request

Appendix BD Specifications Defining Baseline Characteristic Parameters Used in this Request

Appendix BE Specifications Defining Covariates Used in this Request

Appendix BF Specifications Defining Combo Parameters Used in this Request

Appendix BG Specifications Defining Risk Score and Utilization Metric Parameters Used in this Request

Appendix BH Design Diagram of Cohort Entry Requirements and Outcome Evaluation

Glossary of Terms for Analyses Using
Cohort Identification and Descriptive Analysis (CIDA) Module*

Amount Supplied - number of units (pills, tablets, vials) dispensed. Net amount per NDC per dispensing.
Blackout Period - number of days at the beginning of a treatment episode that events are to be ignored. If an event occurs during
Care Setting - type of medical encounter or facility where the exposure, event, or condition code was recorded. Possible care settings include: Inpatient Hospital Stay (IP), Non-Acute Institutional Stay (IS), Emergency Department (ED), Ambulatory Visit (AV), and Other Ambulatory Visit (OA). For laboratory results, possible care settings include: Emergency Department (E), Home (H),

Ambulatory Visit (AV) - includes visits at outpatient clinics, same-day surgeries, urgent care visits, and other same-day
Emergency Department (ED) - includes ED encounters that become inpatient stays (in which case inpatient stays would be a
Inpatient Hospital Stay (IP) - includes all inpatient stays, same-day hospital discharges, hospital transfers, and acute hospital
Non-Acute Institutional Stay (IS) - includes hospice, skilled nursing facility (SNF), rehab center, nursing home, residential,
Other Ambulatory Visit (OA) - includes other non overnight AV encounters such as hospice visits, home health visits, skilled nursing facility visits, other non-hospital visits, as well as telemedicine, telephone and email consultations.

Charlson/Elixhauser Combined Comorbidity Score - calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (e.g., in the 183 days prior to index).
Code Days - the minimum number of times the diagnosis must be found during the evaluation period in order to fulfill the algorithm
Cohort Definition (drug/exposure) - indicates how the cohort will be defined: 01: Cohort includes only the first valid treatment episode during the query period; 02: Cohort includes all valid treatment episodes during the query period; 03: Cohort includes all
Computed Start Marketing Date - represents the first observed dispensing date among all valid users within a GROUP (scenario)
Days Supplied - number of days supplied for all dispensings in qualifying treatment episodes.
Eligible Members - number of members eligible for an incident treatment episode (defined by the drug/exposure and event
Enrollment Gap - number of days allowed between two consecutive enrollment periods without breaking a “continuously enrolled”
Episodes - treatment episodes; length of episode is determined by days supplied in one dispensing or consecutive dispensings
Episode Gap - number of days allowed between two (or more) consecutive exposures (dispensings/procedures) to be considered
Event Deduplication - specifies how events are counted by the Modular Program (MP) algorithm: 0: Counts all occurrences of a health outcome of interest (HOI) during an exposure episode; 1: de-duplicates occurrences of the same HOI code and code type on
Exposure Episode Length - number of days after exposure initiation that is considered "exposed time."
Exposure Extension Period - number of days post treatment period in which the outcomes/events are counted for a treatment
Lookback Period - number of days wherein a member is required to have evidence of pre-existing condition
Maximum Episode Duration - truncates exposure episodes after a requester-specified number of exposed days. Applied after any gaps are bridged and extension days added to the length of the exposure episode.
Member-Years - sum of all days of enrollment with medical and drug coverage in the query period preceded by an exposure
Minimum Days Supplied - specifies a minimum number of days in length of the days supplied for the episode to be considered.
Minimum Episode Duration - specifies a minimum number of days in length of the episode for it to be considered. Applied after any gaps are bridged and extension days added to the length of the exposure episode.
Monitoring Period - used to define time periods of interest for both sequential analysis and simple cohort characterization
Principal Diagnosis (PDX) - diagnosis or condition established to be chiefly responsible for admission of the patient to the hospital. 'P' = principal diagnosis, 'S' = secondary diagnosis, 'X' = unspecified diagnosis, '.' = blank. Along with the Care Setting values, forms the Caresetting/PDX parameter.

Query Period - period in which the modular program looks for exposures and outcomes of interest.
Switch Evaluation Step Value - value used to differentiate evaluation step. Each switch pattern can support up to 2 evaluation steps (0 = switch pattern evaluation start; 1 = first evaluation; 2 = second evaluation).
Switch Gap Inclusion Indicator - indicator for whether gaps in treatment episodes that are included in a switch episode will be
Switch Pattern Cohort Inclusion Date - indicates which date to use for inclusion into the switch pattern cohort of interest as well as optionally as the index date of the treatment episode initiating the switch pattern. Valid options are the product approval date,
Switch Pattern Cohort Inclusion Strategy - indicates how the switch pattern cohort inclusion date will be used: 01: used only as a switch cohort entry date. First treatment episode dispensing date is used as index for computing time to first switch; 02: used as

Glossary of Terms for Analyses Using
Cohort Identification and Descriptive Analysis (CIDA) Module*

Treatment Episode Truncation Indicator - indicates whether the exposure episode will be truncated at the occurrence of a
Washout Period (drug/exposure) - number of days a user is required to have no evidence of prior exposure (drug dispensing/procedure) and continuous drug and medical coverage prior to an incident treatment episode.
Washout Period (event/outcome) - number of days a user is required to have no evidence of a prior event (procedure/diagnosis) and continuous drug and medical coverage prior to an incident treatment episode.
Years at Risk - number of days supplied plus any episode gaps and exposure extension periods all divided by 365.25.

*all terms may not be used in this report

Glossary of Terms for Analyses Using
Propensity Score Analysis (PSA) Module*

Covariate - requester defined binary variable to include in the propensity score estimation model (e.g., diabetes, heart failure, etc.) during requester-defined lookback period. Requester may also choose to add any of the following categorical, continuous, or count metrics to the propensity score estimation model:

1. Age (continuous)
2. Sex
3. Time period (i.e., monitoring period for sequential analyses)
4. Year of exposure
5. Comorbidity score
6. Medical utilization – number of inpatient stays
7. Medical utilization – number of institutional stays
8. Medical utilization – number of emergency department visits
9. Medical utilization – number of outpatient visits
10. Health care utilization – number of other ambulatory encounters (e.g., telemedicine, email consults)
11. Drug utilization – number of dispensings
12. Drug utilization – number of unique generics dispensed
13. Drug Utilization – number of unique drug classes dispensed

Covariate Evaluation Window - specified number of days relative to index date to evaluate the occurrence of covariates of interest. Note: members are required to have continuous enrollment during the covariate evaluation window, regardless of the value included in the "Continuous enrollment before exposure" field.

Individual Level Data Return - program may return individual-level, de-identified datasets to the Sentinel Operations Center (SOC). While the datasets contain a single row per patient for each specified analysis, patient identifiers such as a patient ID are not included in the output. Individual-level datasets are returned to the SOC, aggregated, and used to calculate effect estimates via Cox (proportional hazards) regression.

Mahalanobis Distance - provides a measure of balance across all variables while accounting for their correlation.

Matching Caliper - maximum allowed difference in propensity scores between treatment and control patients. Requester may select any caliper (e.g., 0.01, 0.025, and 0.05).

Matching Ratio - patients in exposed and comparator groups are nearest neighbor matched by a 1:1 or 1:n (up to 10) matching ratio.

Matched Conditional and Unconditional Analysis - in a conditional matched analysis, a Cox model, stratified by Data Partner site and matched set, is run on the matched population. This can be done for both the both 1:1 and 1:n matched cohorts. In an unconditional analysis, a Cox model, stratified by Data Partner site only, is run on the matched population. This can be done for the 1:1 matched cohort only.

Propensity Score Stratification - option to stratify propensity scores based on requester-defined percentiles in the unmatched population. In a stratified analysis, a Cox model, stratified by Data Partner site, is run on the stratified population. Note that all patients identified in exposure and comparator cohorts are used in the analysis.

PSM Tool - performs effect estimation by comparing exposure propensity-score matched parallel new user cohorts. Propensity score estimation and matching are conducted within each Sentinel Data Partner site via distributed programming code; data are returned to the SOC, aggregated, and used to calculate effect estimates.

Risk-set Level Data Return - alternative to the patient-level data return approach. In this approach, the PSM tool will produce de-identified, risk-set level datasets instead of or in addition to individual-level output. Whereas each observation in the patient-level datasets represents one patient in the cohort, each observation in the risk set dataset represents one event. Risk sets are created at the Data Partner site, returned to the SOC, aggregated, and used to calculate effect estimates via case-centered logistic regression.

Subgroup Analysis - may be conducted using any requester-defined covariates. Subgroup analyses may be performed in the unmatched and the matched population.

Glossary of Terms for Analyses Using
Propensity Score Analysis (PSA) Module*

Zero Cell Correction - indicator for whether to screen variables with a zero correction added to each cell in the confounder/outcome 2x2 table. Recommended when the number of exposed outcomes is fewer than 150.

*all terms may not be used in this report

Table 1a. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**
Unique patients	1,388,940	N/A	310,485	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**
Age (years)	72.1	11.2	72.6	11.8	-0.457	-0.040
Age						
18-49 years	68,644	4.9%	16,393	5.3%	-0.338	-0.015
50-64 years	126,297	9.1%	27,034	8.7%	0.386	0.014
65-74 years	657,551	47.3%	137,680	44.3%	2.998	0.060
≥ 75 years	536,448	38.6%	129,378	41.7%	-3.047	-0.062
Sex						
Female	864,007	62.2%	206,766	66.6%	-4.388	-0.092
Male	524,933	37.8%	103,719	33.4%	4.388	0.092
Race[2]						
American Indian or Alaska Native	6,632	0.5%	1,619	0.5%	-0.044	-0.006
Asian	34,306	2.5%	8,908	2.9%	-0.399	-0.025
Black or African American	114,886	8.3%	30,227	9.7%	-1.464	-0.051
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	87,534	6.3%	21,591	7.0%	-0.652	-0.026
White	1,145,582	82.5%	248,140	79.9%	2.559	0.066
Hispanic origin						
Yes	34,584	2.5%	8,954	2.9%	-0.394	-0.024
No	1,301,406	93.7%	288,894	93.0%	0.652	0.026
Unknown	52,950	3.8%	12,637	4.1%	-0.258	-0.013
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**

Table 1a. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Claims-Based frailty index[4]	0.2	0.1	0.2	0.1	-0.002	-0.036
Claims-Based frailty index categories						
<=0.2	1,079,840	77.7%	238,442	76.8%	0.949	0.023
>0.2	309,100	22.3%	72,043	23.2%	-0.949	-0.023
Combined comorbidity score[5]	2.5	3.3	2.5	3.2	0.010	0.003
Diabetes	410,356	29.5%	91,040	29.3%	0.223	0.005
Obesity	329,918	23.8%	69,352	22.3%	1.417	0.034
Hypertension	1,018,112	73.3%	226,975	73.1%	0.198	0.004
Hospitalized Stroke/Transient Ischemic Attack	32,642	2.4%	8,730	2.8%	-0.462	-0.029
Coronary Revascularization	27,267	2.0%	6,042	1.9%	0.017	0.001
Atrial Fibrillation	196,509	14.1%	41,417	13.3%	0.809	0.023
Congestive Heart Failure	183,060	13.2%	39,682	12.8%	0.399	0.012
Hospitalized Acute Myocardial Infarction	32,809	2.4%	6,499	2.1%	0.269	0.018
Other Cerebrovascular Disease	141,922	10.2%	35,003	11.3%	-1.056	-0.034
Chronic Obstructive Pulmonary Disease	225,470	16.2%	47,911	15.4%	0.802	0.022
Asthma without COPD	151,685	10.9%	34,902	11.2%	-0.320	-0.010
Chronic Liver Disease	125,935	9.1%	23,844	7.7%	1.387	0.050
Chronic Kidney Disease	359,669	25.9%	81,707	26.3%	-0.421	-0.010
Any Malignant Neoplasm	355,782	25.6%	77,889	25.1%	0.529	0.012
Hemiplegia	30,024	2.2%	8,641	2.8%	-0.621	-0.040
Neurological/Neurodegenerative Conditions	22,021	1.6%	5,597	1.8%	-0.217	-0.017
Dementia	82,508	5.9%	23,319	7.5%	-1.570	-0.063
Depression	306,041	22.0%	68,834	22.2%	-0.136	-0.003
Schizophrenia	25,988	1.9%	7,816	2.5%	-0.646	-0.044
Rheumatic Disorders	55,200	4.0%	11,972	3.9%	0.118	0.006
Multiple Sclerosis	8,950	0.6%	2,107	0.7%	-0.034	-0.004
HIV/AIDS	5,230	0.4%	1,710	0.6%	-0.174	-0.026
Coronary Artery Disease	414,098	29.8%	89,911	29.0%	0.856	0.019
Immunodeficiency	234,638	16.9%	53,526	17.2%	-0.346	-0.009
Smoking or Nicotine Use	378,444	27.2%	76,570	24.7%	2.586	0.059
Hyperlipidemia	954,879	68.7%	213,540	68.8%	-0.028	-0.001

Table 1a. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Medical Product Use	Number/Mean	Percent/ Standard Deviation[1]	Number/Mean	Percent/ Standard Deviation[1]	Absolute Difference	Standardized Difference
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers	635,520	45.8%	139,623	45.0%	0.786	0.016
Non-Steroidal Anti-Inflammatory Drugs	255,125	18.4%	52,634	17.0%	1.416	0.037
Aspirin	1,922	0.1%	449	0.1%	-0.006	-0.002
Antidepressants	502,460	36.2%	109,847	35.4%	0.797	0.017
Statins	740,824	53.3%	165,768	53.4%	-0.053	-0.001
Insulin	102,374	7.4%	23,066	7.4%	-0.058	-0.002
Anti-Diabetic Oral Drugs	245,805	17.7%	53,401	17.2%	0.498	0.013
Antihypertensive Drugs	697,094	50.2%	153,488	49.4%	0.754	0.015
Anticoagulants	177,094	12.8%	37,946	12.2%	0.529	0.016
Glucocorticoids	252,823	18.2%	57,991	18.7%	-0.475	-0.012
Acetaminophen	236,530	17.0%	47,588	15.3%	1.703	0.046
Tumor Necrosis Factor Inhibitors	9,932	0.7%	2,122	0.7%	0.032	0.004
Immunosuppressants	122,391	8.8%	28,027	9.0%	-0.215	-0.008
Inhaled Corticosteroids	120,426	8.7%	27,333	8.8%	-0.133	-0.005
COVID-19 Vaccine	409,985	29.5%	98,694	31.8%	-2.269	-0.049
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters	14.2	15.1	14.3	15.4	-0.099	-0.006
Mean number of emergency room encounters	0.4	1.1	0.4	1.3	-0.014	-0.011
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.034	0.044
Mean number of non-acute institutional encounters	0.1	0.5	0.2	0.5	-0.016	-0.031
Mean number of other ambulatory encounters	7.1	13.8	8.1	15.9	-0.985	-0.066
Mean number of filled prescriptions	18.2	15.8	18.9	17.3	-0.633	-0.038
Mean number of generics dispensed	8.7	4.8	8.7	4.7	0.005	0.001
Mean number of unique drug classes dispensed	8.3	4.4	8.3	4.3	-0.000	-0.000

Table 1a. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product		Characteristic Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[1]Value represents standard deviation where no % follows the value.

[2]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[3]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[4]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[5]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1b. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics	Number/Mean	Percent/ Standard Deviation[1]	Number/Mean	Percent/ Standard Deviation[1]	Absolute Difference	Standardized Difference
Unique patients	1,389,100	N/A	310,525	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**
Age (years)	72.1	11.2	72.6	11.8	-0.457	-0.040
Age						
18-49 years	68,647	4.9%	16,395	5.3%	-0.338	-0.015
50-64 years	126,309	9.1%	27,038	8.7%	0.386	0.014
65-74 years	657,590	47.3%	137,691	44.3%	2.998	0.060
≥ 75 years	536,554	38.6%	129,401	41.7%	-3.046	-0.062
Sex						
Female	864,098	62.2%	206,788	66.6%	-4.387	-0.092
Male	525,002	37.8%	103,737	33.4%	4.387	0.092
Race[2]						
American Indian or Alaska Native	6,634	0.5%	1,619	0.5%	-0.044	-0.006
Asian	34,307	2.5%	8,908	2.9%	-0.399	-0.025
Black or African American	114,899	8.3%	30,231	9.7%	-1.464	-0.051
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	87,539	6.3%	21,594	7.0%	-0.652	-0.026
White	1,145,721	82.5%	248,173	79.9%	2.559	0.066
Hispanic origin						
Yes	34,587	2.5%	8,955	2.9%	-0.394	-0.024
No	1,301,561	93.7%	288,931	93.0%	0.652	0.026
Unknown	52,952	3.8%	12,639	4.1%	-0.258	-0.013

Table 1b. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Health Characteristics	Number/Mean	Percent/ Standard Deviation[1]	Number/Mean	Percent/ Standard Deviation[1]	Absolute Difference	Standardized Difference
Claims-Based frailty index[4]	0.2	0.1	0.2	0.1	-0.002	-0.036
Claims-Based frailty index categories						
<=0.2	1,079,879	77.7%	238,456	76.8%	0.948	0.023
>0.2	309,221	22.3%	72,069	23.2%	-0.948	-0.023
Combined comorbidity score[5]	2.5	3.3	2.5	3.2	0.010	0.003
Diabetes	410,434	29.5%	91,053	29.3%	0.224	0.005
Obesity	329,966	23.8%	69,363	22.3%	1.417	0.034
Hypertension	1,018,260	73.3%	227,013	73.1%	0.197	0.004
Hospitalized Stroke/Transient Ischemic Attack	32,655	2.4%	8,739	2.8%	-0.463	-0.029
Coronary Revascularization	27,270	2.0%	6,042	1.9%	0.017	0.001
Atrial Fibrillation	196,567	14.2%	41,425	13.3%	0.810	0.024
Congestive Heart Failure	183,129	13.2%	39,695	12.8%	0.400	0.012
Hospitalized Acute Myocardial Infarction	32,829	2.4%	6,501	2.1%	0.270	0.018
Other Cerebrovascular Disease	141,957	10.2%	35,023	11.3%	-1.059	-0.034
Chronic Obstructive Pulmonary Disease	225,530	16.2%	47,925	15.4%	0.802	0.022
Asthma without COPD	151,704	10.9%	34,906	11.2%	-0.320	-0.010
Chronic Liver Disease	125,960	9.1%	23,845	7.7%	1.389	0.050
Chronic Kidney Disease	359,775	25.9%	81,731	26.3%	-0.420	-0.010
Any Malignant Neoplasm	355,833	25.6%	77,900	25.1%	0.530	0.012
Hemiplegia	30,040	2.2%	8,651	2.8%	-0.623	-0.040
Neurological/Neurodegenerative Conditions	22,028	1.6%	5,598	1.8%	-0.217	-0.017
Dementia	82,557	5.9%	23,332	7.5%	-1.571	-0.063
Depression	306,092	22.0%	68,851	22.2%	-0.137	-0.003
Schizophrenia	25,999	1.9%	7,816	2.5%	-0.645	-0.044
Rheumatic Disorders	55,209	4.0%	11,973	3.9%	0.119	0.006
Multiple Sclerosis	8,951	0.6%	2,107	0.7%	-0.034	-0.004
HIV/AIDS	5,230	0.4%	1,710	0.6%	-0.174	-0.026
Coronary Artery Disease	414,188	29.8%	89,932	29.0%	0.856	0.019
Immunodeficiency	234,688	16.9%	53,532	17.2%	-0.344	-0.009

Table 1b. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Smoking or Nicotine Use	378,526	27.2%	76,589	24.7%	2.585	0.059
Hyperlipidemia	954,997	68.7%	213,570	68.8%	-0.028	-0.001
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers	635,589	45.8%	139,645	45.0%	0.785	0.016
Non-Steroidal Anti-Inflammatory Drugs	255,143	18.4%	52,640	17.0%	1.416	0.037
Aspirin	1,922	0.1%	449	0.1%	-0.006	-0.002
Antidepressants	502,523	36.2%	109,862	35.4%	0.797	0.017
Statins	740,918	53.3%	165,790	53.4%	-0.052	-0.001
Insulin	102,391	7.4%	23,071	7.4%	-0.059	-0.002
Anti-Diabetic Oral Drugs	245,841	17.7%	53,408	17.2%	0.499	0.013
Antihypertensive Drugs	697,183	50.2%	153,511	49.4%	0.754	0.015
Anticoagulants	177,147	12.8%	37,951	12.2%	0.531	0.016
Glucocorticoids	252,858	18.2%	58,001	18.7%	-0.475	-0.012
Acetaminophen	236,559	17.0%	47,602	15.3%	1.700	0.046
Tumor Necrosis Factor Inhibitors	9,933	0.7%	2,122	0.7%	0.032	0.004
Immunosuppressants	122,411	8.8%	28,030	9.0%	-0.214	-0.008
Inhaled Corticosteroids	120,447	8.7%	27,338	8.8%	-0.133	-0.005
COVID-19 Vaccine	410,030	29.5%	98,704	31.8%	-2.268	-0.049
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Number/Mean**	**Percent/ Standard Deviation[1]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters	14.2	15.1	14.3	15.4	-0.099	-0.006
Mean number of emergency room encounters	0.4	1.1	0.4	1.3	-0.014	-0.011
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.034	0.044
Mean number of non-acute institutional encounters	0.1	0.5	0.2	0.5	-0.016	-0.031
Mean number of other ambulatory encounters	7.1	13.8	8.1	15.9	-0.984	-0.066
Mean number of filled prescriptions	18.2	15.8	18.9	17.3	-0.633	-0.038

Table 1b. Characteristics of Proton Pump Inhibitor New Users and Famotidine New Users in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Characteristic Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Mean number of generics dispensed	8.7	4.8	8.7	4.7	0.005	0.001
Mean number of unique drug classes dispensed	8.3	4.4	8.3	4.3	-0.000	-0.000

[1]Value represents standard deviation where no % follows the value.

[2]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[3]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[4]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[5]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

Table 1c. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	1,380,629	N/A	1,368,549	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	72.1	11.2	72.1	11.5	-0.015	-0.001
Age[*]						
18-49 years	68,229	4.9%	68,411	5.0%	-0.057	-0.003
50-64 years	125,626	9.1%	124,311	9.1%	0.016	0.001
65-74 years	654,045	47.4%	645,483	47.2%	0.207	0.004
≥ 75 years	532,729	38.6%	530,344	38.8%	-0.166	-0.003
Sex[*]						
Female	858,170	62.2%	855,733	62.5%	-0.371	-0.008
Male	522,459	37.8%	512,816	37.5%	0.371	0.008
Race[4]						
American Indian or Alaska Native	6,607	0.5%	6,914	0.5%	-0.027	-0.004
Asian	34,070	2.5%	37,981	2.8%	-0.308	-0.019
Black or African American	114,021	8.3%	127,773	9.3%	-1.078	-0.038
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	86,926	6.3%	95,802	7.0%	-0.704	-0.028
White	1,139,005	82.5%	1,100,079	80.4%	2.116	0.054
Hispanic origin						
Yes	34,301	2.5%	38,628	2.8%	-0.338	-0.021
No	1,293,703	93.7%	1,272,747	93.0%	0.704	0.028
Unknown	52,625	3.8%	57,174	4.2%	-0.366	-0.019
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	384,871	27.9%	381,388	27.9%	0.008	0.000
Q2	377,718	27.4%	373,629	27.3%	0.057	0.001

Table 1c. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	352,820	25.6%	349,301	25.5%	0.032	0.001
Q4 (Most deprived)	262,616	19.0%	261,619	19.1%	-0.095	-0.002
Unknown	2,604	0.2%	2,612	0.2%	-0.002	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	112,365	8.1%	110,699	8.1%	0.050	0.002
2020 Quarter 3	138,370	10.0%	130,791	9.6%	0.465	0.016
2020 Quarter 4	134,087	9.7%	133,664	9.8%	-0.055	-0.002
2021 Quarter 1	123,163	8.9%	122,999	9.0%	-0.067	-0.002
2021 Quarter 2	125,149	9.1%	124,841	9.1%	-0.058	-0.002
2021 Quarter 3	121,552	8.8%	121,427	8.9%	-0.069	-0.002
2021 Quarter 4	119,557	8.7%	119,205	8.7%	-0.051	-0.002
2022 Quarter 1	107,398	7.8%	107,333	7.8%	-0.064	-0.002
2022 Quarter 2	104,119	7.5%	103,778	7.6%	-0.042	-0.002
2022 Quarter 3	99,071	7.2%	98,756	7.2%	-0.040	-0.002
2022 Quarter 4	96,455	7.0%	96,009	7.0%	-0.029	-0.001
2023 Quarter 1	99,343	7.2%	99,046	7.2%	-0.042	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,6	0.2	0.1	0.2	0.1	-0.000	-0.002
Claims-Based frailty index categories						
<=0.2	1,073,602	77.8%	1,067,427	78.0%	-0.235	-0.006
>0.2	307,027	22.2%	301,121	22.0%	0.235	0.006
Combined comorbidity score*,7	2.5	3.3	2.5	3.2	0.005	0.001
Diabetes*	407,975	29.5%	404,233	29.5%	0.013	0.000
Obesity*	327,971	23.8%	324,154	23.7%	0.069	0.002
Hypertension*	1,011,991	73.3%	1,002,474	73.3%	0.048	0.001
Hospitalized Stroke/Transient Ischemic Attack	32,453	2.4%	34,685	2.5%	-0.184	-0.012
Coronary Revascularization	27,097	2.0%	28,983	2.1%	-0.155	-0.011
Atrial Fibrillation*	195,312	14.1%	192,192	14.0%	0.103	0.003

Table 1c. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	181,885	13.2%	179,996	13.2%	0.022	0.001
Hospitalized Acute Myocardial Infarction	32,605	2.4%	29,224	2.1%	0.226	0.015
Other Cerebrovascular Disease*	140,927	10.2%	140,887	10.3%	-0.087	-0.003
Chronic Obstructive Pulmonary Disease*	224,030	16.2%	220,837	16.1%	0.090	0.002
Asthma without COPD*	150,514	10.9%	150,009	11.0%	-0.059	-0.002
Chronic Liver Disease*	125,052	9.1%	121,094	8.8%	0.209	0.007
Chronic Kidney Disease*	357,480	25.9%	355,777	26.0%	-0.104	-0.002
Any Malignant Neoplasm*	353,454	25.6%	349,681	25.6%	0.050	0.001
Hemiplegia	29,846	2.2%	33,571	2.5%	-0.291	-0.019
Neurological/Neurodegenerative Conditions	21,883	1.6%	22,847	1.7%	-0.084	-0.007
Dementia*	82,057	5.9%	81,971	6.0%	-0.046	-0.002
Depression*	304,236	22.0%	301,766	22.1%	-0.014	-0.000
Schizophrenia	25,841	1.9%	31,471	2.3%	-0.428	-0.030
Rheumatic Disorders*	54,816	4.0%	54,342	4.0%	-0.000	-0.000
Multiple Sclerosis	8,900	0.6%	8,757	0.6%	0.005	0.001
HIV/AIDS	5,207	0.4%	7,625	0.6%	-0.180	-0.026
Coronary Artery Disease*	411,368	29.8%	407,272	29.8%	0.036	0.001
Immunodeficiency*	233,055	16.9%	231,289	16.9%	-0.020	-0.001
Smoking or Nicotine Use	376,162	27.2%	350,671	25.6%	1.622	0.037
Hyperlipidemia*	949,015	68.7%	941,683	68.8%	-0.071	-0.002
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	631,919	45.8%	626,271	45.8%	0.009	0.000
Non-Steroidal Anti-Inflammatory Drugs*	253,591	18.4%	250,472	18.3%	0.066	0.002
Aspirin	1,918	0.1%	1,875	0.1%	0.002	0.001
Antidepressants*	499,352	36.2%	494,440	36.1%	0.040	0.001
Statins*	736,559	53.3%	731,816	53.5%	-0.124	-0.002

Table 1c. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	101,803	7.4%	101,011	7.4%	-0.007	-0.000
Anti-Diabetic Oral Drugs*	244,504	17.7%	242,132	17.7%	0.017	0.000
Antihypertensive Drugs*	693,128	50.2%	686,757	50.2%	0.022	0.000
Anticoagulants*	176,066	12.8%	173,643	12.7%	0.064	0.002
Glucocorticoids*	251,033	18.2%	250,492	18.3%	-0.121	-0.003
Acetaminophen	235,084	17.0%	214,473	15.7%	1.356	0.037
Tumor Necrosis Factor Inhibitors	9,869	0.7%	9,339	0.7%	0.032	0.004
Immunosuppressants*	121,558	8.8%	120,801	8.8%	-0.022	-0.001
Inhaled Corticosteroids*	119,595	8.7%	119,042	8.7%	-0.036	-0.001
COVID-19 Vaccine*	406,674	29.5%	405,263	29.6%	-0.157	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.1	14.2	15.1	-0.041	-0.003
Mean number of emergency room encounters*	0.4	1.1	0.4	1.2	-0.001	-0.001
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.040	0.053
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	-0.002	-0.004
Mean number of other ambulatory encounters*	7.1	13.8	7.1	13.8	-0.034	-0.002
Mean number of filled prescriptions*	18.2	15.8	18.3	15.5	-0.065	-0.004
Mean number of generics dispensed*	8.7	4.8	8.8	4.7	-0.011	-0.002
Mean number of unique drug classes dispensed*	8.3	4.4	8.3	4.3	-0.011	-0.002

Table 1c. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1d. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	68,189	N/A	67,561	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	40.1	7.1	40.0	7.2	0.034	0.005
Age*						
18-49 years	68,189	100.0%	67,561	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	37,530	55.0%	37,211	55.1%	-0.040	-0.001
Male	30,659	45.0%	30,350	44.9%	0.040	0.001
Race[4]						
American Indian or Alaska Native	881	1.3%	780	1.2%	0.137	0.012
Asian	891	1.3%	996	1.5%	-0.168	-0.014
Black or African American	13,804	20.2%	14,888	22.0%	-1.793	-0.044
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	8,284	12.1%	8,629	12.8%	-0.624	-0.019
White	44,329	65.0%	42,267	62.6%	2.448	0.051
Hispanic origin						
Yes	4,746	7.0%	4,985	7.4%	-0.418	-0.016
No	59,905	87.9%	58,932	87.2%	0.624	0.019
Unknown	3,538	5.2%	3,645	5.4%	-0.206	-0.009
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	9,886	14.5%	9,856	14.6%	-0.090	-0.003
Q2	15,640	22.9%	15,502	22.9%	-0.009	-0.000

Table 1d. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	21,221	31.1%	20,931	31.0%	0.140	0.003
Q4 (Most deprived)	21,382	31.4%	21,211	31.4%	-0.039	-0.001
Unknown	60	0.1%	60	0.1%	-0.001	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	7,238	10.6%	7,014	10.4%	0.233	0.008
2020 Quarter 3	7,993	11.7%	7,747	11.5%	0.256	0.008
2020 Quarter 4	7,295	10.7%	7,327	10.8%	-0.147	-0.005
2021 Quarter 1	6,669	9.8%	6,648	9.8%	-0.060	-0.002
2021 Quarter 2	6,392	9.4%	6,378	9.4%	-0.067	-0.002
2021 Quarter 3	5,809	8.5%	5,799	8.6%	-0.064	-0.002
2021 Quarter 4	5,236	7.7%	5,230	7.7%	-0.062	-0.002
2022 Quarter 1	4,611	6.8%	4,604	6.8%	-0.053	-0.002
2022 Quarter 2	4,325	6.3%	4,268	6.3%	0.026	0.001
2022 Quarter 3	4,341	6.4%	4,287	6.3%	0.020	0.001
2022 Quarter 4	4,062	6.0%	4,068	6.0%	-0.064	-0.003
2023 Quarter 1	4,218	6.2%	4,191	6.2%	-0.018	-0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.0	0.2	0.0	-0.000	-0.001
Claims-Based frailty index categories						
<=0.2	55,301	81.1%	54,460	80.6%	0.491	0.012
>0.2	12,888	18.9%	13,101	19.4%	-0.491	-0.012
Combined comorbidity score*,[7]	2.2	2.7	2.2	2.6	-0.012	-0.004
Diabetes*	15,910	23.3%	15,801	23.4%	-0.055	-0.001
Obesity*	25,465	37.3%	25,211	37.3%	0.028	0.001
Hypertension*	30,608	44.9%	30,234	44.8%	0.137	0.003
Hospitalized Stroke/Transient Ischemic Attack	704	1.0%	698	1.0%	-0.001	-0.000
Coronary Revascularization	900	1.3%	849	1.3%	0.063	0.006
Atrial Fibrillation*	1,634	2.4%	1,664	2.5%	-0.066	-0.004

Table 1d. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	4,841	7.1%	4,859	7.2%	-0.093	-0.004
Hospitalized Acute Myocardial Infarction	844	1.2%	675	1.0%	0.239	0.023
Other Cerebrovascular Disease*	2,056	3.0%	2,059	3.0%	-0.033	-0.002
Chronic Obstructive Pulmonary Disease*	5,725	8.4%	5,548	8.2%	0.184	0.007
Asthma without COPD*	13,438	19.7%	13,460	19.9%	-0.215	-0.005
Chronic Liver Disease*	7,087	10.4%	6,893	10.2%	0.190	0.006
Chronic Kidney Disease*	14,271	20.9%	14,276	21.1%	-0.201	-0.005
Any Malignant Neoplasm*	4,027	5.9%	4,036	6.0%	-0.068	-0.003
Hemiplegia	1,316	1.9%	1,427	2.1%	-0.182	-0.013
Neurological/Neurodegenerative Conditions	193	0.3%	258	0.4%	-0.099	-0.017
Dementia*	439	0.6%	453	0.7%	-0.027	-0.003
Depression*	26,782	39.3%	26,575	39.3%	-0.059	-0.001
Schizophrenia	8,383	12.3%	9,119	13.5%	-1.204	-0.036
Rheumatic Disorders*	2,232	3.3%	2,175	3.2%	0.054	0.003
Multiple Sclerosis	1,124	1.6%	1,215	1.8%	-0.150	-0.011
HIV/AIDS	927	1.4%	1,184	1.8%	-0.394	-0.032
Coronary Artery Disease*	7,078	10.4%	7,017	10.4%	-0.006	-0.000
Immunodeficiency*	13,969	20.5%	13,980	20.7%	-0.207	-0.005
Smoking or Nicotine Use	26,196	38.4%	24,468	36.2%	2.200	0.046
Hyperlipidemia*	23,805	34.9%	23,596	34.9%	-0.015	-0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	14,504	21.3%	14,399	21.3%	-0.043	-0.001
Non-Steroidal Anti-Inflammatory Drugs*	17,175	25.2%	17,059	25.2%	-0.062	-0.001
Aspirin	42	0.1%	43	0.1%	-0.002	-0.001
Antidepressants*	35,651	52.3%	35,333	52.3%	-0.016	-0.000
Statins*	13,780	20.2%	13,698	20.3%	-0.067	-0.002

Table 1d. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	6,309	9.3%	6,267	9.3%	-0.024	-0.001
Anti-Diabetic Oral Drugs*	8,243	12.1%	8,191	12.1%	-0.036	-0.001
Antihypertensive Drugs*	20,793	30.5%	20,571	30.4%	0.045	0.001
Anticoagulants*	3,340	4.9%	3,369	5.0%	-0.088	-0.004
Glucocorticoids*	12,763	18.7%	12,668	18.8%	-0.033	-0.001
Acetaminophen	15,733	23.1%	14,067	20.8%	2.252	0.054
Tumor Necrosis Factor Inhibitors	767	1.1%	789	1.2%	-0.043	-0.004
Immunosuppressants*	4,081	6.0%	4,132	6.1%	-0.131	-0.006
Inhaled Corticosteroids*	6,018	8.8%	5,968	8.8%	-0.008	-0.000
COVID-19 Vaccine*	10,346	15.2%	10,335	15.3%	-0.125	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	16.9	23.9	17.1	24.5	-0.186	-0.008
Mean number of emergency room encounters*	1.1	2.5	1.1	2.4	-0.023	-0.009
Mean number of inpatient hospital encounters	0.4	1.1	0.4	1.0	0.041	0.040
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.5	-0.003	-0.005
Mean number of other ambulatory encounters*	7.6	15.4	7.7	15.2	-0.077	-0.005
Mean number of filled prescriptions*	22.8	20.1	22.9	19.3	-0.129	-0.007
Mean number of generics dispensed*	9.2	5.5	9.2	5.5	-0.008	-0.001
Mean number of unique drug classes dispensed*	8.7	5.0	8.7	4.9	-0.006	-0.001

Table 1d. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1e. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	125,605	N/A	124,501	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	58.6	4.2	58.6	4.1	-0.015	-0.004
Age[*]						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	125,605	100.0%	124,501	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex[*]						
Female	73,534	58.5%	73,089	58.7%	-0.162	-0.003
Male	52,071	41.5%	51,412	41.3%	0.162	0.003
Race[4]						
American Indian or Alaska Native	1,473	1.2%	1,484	1.2%	-0.019	-0.002
Asian	2,067	1.6%	2,387	1.9%	-0.271	-0.021
Black or African American	24,115	19.2%	26,358	21.2%	-1.972	-0.049
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	9,003	7.2%	10,100	8.1%	-0.944	-0.036
White	88,947	70.8%	84,174	67.6%	3.206	0.069
Hispanic origin						
Yes	6,916	5.5%	7,657	6.2%	-0.644	-0.027
No	116,602	92.8%	114,402	91.9%	0.944	0.036
Unknown	2,087	1.7%	2,443	2.0%	-0.300	-0.023
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	18,638	14.8%	18,394	14.8%	0.065	0.002
Q2	29,044	23.1%	28,635	23.0%	0.124	0.003

Table 1e. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	38,462	30.6%	38,134	30.6%	-0.008	-0.000
Q4 (Most deprived)	39,319	31.3%	39,198	31.5%	-0.181	-0.004
Unknown	142	0.1%	140	0.1%	0.001	0.000
Year-Quarter of Exposure*						
2020 Quarter 2	12,968	10.3%	12,784	10.3%	0.056	0.002
2020 Quarter 3	14,565	11.6%	13,915	11.2%	0.420	0.013
2020 Quarter 4	13,848	11.0%	13,825	11.1%	-0.080	-0.003
2021 Quarter 1	11,955	9.5%	11,926	9.6%	-0.061	-0.002
2021 Quarter 2	11,559	9.2%	11,535	9.3%	-0.063	-0.002
2021 Quarter 3	10,855	8.6%	10,810	8.7%	-0.040	-0.001
2021 Quarter 4	10,181	8.1%	10,125	8.1%	-0.027	-0.001
2022 Quarter 1	8,664	6.9%	8,666	7.0%	-0.063	-0.002
2022 Quarter 2	8,238	6.6%	8,172	6.6%	-0.005	-0.000
2022 Quarter 3	7,978	6.4%	7,961	6.4%	-0.043	-0.002
2022 Quarter 4	7,334	5.8%	7,315	5.9%	-0.037	-0.002
2023 Quarter 1	7,460	5.9%	7,466	6.0%	-0.058	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.000	0.001
Claims-Based frailty index categories						
<=0.2	90,577	72.1%	89,768	72.1%	0.011	0.000
>0.2	35,028	27.9%	34,734	27.9%	-0.011	-0.000
Combined comorbidity score*,[7]	2.8	3.3	2.8	3.2	-0.001	-0.000
Diabetes*	46,507	37.0%	46,146	37.1%	-0.039	-0.001
Obesity*	43,203	34.4%	42,840	34.4%	-0.013	-0.000
Hypertension*	86,738	69.1%	85,918	69.0%	0.047	0.001
Hospitalized Stroke/Transient Ischemic Attack	3,014	2.4%	3,141	2.5%	-0.123	-0.008
Coronary Revascularization	2,861	2.3%	2,888	2.3%	-0.042	-0.003
Atrial Fibrillation*	8,971	7.1%	8,892	7.1%	-0.000	-0.000

Table 1e. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	17,182	13.7%	17,091	13.7%	-0.048	-0.001
Hospitalized Acute Myocardial Infarction	3,138	2.5%	2,842	2.3%	0.216	0.014
Other Cerebrovascular Disease*	10,016	8.0%	9,979	8.0%	-0.041	-0.002
Chronic Obstructive Pulmonary Disease*	31,237	24.9%	30,676	24.6%	0.230	0.005
Asthma without COPD*	19,054	15.2%	18,931	15.2%	-0.036	-0.001
Chronic Liver Disease*	16,535	13.2%	16,033	12.9%	0.286	0.009
Chronic Kidney Disease*	37,255	29.7%	37,142	29.8%	-0.172	-0.004
Any Malignant Neoplasm*	17,462	13.9%	17,295	13.9%	0.011	0.000
Hemiplegia	4,280	3.4%	4,612	3.7%	-0.297	-0.016
Neurological/Neurodegenerative Conditions	1,285	1.0%	1,406	1.1%	-0.106	-0.010
Dementia*	3,227	2.6%	3,258	2.6%	-0.047	-0.003
Depression*	46,926	37.4%	46,501	37.3%	0.010	0.000
Schizophrenia	8,562	6.8%	10,327	8.3%	-1.478	-0.056
Rheumatic Disorders*	6,610	5.3%	6,502	5.2%	0.040	0.002
Multiple Sclerosis	2,259	1.8%	2,213	1.8%	0.021	0.002
HIV/AIDS	2,225	1.8%	3,087	2.5%	-0.708	-0.049
Coronary Artery Disease*	31,240	24.9%	31,074	25.0%	-0.087	-0.002
Immunodeficiency*	30,182	24.0%	30,064	24.1%	-0.118	-0.003
Smoking or Nicotine Use	54,480	43.4%	51,212	41.1%	2.241	0.045
Hyperlipidemia*	74,415	59.2%	73,989	59.4%	-0.183	-0.004
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	48,909	38.9%	48,502	39.0%	-0.018	-0.000
Non-Steroidal Anti-Inflammatory Drugs*	32,801	26.1%	32,386	26.0%	0.102	0.002
Aspirin	153	0.1%	151	0.1%	0.000	0.000
Antidepressants*	65,160	51.9%	64,479	51.8%	0.087	0.002
Statins*	56,809	45.2%	56,549	45.4%	-0.192	-0.004

Table 1e. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	17,345	13.8%	17,189	13.8%	0.003	0.000
Anti-Diabetic Oral Drugs*	26,157	20.8%	26,002	20.9%	-0.060	-0.001
Antihypertensive Drugs*	57,145	45.5%	56,671	45.5%	-0.023	-0.000
Anticoagulants*	10,971	8.7%	10,962	8.8%	-0.070	-0.002
Glucocorticoids*	26,375	21.0%	26,322	21.1%	-0.143	-0.004
Acetaminophen	35,376	28.2%	31,749	25.5%	2.664	0.060
Tumor Necrosis Factor Inhibitors	1,387	1.1%	1,334	1.1%	0.033	0.003
Immunosuppressants*	9,813	7.8%	9,764	7.8%	-0.030	-0.001
Inhaled Corticosteroids*	16,544	13.2%	16,401	13.2%	-0.002	-0.000
COVID-19 Vaccine*	24,923	19.8%	24,860	20.0%	-0.125	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	21.7	17.1	22.4	-0.135	-0.006
Mean number of emergency room encounters*	0.7	1.9	0.7	1.8	-0.008	-0.005
Mean number of inpatient hospital encounters	0.4	1.0	0.4	0.9	0.038	0.040
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	-0.004	-0.007
Mean number of other ambulatory encounters*	9.1	17.5	9.2	17.2	-0.120	-0.007
Mean number of filled prescriptions*	25.9	21.0	26.0	20.5	-0.123	-0.006
Mean number of generics dispensed*	10.5	5.5	10.5	5.4	-0.007	-0.001
Mean number of unique drug classes dispensed*	9.8	4.9	9.8	4.9	-0.008	-0.002

Table 1e. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1f. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	654,039	N/A	648,145	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.1	2.7	70.1	2.7	-0.011	-0.004
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	654,039	100.0%	648,145	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	404,310	61.8%	403,272	62.2%	-0.402	-0.008
Male	249,729	38.2%	244,874	37.8%	0.402	0.008
Race[4]						
American Indian or Alaska Native	2,398	0.4%	2,557	0.4%	-0.028	-0.005
Asian	17,164	2.6%	19,747	3.0%	-0.422	-0.025
Black or African American	45,169	6.9%	51,278	7.9%	-1.005	-0.038
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	46,627	7.1%	51,609	8.0%	-0.834	-0.032
White	542,681	83.0%	522,954	80.7%	2.289	0.059
Hispanic origin						
Yes	13,558	2.1%	15,796	2.4%	-0.364	-0.025
No	607,412	92.9%	596,536	92.0%	0.834	0.032
Unknown	33,069	5.1%	35,813	5.5%	-0.469	-0.021
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	195,065	29.8%	193,200	29.8%	0.017	0.000
Q2	183,361	28.0%	181,319	28.0%	0.060	0.001

Table 1f. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	162,422	24.8%	160,755	24.8%	0.031	0.001
Q4 (Most deprived)	111,833	17.1%	111,505	17.2%	-0.105	-0.003
Unknown	1,358	0.2%	1,367	0.2%	-0.003	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	50,440	7.7%	49,766	7.7%	0.034	0.001
2020 Quarter 3	64,134	9.8%	60,332	9.3%	0.497	0.017
2020 Quarter 4	63,647	9.7%	63,480	9.8%	-0.063	-0.002
2021 Quarter 1	59,080	9.0%	59,036	9.1%	-0.075	-0.003
2021 Quarter 2	58,783	9.0%	58,573	9.0%	-0.049	-0.002
2021 Quarter 3	57,067	8.7%	57,061	8.8%	-0.078	-0.003
2021 Quarter 4	57,426	8.8%	57,271	8.8%	-0.056	-0.002
2022 Quarter 1	51,852	7.9%	51,816	8.0%	-0.066	-0.002
2022 Quarter 2	49,518	7.6%	49,327	7.6%	-0.039	-0.001
2022 Quarter 3	46,919	7.2%	46,747	7.2%	-0.039	-0.001
2022 Quarter 4	46,775	7.2%	46,506	7.2%	-0.024	-0.001
2023 Quarter 1	48,398	7.4%	48,231	7.4%	-0.041	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	-0.000	-0.002
Claims-Based frailty index categories						
<=0.2	557,676	85.3%	553,224	85.4%	-0.088	-0.002
>0.2	96,363	14.7%	94,922	14.6%	0.088	0.002
Combined comorbidity score*,[7]	1.9	3.0	1.9	2.9	0.002	0.001
Diabetes*	182,451	27.9%	181,182	28.0%	-0.058	-0.001
Obesity*	165,084	25.2%	163,205	25.2%	0.060	0.001
Hypertension*	453,373	69.3%	449,029	69.3%	0.040	0.001
Hospitalized Stroke/Transient Ischemic Attack	10,567	1.6%	11,413	1.8%	-0.145	-0.011
Coronary Revascularization	11,672	1.8%	13,353	2.1%	-0.276	-0.020
Atrial Fibrillation*	64,856	9.9%	63,594	9.8%	0.105	0.004

Table 1f. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	57,189	8.7%	56,623	8.7%	0.008	0.000
Hospitalized Acute Myocardial Infarction	11,378	1.7%	10,685	1.6%	0.091	0.007
Other Cerebrovascular Disease*	52,015	8.0%	51,965	8.0%	-0.065	-0.002
Chronic Obstructive Pulmonary Disease*	88,433	13.5%	87,403	13.5%	0.036	0.001
Asthma without COPD*	68,108	10.4%	67,809	10.5%	-0.049	-0.002
Chronic Liver Disease*	62,133	9.5%	60,364	9.3%	0.186	0.006
Chronic Kidney Disease*	138,669	21.2%	138,320	21.3%	-0.139	-0.003
Any Malignant Neoplasm*	158,549	24.2%	156,674	24.2%	0.069	0.002
Hemiplegia	10,462	1.6%	11,810	1.8%	-0.223	-0.017
Neurological/Neurodegenerative Conditions	7,757	1.2%	8,116	1.3%	-0.066	-0.006
Dementia*	16,627	2.5%	16,642	2.6%	-0.025	-0.002
Depression*	125,206	19.1%	124,078	19.1%	-0.000	-0.000
Schizophrenia	5,880	0.9%	7,439	1.1%	-0.249	-0.025
Rheumatic Disorders*	24,429	3.7%	24,241	3.7%	-0.005	-0.000
Multiple Sclerosis	3,764	0.6%	3,685	0.6%	0.007	0.001
HIV/AIDS	1,606	0.2%	2,560	0.4%	-0.149	-0.026
Coronary Artery Disease*	164,538	25.2%	162,969	25.1%	0.013	0.000
Immunodeficiency*	99,879	15.3%	99,001	15.3%	-0.003	-0.000
Smoking or Nicotine Use	159,878	24.4%	150,408	23.2%	1.239	0.029
Hyperlipidemia*	454,167	69.4%	450,561	69.5%	-0.075	-0.002
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	297,896	45.5%	295,156	45.5%	0.009	0.000
Non-Steroidal Anti-Inflammatory Drugs*	126,234	19.3%	124,812	19.3%	0.044	0.001
Aspirin	736	0.1%	705	0.1%	0.004	0.001
Antidepressants*	221,652	33.9%	219,475	33.9%	0.028	0.001
Statins*	354,451	54.2%	352,486	54.4%	-0.190	-0.004

Table 1f. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	43,879	6.7%	43,669	6.7%	-0.029	-0.001
Anti-Diabetic Oral Drugs*	119,210	18.2%	118,253	18.2%	-0.018	-0.000
Antihypertensive Drugs*	319,676	48.9%	316,641	48.9%	0.024	0.000
Anticoagulants*	60,189	9.2%	59,165	9.1%	0.074	0.003
Glucocorticoids*	118,716	18.2%	118,647	18.3%	-0.154	-0.004
Acetaminophen	105,176	16.1%	97,478	15.0%	1.041	0.029
Tumor Necrosis Factor Inhibitors	4,983	0.8%	4,762	0.7%	0.027	0.003
Immunosuppressants*	55,586	8.5%	55,201	8.5%	-0.018	-0.001
Inhaled Corticosteroids*	51,575	7.9%	51,339	7.9%	-0.035	-0.001
COVID-19 Vaccine*	198,536	30.4%	197,813	30.5%	-0.164	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.3	13.6	13.3	13.7	-0.038	-0.003
Mean number of emergency room encounters*	0.3	0.8	0.3	0.8	-0.001	-0.001
Mean number of inpatient hospital encounters	0.2	0.7	0.2	0.6	0.025	0.039
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	-0.002	-0.004
Mean number of other ambulatory encounters*	5.4	11.7	5.5	11.7	-0.036	-0.003
Mean number of filled prescriptions*	16.0	13.9	16.1	13.8	-0.045	-0.003
Mean number of generics dispensed*	8.1	4.6	8.1	4.6	-0.013	-0.003
Mean number of unique drug classes dispensed*	7.7	4.2	7.8	4.2	-0.012	-0.003

Table 1f. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1g. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	532,711	N/A	528,200	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	81.9	5.4	81.9	5.4	-0.020	-0.004
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	532,711	100.0%	528,200	100.0%	0.000	NaN
Sex*						
Female	342,763	64.3%	341,929	64.7%	-0.392	-0.008
Male	189,948	35.7%	186,270	35.3%	0.392	0.008
Race[4]						
American Indian or Alaska Native	1,855	0.3%	2,094	0.4%	-0.048	-0.008
Asian	13,948	2.6%	14,858	2.8%	-0.195	-0.012
Black or African American	30,924	5.8%	35,138	6.7%	-0.847	-0.035
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	23,009	4.3%	24,825	4.7%	-0.381	-0.018
White	462,975	86.9%	451,285	85.4%	1.471	0.043
Hispanic origin						
Yes	9,079	1.7%	10,003	1.9%	-0.189	-0.014
No	509,702	95.7%	503,374	95.3%	0.381	0.018
Unknown	13,930	2.6%	14,822	2.8%	-0.191	-0.012
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	161,267	30.3%	160,046	30.3%	-0.027	-0.001
Q2	149,646	28.1%	148,137	28.0%	0.046	0.001

Table 1g. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	130,683	24.5%	129,445	24.5%	0.025	0.001
Q4 (Most deprived)	90,071	16.9%	89,517	16.9%	-0.039	-0.001
Unknown	1,044	0.2%	1,056	0.2%	-0.004	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	41,697	7.8%	40,966	7.8%	0.072	0.003
2020 Quarter 3	51,626	9.7%	48,848	9.2%	0.443	0.015
2020 Quarter 4	49,296	9.3%	49,060	9.3%	-0.034	-0.001
2021 Quarter 1	45,457	8.5%	45,319	8.6%	-0.047	-0.002
2021 Quarter 2	48,413	9.1%	48,417	9.2%	-0.078	-0.003
2021 Quarter 3	47,821	9.0%	47,748	9.0%	-0.063	-0.002
2021 Quarter 4	46,714	8.8%	46,573	8.8%	-0.048	-0.002
2022 Quarter 1	42,270	7.9%	42,291	8.0%	-0.072	-0.003
2022 Quarter 2	42,037	7.9%	41,908	7.9%	-0.043	-0.002
2022 Quarter 3	39,832	7.5%	39,736	7.5%	-0.046	-0.002
2022 Quarter 4	38,283	7.2%	38,159	7.2%	-0.038	-0.001
2023 Quarter 1	39,265	7.4%	39,175	7.4%	-0.046	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	-0.000	-0.000
Claims-Based frailty index categories						
<=0.2	370,019	69.5%	369,838	70.0%	-0.559	-0.012
>0.2	162,692	30.5%	158,361	30.0%	0.559	0.012
Combined comorbidity score*,[7]	3.2	3.5	3.2	3.5	0.018	0.005
Diabetes*	163,063	30.6%	161,138	30.5%	0.103	0.002
Obesity*	94,168	17.7%	93,027	17.6%	0.065	0.002
Hypertension*	441,194	82.8%	437,148	82.8%	0.059	0.002
Hospitalized Stroke/Transient Ischemic Attack	18,165	3.4%	19,532	3.7%	-0.288	-0.016
Coronary Revascularization	11,664	2.2%	11,841	2.2%	-0.052	-0.004
Atrial Fibrillation*	119,825	22.5%	117,676	22.3%	0.215	0.005

Table 1g. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	102,625	19.3%	101,065	19.1%	0.131	0.003
Hospitalized Acute Myocardial Infarction	17,242	3.2%	15,037	2.8%	0.390	0.023
Other Cerebrovascular Disease*	76,833	14.4%	76,707	14.5%	-0.099	-0.003
Chronic Obstructive Pulmonary Disease*	98,586	18.5%	97,119	18.4%	0.120	0.003
Asthma without COPD*	49,901	9.4%	49,767	9.4%	-0.055	-0.002
Chronic Liver Disease*	39,232	7.4%	37,960	7.2%	0.178	0.007
Chronic Kidney Disease*	167,250	31.4%	165,666	31.4%	0.032	0.001
Any Malignant Neoplasm*	173,397	32.5%	171,440	32.5%	0.093	0.002
Hemiplegia	13,785	2.6%	15,631	3.0%	-0.372	-0.023
Neurological/Neurodegenerative Conditions	12,645	2.4%	13,154	2.5%	-0.117	-0.008
Dementia*	61,756	11.6%	61,581	11.7%	-0.066	-0.002
Depression*	105,273	19.8%	104,485	19.8%	-0.020	-0.000
Schizophrenia	3,008	0.6%	3,702	0.7%	-0.136	-0.017
Rheumatic Disorders*	21,516	4.0%	21,343	4.0%	-0.002	-0.000
Multiple Sclerosis	1,752	0.3%	1,760	0.3%	-0.004	-0.001
HIV/AIDS	448	0.1%	684	0.1%	-0.045	-0.014
Coronary Artery Disease*	208,466	39.1%	205,884	39.0%	0.155	0.003
Immunodeficiency*	88,994	16.7%	88,206	16.7%	0.006	0.000
Smoking or Nicotine Use	135,549	25.4%	125,652	23.8%	1.656	0.038
Hyperlipidemia*	396,570	74.4%	393,349	74.5%	-0.026	-0.001
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	270,558	50.8%	268,450	50.8%	-0.035	-0.001
Non-Steroidal Anti-Inflammatory Drugs*	77,352	14.5%	76,435	14.5%	0.050	0.001
Aspirin	987	0.2%	980	0.2%	-0.000	-0.000
Antidepressants*	176,826	33.2%	175,099	33.2%	0.044	0.001
Statins*	311,487	58.5%	309,038	58.5%	-0.036	-0.001

Table 1g. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	34,252	6.4%	33,961	6.4%	0.000	0.000
Anti-Diabetic Oral Drugs*	90,876	17.1%	89,735	17.0%	0.070	0.002
Antihypertensive Drugs*	295,446	55.5%	293,089	55.5%	-0.027	-0.001
Anticoagulants*	101,550	19.1%	99,830	18.9%	0.163	0.004
Glucocorticoids*	93,151	17.5%	92,709	17.6%	-0.066	-0.002
Acetaminophen	78,760	14.8%	71,874	13.6%	1.177	0.034
Tumor Necrosis Factor Inhibitors	2,732	0.5%	2,511	0.5%	0.037	0.005
Immunosuppressants*	52,070	9.8%	51,646	9.8%	-0.003	-0.000
Inhaled Corticosteroids*	45,452	8.5%	45,264	8.6%	-0.037	-0.001
COVID-19 Vaccine*	172,863	32.4%	172,335	32.6%	-0.177	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	13.1	14.2	12.9	-0.007	-0.001
Mean number of emergency room encounters*	0.4	0.9	0.4	0.9	0.001	0.001
Mean number of inpatient hospital encounters	0.4	0.8	0.4	0.7	0.057	0.075
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	-0.001	-0.001
Mean number of other ambulatory encounters*	8.6	14.7	8.6	14.9	0.002	0.000
Mean number of filled prescriptions*	18.6	15.0	18.6	14.7	-0.047	-0.003
Mean number of generics dispensed*	9.0	4.5	9.0	4.5	-0.004	-0.001
Mean number of unique drug classes dispensed*	8.7	4.1	8.7	4.1	-0.004	-0.001

Table 1g. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1h. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	1,380,595	N/A	1,310,162	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	72.1	11.2	72.0	11.4	0.086	0.008
Age[*]						
18-49 years	68,227	4.9%	66,248	5.1%	-0.115	-0.005
50-64 years	125,623	9.1%	118,988	9.1%	0.017	0.001
65-74 years	654,027	47.4%	623,693	47.6%	-0.231	-0.005
≥ 75 years	532,718	38.6%	501,232	38.3%	0.329	0.007
Sex[*]						
Female	858,160	62.2%	824,909	63.0%	-0.804	-0.017
Male	522,435	37.8%	485,253	37.0%	0.804	0.017
Race[4]						
American Indian or Alaska Native	6,606	0.5%	6,757	0.5%	-0.037	-0.005
Asian	34,070	2.5%	36,581	2.8%	-0.324	-0.020
Black or African American	114,017	8.3%	120,729	9.2%	-0.956	-0.034
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	86,926	6.3%	92,267	7.0%	-0.746	-0.030
White	1,138,976	82.5%	1,053,828	80.4%	2.064	0.053
Hispanic origin						
Yes	34,301	2.5%	37,063	2.8%	-0.344	-0.021
No	1,293,669	93.7%	1,217,895	93.0%	0.746	0.030
Unknown	52,625	3.8%	55,205	4.2%	-0.402	-0.020
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	384,860	27.9%	365,469	27.9%	-0.019	-0.000
Q2	377,706	27.4%	357,503	27.3%	0.071	0.002

Table 1h. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	352,813	25.6%	334,025	25.5%	0.060	0.001
Q4 (Most deprived)	262,612	19.0%	250,628	19.1%	-0.108	-0.003
Unknown	2,604	0.2%	2,537	0.2%	-0.005	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	112,352	8.1%	106,048	8.1%	0.044	0.002
2020 Quarter 3	138,365	10.0%	127,221	9.7%	0.312	0.010
2020 Quarter 4	134,085	9.7%	127,987	9.8%	-0.057	-0.002
2021 Quarter 1	123,160	8.9%	117,740	9.0%	-0.066	-0.002
2021 Quarter 2	125,145	9.1%	118,747	9.1%	0.001	0.000
2021 Quarter 3	121,550	8.8%	115,854	8.8%	-0.039	-0.001
2021 Quarter 4	119,556	8.7%	114,079	8.7%	-0.047	-0.002
2022 Quarter 1	107,397	7.8%	102,792	7.8%	-0.067	-0.002
2022 Quarter 2	104,120	7.5%	98,916	7.5%	-0.008	-0.000
2022 Quarter 3	99,069	7.2%	94,267	7.2%	-0.019	-0.001
2022 Quarter 4	96,454	7.0%	91,671	7.0%	-0.011	-0.000
2023 Quarter 1	99,342	7.2%	94,839	7.2%	-0.043	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.024
Claims-Based frailty index categories						
<=0.2	1,073,589	77.8%	1,033,343	78.9%	-1.109	-0.027
>0.2	307,006	22.2%	276,819	21.1%	1.109	0.027
Combined comorbidity score*,[7]	2.5	3.3	2.4	3.2	0.128	0.040
Diabetes*	407,964	29.5%	381,893	29.1%	0.401	0.009
Obesity*	327,961	23.8%	307,441	23.5%	0.289	0.007
Hypertension*	1,011,961	73.3%	952,103	72.7%	0.628	0.014
Hospitalized Stroke/Transient Ischemic Attack	32,449	2.4%	30,951	2.4%	-0.012	-0.001
Coronary Revascularization	27,094	2.0%	26,948	2.1%	-0.094	-0.007
Atrial Fibrillation*	195,306	14.1%	175,689	13.4%	0.737	0.021

Table 1h. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	181,874	13.2%	162,513	12.4%	0.770	0.023
Hospitalized Acute Myocardial Infarction	32,601	2.4%	26,919	2.1%	0.307	0.021
Other Cerebrovascular Disease*	140,923	10.2%	131,488	10.0%	0.171	0.006
Chronic Obstructive Pulmonary Disease*	224,018	16.2%	206,279	15.7%	0.482	0.013
Asthma without COPD*	150,509	10.9%	144,184	11.0%	-0.103	-0.003
Chronic Liver Disease*	125,045	9.1%	111,096	8.5%	0.578	0.020
Chronic Kidney Disease*	357,458	25.9%	325,440	24.8%	1.052	0.024
Any Malignant Neoplasm*	353,446	25.6%	330,200	25.2%	0.398	0.009
Hemiplegia	29,846	2.2%	28,886	2.2%	-0.043	-0.003
Neurological/Neurodegenerative Conditions	21,883	1.6%	21,549	1.6%	-0.060	-0.005
Dementia*	82,055	5.9%	75,822	5.8%	0.156	0.007
Depression*	304,221	22.0%	287,005	21.9%	0.129	0.003
Schizophrenia	25,839	1.9%	28,649	2.2%	-0.315	-0.022
Rheumatic Disorders*	54,812	4.0%	51,698	3.9%	0.024	0.001
Multiple Sclerosis	8,900	0.6%	8,252	0.6%	0.015	0.002
HIV/AIDS	5,206	0.4%	7,338	0.6%	-0.183	-0.027
Coronary Artery Disease*	411,347	29.8%	378,747	28.9%	0.887	0.019
Immunodeficiency*	233,040	16.9%	214,292	16.4%	0.524	0.014
Smoking or Nicotine Use	376,144	27.2%	335,208	25.6%	1.660	0.038
Hyperlipidemia*	948,991	68.7%	897,869	68.5%	0.207	0.004
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	631,900	45.8%	596,626	45.5%	0.232	0.005
Non-Steroidal Anti-Inflammatory Drugs*	253,583	18.4%	241,993	18.5%	-0.103	-0.003
Aspirin	1,918	0.1%	1,744	0.1%	0.006	0.002
Antidepressants*	499,336	36.2%	472,971	36.1%	0.068	0.001
Statins*	736,538	53.3%	697,836	53.3%	0.086	0.002

Table 1h. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	101,802	7.4%	94,315	7.2%	0.175	0.007
Anti-Diabetic Oral Drugs*	244,497	17.7%	230,397	17.6%	0.124	0.003
Antihypertensive Drugs*	693,106	50.2%	652,981	49.8%	0.364	0.007
Anticoagulants*	176,058	12.8%	160,249	12.2%	0.521	0.016
Glucocorticoids*	251,026	18.2%	240,098	18.3%	-0.143	-0.004
Acetaminophen	235,077	17.0%	206,854	15.8%	1.239	0.033
Tumor Necrosis Factor Inhibitors	9,869	0.7%	9,093	0.7%	0.021	0.002
Immunosuppressants*	121,557	8.8%	114,919	8.8%	0.033	0.001
Inhaled Corticosteroids*	119,594	8.7%	114,334	8.7%	-0.064	-0.002
COVID-19 Vaccine*	406,671	29.5%	388,279	29.6%	-0.180	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.1	14.1	14.6	0.079	0.005
Mean number of emergency room encounters*	0.4	1.1	0.4	1.1	0.001	0.000
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.040	0.053
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	0.007	0.015
Mean number of other ambulatory encounters*	7.1	13.8	6.9	13.4	0.232	0.017
Mean number of filled prescriptions*	18.2	15.8	18.2	15.6	0.043	0.003
Mean number of generics dispensed*	8.7	4.8	8.7	4.7	0.039	0.008
Mean number of unique drug classes dispensed*	8.3	4.4	8.3	4.3	0.036	0.008

Table 1h. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1i. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	68,136	N/A	65,044	N/A	N/A	N/A
Demographic Characteristics	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Age (years)*	40.1	7.1	40.0	7.2	0.076	0.011
Age*						
18-49 years	68,136	100.0%	65,044	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	37,511	55.1%	35,957	55.3%	-0.228	-0.005
Male	30,625	44.9%	29,087	44.7%	0.228	0.005
Race[4]						
American Indian or Alaska Native	881	1.3%	736	1.1%	0.162	0.015
Asian	888	1.3%	923	1.4%	-0.117	-0.010
Black or African American	13,783	20.2%	14,237	21.9%	-1.659	-0.041
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	8,274	12.1%	8,278	12.7%	-0.583	-0.018
White	44,310	65.0%	40,870	62.8%	2.197	0.046
Hispanic origin						
Yes	4,741	7.0%	4,709	7.2%	-0.281	-0.011
No	59,862	87.9%	56,766	87.3%	0.583	0.018
Unknown	3,533	5.2%	3,569	5.5%	-0.301	-0.013
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	9,878	14.5%	9,517	14.6%	-0.134	-0.004
Q2	15,623	22.9%	14,946	23.0%	-0.049	-0.001

Table 1i. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	21,220	31.1%	20,177	31.0%	0.122	0.003
Q4 (Most deprived)	21,355	31.3%	20,345	31.3%	0.063	0.001
Unknown	60	0.1%	59	0.1%	-0.002	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	7,239	10.6%	6,843	10.5%	0.103	0.003
2020 Quarter 3	7,985	11.7%	7,420	11.4%	0.312	0.010
2020 Quarter 4	7,288	10.7%	7,041	10.8%	-0.129	-0.004
2021 Quarter 1	6,666	9.8%	6,418	9.9%	-0.083	-0.003
2021 Quarter 2	6,387	9.4%	6,065	9.3%	0.050	0.002
2021 Quarter 3	5,802	8.5%	5,596	8.6%	-0.088	-0.003
2021 Quarter 4	5,231	7.7%	5,024	7.7%	-0.047	-0.002
2022 Quarter 1	4,605	6.8%	4,429	6.8%	-0.050	-0.002
2022 Quarter 2	4,320	6.3%	4,092	6.3%	0.050	0.002
2022 Quarter 3	4,337	6.4%	4,136	6.4%	0.007	0.000
2022 Quarter 4	4,059	6.0%	3,927	6.0%	-0.080	-0.003
2023 Quarter 1	4,217	6.2%	4,054	6.2%	-0.044	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.0	0.2	0.0	0.001	0.014
Claims-Based frailty index categories						
<=0.2	55,280	81.1%	52,864	81.3%	-0.143	-0.004
>0.2	12,856	18.9%	12,180	18.7%	0.143	0.004
Combined comorbidity score*,[7]	2.2	2.6	2.1	2.6	0.069	0.026
Diabetes*	15,884	23.3%	14,810	22.8%	0.543	0.013
Obesity*	25,458	37.4%	24,241	37.3%	0.095	0.002
Hypertension*	30,569	44.9%	28,677	44.1%	0.776	0.016
Hospitalized Stroke/Transient Ischemic Attack	701	1.0%	643	1.0%	0.041	0.004
Coronary Revascularization	895	1.3%	747	1.1%	0.165	0.015
Atrial Fibrillation*	1,628	2.4%	1,531	2.4%	0.036	0.002

Table 1i. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	4,826	7.1%	4,400	6.8%	0.318	0.013
Hospitalized Acute Myocardial Infarction	830	1.2%	637	1.0%	0.239	0.023
Other Cerebrovascular Disease*	2,053	3.0%	1,951	3.0%	0.014	0.001
Chronic Obstructive Pulmonary Disease*	5,725	8.4%	5,257	8.1%	0.320	0.012
Asthma without COPD*	13,436	19.7%	13,064	20.1%	-0.366	-0.009
Chronic Liver Disease*	7,085	10.4%	6,297	9.7%	0.718	0.024
Chronic Kidney Disease*	14,220	20.9%	13,011	20.0%	0.866	0.021
Any Malignant Neoplasm*	4,018	5.9%	3,777	5.8%	0.090	0.004
Hemiplegia	1,315	1.9%	1,308	2.0%	-0.081	-0.006
Neurological/Neurodegenerative Conditions	192	0.3%	219	0.3%	-0.055	-0.010
Dementia*	441	0.6%	447	0.7%	-0.040	-0.005
Depression*	26,756	39.3%	25,486	39.2%	0.085	0.002
Schizophrenia	8,379	12.3%	8,703	13.4%	-1.083	-0.032
Rheumatic Disorders*	2,244	3.3%	2,124	3.3%	0.029	0.002
Multiple Sclerosis	1,124	1.6%	1,190	1.8%	-0.180	-0.014
HIV/AIDS	923	1.4%	1,153	1.8%	-0.417	-0.034
Coronary Artery Disease*	7,047	10.3%	6,428	9.9%	0.459	0.015
Immunodeficiency*	13,920	20.4%	12,926	19.9%	0.557	0.014
Smoking or Nicotine Use	26,162	38.4%	23,918	36.8%	1.625	0.034
Hyperlipidemia*	23,787	34.9%	22,543	34.7%	0.253	0.005
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	14,498	21.3%	13,628	21.0%	0.326	0.008
Non-Steroidal Anti-Inflammatory Drugs*	17,178	25.2%	16,704	25.7%	-0.469	-0.011
Aspirin	42	0.1%	46	0.1%	-0.009	-0.004
Antidepressants*	35,644	52.3%	34,140	52.5%	-0.175	-0.004
Statins*	13,767	20.2%	12,989	20.0%	0.236	0.006

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	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	6,289	9.2%	5,749	8.8%	0.392	0.014
Anti-Diabetic Oral Drugs*	8,249	12.1%	7,947	12.2%	-0.111	-0.003
Antihypertensive Drugs*	20,776	30.5%	19,555	30.1%	0.427	0.009
Anticoagulants*	3,333	4.9%	3,126	4.8%	0.086	0.004
Glucocorticoids*	12,760	18.7%	12,244	18.8%	-0.097	-0.002
Acetaminophen	15,714	23.1%	14,432	22.2%	0.874	0.021
Tumor Necrosis Factor Inhibitors	767	1.1%	813	1.2%	-0.124	-0.011
Immunosuppressants*	4,071	6.0%	3,920	6.0%	-0.051	-0.002
Inhaled Corticosteroids*	6,017	8.8%	5,809	8.9%	-0.100	-0.004
COVID-19 Vaccine*	10,344	15.2%	9,936	15.3%	-0.095	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	16.9	23.9	16.7	23.7	0.195	0.008
Mean number of emergency room encounters*	1.1	2.6	1.1	2.3	-0.007	-0.003
Mean number of inpatient hospital encounters	0.4	1.1	0.4	1.1	0.032	0.030
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.6	-0.005	-0.008
Mean number of other ambulatory encounters*	7.6	15.4	7.5	15.2	0.122	0.008
Mean number of filled prescriptions*	22.8	20.2	22.9	19.3	-0.113	-0.006
Mean number of generics dispensed*	9.2	5.5	9.2	5.5	0.015	0.003
Mean number of unique drug classes dispensed*	8.7	5.0	8.7	4.9	0.013	0.003

Table 1i. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

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[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1j. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	125,613	N/A	119,151	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	58.6	4.2	58.6	4.1	-0.014	-0.003
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	125,613	100.0%	119,151	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	73,536	58.5%	70,569	59.2%	-0.684	-0.014
Male	52,077	41.5%	48,583	40.8%	0.684	0.014
Race[4]						
American Indian or Alaska Native	1,471	1.2%	1,419	1.2%	-0.020	-0.002
Asian	2,067	1.6%	2,245	1.9%	-0.239	-0.018
Black or African American	24,113	19.2%	24,944	20.9%	-1.738	-0.043
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	9,004	7.2%	9,655	8.1%	-0.935	-0.035
White	88,958	70.8%	80,888	67.9%	2.932	0.064
Hispanic origin						
Yes	6,917	5.5%	7,312	6.1%	-0.630	-0.027
No	116,609	92.8%	109,496	91.9%	0.935	0.035
Unknown	2,087	1.7%	2,343	2.0%	-0.305	-0.023
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	18,641	14.8%	17,592	14.8%	0.076	0.002
Q2	29,051	23.1%	27,443	23.0%	0.095	0.002

Table 1j. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	38,463	30.6%	36,567	30.7%	-0.070	-0.002
Q4 (Most deprived)	39,316	31.3%	37,418	31.4%	-0.104	-0.002
Unknown	142	0.1%	131	0.1%	0.003	0.001
Year-Quarter of Exposure*						
2020 Quarter 2	12,970	10.3%	12,181	10.2%	0.102	0.003
2020 Quarter 3	14,579	11.6%	13,406	11.3%	0.355	0.011
2020 Quarter 4	13,846	11.0%	13,176	11.1%	-0.035	-0.001
2021 Quarter 1	11,953	9.5%	11,545	9.7%	-0.174	-0.006
2021 Quarter 2	11,558	9.2%	10,945	9.2%	0.016	0.001
2021 Quarter 3	10,855	8.6%	10,316	8.7%	-0.016	-0.001
2021 Quarter 4	10,181	8.1%	9,622	8.1%	0.029	0.001
2022 Quarter 1	8,664	6.9%	8,358	7.0%	-0.118	-0.005
2022 Quarter 2	8,238	6.6%	7,820	6.6%	-0.005	-0.000
2022 Quarter 3	7,977	6.4%	7,586	6.4%	-0.016	-0.001
2022 Quarter 4	7,334	5.8%	7,023	5.9%	-0.055	-0.002
2023 Quarter 1	7,458	5.9%	7,174	6.0%	-0.083	-0.004
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.025
Claims-Based frailty index categories						
<=0.2	90,582	72.1%	87,023	73.0%	-0.924	-0.021
>0.2	35,031	27.9%	32,129	27.0%	0.924	0.021
Combined comorbidity score*,[7]	2.8	3.3	2.7	3.2	0.128	0.040
Diabetes*	46,509	37.0%	43,614	36.6%	0.422	0.009
Obesity*	43,204	34.4%	40,740	34.2%	0.202	0.004
Hypertension*	86,742	69.1%	81,526	68.4%	0.633	0.014
Hospitalized Stroke/Transient Ischemic Attack	3,014	2.4%	2,838	2.4%	0.017	0.001
Coronary Revascularization	2,860	2.3%	2,598	2.2%	0.096	0.007
Atrial Fibrillation*	8,974	7.1%	8,161	6.8%	0.295	0.012

Table 1j. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	17,188	13.7%	15,559	13.1%	0.625	0.018
Hospitalized Acute Myocardial Infarction	3,135	2.5%	2,576	2.2%	0.334	0.022
Other Cerebrovascular Disease*	10,014	8.0%	9,256	7.8%	0.204	0.008
Chronic Obstructive Pulmonary Disease*	31,247	24.9%	29,194	24.5%	0.374	0.009
Asthma without COPD*	19,052	15.2%	18,245	15.3%	-0.145	-0.004
Chronic Liver Disease*	16,549	13.2%	14,494	12.2%	1.010	0.030
Chronic Kidney Disease*	37,255	29.7%	34,031	28.6%	1.097	0.024
Any Malignant Neoplasm*	17,463	13.9%	16,323	13.7%	0.203	0.006
Hemiplegia	4,278	3.4%	3,977	3.3%	0.068	0.004
Neurological/Neurodegenerative Conditions	1,286	1.0%	1,325	1.1%	-0.088	-0.009
Dementia*	3,224	2.6%	3,057	2.6%	0.001	0.000
Depression*	46,929	37.4%	44,350	37.2%	0.138	0.003
Schizophrenia	8,560	6.8%	9,482	8.0%	-1.143	-0.044
Rheumatic Disorders*	6,619	5.3%	6,259	5.3%	0.017	0.001
Multiple Sclerosis	2,259	1.8%	2,130	1.8%	0.011	0.001
HIV/AIDS	2,226	1.8%	3,028	2.5%	-0.769	-0.053
Coronary Artery Disease*	31,248	24.9%	28,838	24.2%	0.674	0.016
Immunodeficiency*	30,180	24.0%	27,608	23.2%	0.856	0.020
Smoking or Nicotine Use	54,487	43.4%	49,232	41.3%	2.058	0.042
Hyperlipidemia*	74,419	59.2%	70,582	59.2%	0.007	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	48,915	38.9%	46,448	39.0%	-0.041	-0.001
Non-Steroidal Anti-Inflammatory Drugs*	32,807	26.1%	31,460	26.4%	-0.286	-0.006
Aspirin	153	0.1%	145	0.1%	0.000	0.000
Antidepressants*	65,168	51.9%	61,862	51.9%	-0.039	-0.001
Statins*	56,806	45.2%	53,987	45.3%	-0.086	-0.002

Table 1j. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	17,345	13.8%	16,084	13.5%	0.309	0.009
Anti-Diabetic Oral Drugs*	26,157	20.8%	24,945	20.9%	-0.112	-0.003
Antihypertensive Drugs*	57,152	45.5%	53,982	45.3%	0.193	0.004
Anticoagulants*	10,967	8.7%	10,192	8.6%	0.177	0.006
Glucocorticoids*	26,379	21.0%	25,265	21.2%	-0.204	-0.005
Acetaminophen	35,382	28.2%	30,805	25.9%	2.314	0.052
Tumor Necrosis Factor Inhibitors	1,387	1.1%	1,348	1.1%	-0.027	-0.003
Immunosuppressants*	9,813	7.8%	9,362	7.9%	-0.045	-0.002
Inhaled Corticosteroids*	16,545	13.2%	15,953	13.4%	-0.217	-0.006
COVID-19 Vaccine*	24,920	19.8%	23,843	20.0%	-0.172	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	21.7	16.7	21.4	0.280	0.013
Mean number of emergency room encounters*	0.7	1.8	0.7	1.7	-0.008	-0.004
Mean number of inpatient hospital encounters	0.4	1.0	0.4	0.9	0.046	0.048
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.006	0.011
Mean number of other ambulatory encounters*	9.1	17.5	8.8	17.0	0.290	0.017
Mean number of filled prescriptions*	25.8	21.0	26.0	20.7	-0.132	-0.006
Mean number of generics dispensed*	10.5	5.5	10.4	5.4	0.019	0.003
Mean number of unique drug classes dispensed*	9.8	4.9	9.8	4.9	0.015	0.003

Table 1j. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1k. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	653,964	N/A	627,277	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.1	2.7	70.1	2.7	-0.002	-0.001
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	653,964	100.0%	627,277	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	404,284	61.8%	392,971	62.6%	-0.827	-0.017
Male	249,680	38.2%	234,306	37.4%	0.827	0.017
Race[4]						
American Indian or Alaska Native	2,398	0.4%	2,508	0.4%	-0.033	-0.005
Asian	17,161	2.6%	19,088	3.0%	-0.419	-0.025
Black or African American	45,161	6.9%	48,719	7.8%	-0.861	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	46,622	7.1%	49,805	7.9%	-0.811	-0.031
White	542,622	83.0%	507,156	80.9%	2.124	0.055
Hispanic origin						
Yes	13,556	2.1%	15,215	2.4%	-0.353	-0.024
No	607,342	92.9%	577,471	92.1%	0.811	0.031
Unknown	33,066	5.1%	34,591	5.5%	-0.458	-0.020
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	195,047	29.8%	187,506	29.9%	-0.067	-0.001
Q2	183,335	28.0%	175,435	28.0%	0.067	0.001

Table 1k. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	162,400	24.8%	155,181	24.7%	0.094	0.002
Q4 (Most deprived)	111,824	17.1%	107,822	17.2%	-0.089	-0.002
Unknown	1,358	0.2%	1,333	0.2%	-0.005	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	50,424	7.7%	48,137	7.7%	0.036	0.001
2020 Quarter 3	64,125	9.8%	59,235	9.4%	0.362	0.012
2020 Quarter 4	63,638	9.7%	61,417	9.8%	-0.060	-0.002
2021 Quarter 1	59,074	9.0%	57,028	9.1%	-0.058	-0.002
2021 Quarter 2	58,775	9.0%	56,331	9.0%	0.007	0.000
2021 Quarter 3	57,063	8.7%	55,121	8.8%	-0.062	-0.002
2021 Quarter 4	57,421	8.8%	55,415	8.8%	-0.054	-0.002
2022 Quarter 1	51,849	7.9%	50,239	8.0%	-0.081	-0.003
2022 Quarter 2	49,514	7.6%	47,562	7.6%	-0.011	-0.000
2022 Quarter 3	46,916	7.2%	45,073	7.2%	-0.011	-0.000
2022 Quarter 4	46,768	7.2%	44,962	7.2%	-0.016	-0.001
2023 Quarter 1	48,397	7.4%	46,757	7.5%	-0.053	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.016
Claims-Based frailty index categories						
<=0.2	557,639	85.3%	538,929	85.9%	-0.645	-0.018
>0.2	96,325	14.7%	88,348	14.1%	0.645	0.018
Combined comorbidity score*,[7]	1.9	3.0	1.8	2.9	0.084	0.029
Diabetes*	182,420	27.9%	173,161	27.6%	0.289	0.006
Obesity*	165,058	25.2%	156,324	24.9%	0.319	0.007
Hypertension*	453,305	69.3%	431,855	68.8%	0.471	0.010
Hospitalized Stroke/Transient Ischemic Attack	10,565	1.6%	10,045	1.6%	0.014	0.001
Coronary Revascularization	11,666	1.8%	12,177	1.9%	-0.157	-0.012
Atrial Fibrillation*	64,833	9.9%	59,189	9.4%	0.478	0.016

Table 1k. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	57,164	8.7%	52,025	8.3%	0.447	0.016
Hospitalized Acute Myocardial Infarction	11,368	1.7%	9,883	1.6%	0.163	0.013
Other Cerebrovascular Disease*	52,001	8.0%	49,376	7.9%	0.080	0.003
Chronic Obstructive Pulmonary Disease*	88,407	13.5%	82,757	13.2%	0.326	0.010
Asthma without COPD*	68,101	10.4%	65,853	10.5%	-0.085	-0.003
Chronic Liver Disease*	62,116	9.5%	56,229	9.0%	0.534	0.018
Chronic Kidney Disease*	138,625	21.2%	128,999	20.6%	0.633	0.016
Any Malignant Neoplasm*	158,530	24.2%	150,378	24.0%	0.268	0.006
Hemiplegia	10,460	1.6%	10,352	1.7%	-0.051	-0.004
Neurological/Neurodegenerative Conditions	7,756	1.2%	7,826	1.2%	-0.062	-0.006
Dementia*	16,625	2.5%	15,724	2.5%	0.036	0.002
Depression*	125,183	19.1%	119,278	19.0%	0.127	0.003
Schizophrenia	5,878	0.9%	6,546	1.0%	-0.145	-0.015
Rheumatic Disorders*	24,423	3.7%	23,400	3.7%	0.004	0.000
Multiple Sclerosis	3,764	0.6%	3,502	0.6%	0.017	0.002
HIV/AIDS	1,606	0.2%	2,454	0.4%	-0.146	-0.026
Coronary Artery Disease*	164,499	25.2%	154,174	24.6%	0.576	0.013
Immunodeficiency*	99,854	15.3%	93,338	14.9%	0.389	0.011
Smoking or Nicotine Use	159,834	24.4%	145,227	23.2%	1.289	0.030
Hyperlipidemia*	454,117	69.4%	435,258	69.4%	0.052	0.001
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	297,856	45.5%	284,491	45.4%	0.193	0.004
Non-Steroidal Anti-Inflammatory Drugs*	126,214	19.3%	121,530	19.4%	-0.074	-0.002
Aspirin	736	0.1%	664	0.1%	0.007	0.002
Antidepressants*	221,624	33.9%	212,069	33.8%	0.081	0.002
Statins*	354,405	54.2%	340,240	54.2%	-0.047	-0.001

Table 1k. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	43,873	6.7%	41,358	6.6%	0.115	0.005
Anti-Diabetic Oral Drugs*	119,191	18.2%	113,538	18.1%	0.126	0.003
Antihypertensive Drugs*	319,631	48.9%	304,826	48.6%	0.281	0.006
Anticoagulants*	60,173	9.2%	55,346	8.8%	0.378	0.013
Glucocorticoids*	118,708	18.2%	115,121	18.4%	-0.200	-0.005
Acetaminophen	105,159	16.1%	99,446	15.9%	0.227	0.006
Tumor Necrosis Factor Inhibitors	4,983	0.8%	4,637	0.7%	0.023	0.003
Immunosuppressants*	55,579	8.5%	53,321	8.5%	-0.002	-0.000
Inhaled Corticosteroids*	51,566	7.9%	49,763	7.9%	-0.048	-0.002
COVID-19 Vaccine*	198,524	30.4%	191,644	30.6%	-0.195	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.3	13.6	13.3	13.3	0.039	0.003
Mean number of emergency room encounters*	0.3	0.8	0.3	0.8	0.002	0.003
Mean number of inpatient hospital encounters	0.2	0.7	0.2	0.6	0.025	0.039
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	0.003	0.008
Mean number of other ambulatory encounters*	5.4	11.7	5.3	11.4	0.124	0.011
Mean number of filled prescriptions*	16.0	14.0	16.0	13.8	0.049	0.004
Mean number of generics dispensed*	8.1	4.6	8.1	4.6	0.028	0.006
Mean number of unique drug classes dispensed*	7.7	4.2	7.7	4.2	0.025	0.006

Table 1k. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1l. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	532,676	N/A	499,808	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	81.9	5.4	81.9	5.4	0.038	0.007
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	532,676	100.0%	499,808	100.0%	0.000	NaN
Sex*						
Female	342,753	64.3%	326,118	65.2%	-0.903	-0.019
Male	189,923	35.7%	173,690	34.8%	0.903	0.019
Race[4]						
American Indian or Alaska Native	1,855	0.3%	2,077	0.4%	-0.067	-0.011
Asian	13,948	2.6%	14,251	2.9%	-0.233	-0.014
Black or African American	30,923	5.8%	32,944	6.6%	-0.786	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	23,009	4.3%	23,859	4.8%	-0.454	-0.022
White	462,941	86.9%	426,678	85.4%	1.540	0.045
Hispanic origin						
Yes	9,079	1.7%	9,565	1.9%	-0.209	-0.016
No	509,667	95.7%	475,949	95.2%	0.454	0.022
Unknown	13,930	2.6%	14,294	2.9%	-0.245	-0.015
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	161,254	30.3%	151,406	30.3%	-0.020	-0.000
Q2	149,635	28.1%	140,152	28.0%	0.050	0.001

Table 1l. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	130,677	24.5%	122,328	24.5%	0.057	0.001
Q4 (Most deprived)	90,066	16.9%	84,896	17.0%	-0.077	-0.002
Unknown	1,044	0.2%	1,026	0.2%	-0.009	-0.002
Year-Quarter of Exposure*						
2020 Quarter 2	41,683	7.8%	38,748	7.8%	0.073	0.003
2020 Quarter 3	51,621	9.7%	47,086	9.4%	0.270	0.009
2020 Quarter 4	49,295	9.3%	46,561	9.3%	-0.062	-0.002
2021 Quarter 1	45,456	8.5%	42,924	8.6%	-0.055	-0.002
2021 Quarter 2	48,412	9.1%	45,626	9.1%	-0.040	-0.001
2021 Quarter 3	47,816	9.0%	44,989	9.0%	-0.025	-0.001
2021 Quarter 4	46,712	8.8%	44,065	8.8%	-0.047	-0.002
2022 Quarter 1	42,270	7.9%	39,987	8.0%	-0.065	-0.002
2022 Quarter 2	42,037	7.9%	39,434	7.9%	0.002	0.000
2022 Quarter 3	39,829	7.5%	37,526	7.5%	-0.031	-0.001
2022 Quarter 4	38,282	7.2%	35,944	7.2%	-0.005	-0.000
2023 Quarter 1	39,263	7.4%	36,918	7.4%	-0.015	-0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.002	0.031
Claims-Based frailty index categories						
<=0.2	370,002	69.5%	355,312	71.1%	-1.629	-0.036
>0.2	162,674	30.5%	144,495	28.9%	1.629	0.036
Combined comorbidity score*,[7]	3.2	3.5	3.0	3.4	0.175	0.050
Diabetes*	163,047	30.6%	150,439	30.1%	0.510	0.011
Obesity*	94,158	17.7%	86,480	17.3%	0.374	0.010
Hypertension*	441,163	82.8%	410,952	82.2%	0.598	0.016
Hospitalized Stroke/Transient Ischemic Attack	18,163	3.4%	17,752	3.6%	-0.142	-0.008
Coronary Revascularization	11,660	2.2%	11,204	2.2%	-0.053	-0.004
Atrial Fibrillation*	119,810	22.5%	106,377	21.3%	1.209	0.029

Table 1l. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	102,613	19.3%	90,308	18.1%	1.195	0.031
Hospitalized Acute Myocardial Infarction	17,240	3.2%	13,937	2.8%	0.448	0.026
Other Cerebrovascular Disease*	76,830	14.4%	70,891	14.2%	0.240	0.007
Chronic Obstructive Pulmonary Disease*	98,577	18.5%	89,426	17.9%	0.614	0.016
Asthma without COPD*	49,899	9.4%	47,099	9.4%	-0.056	-0.002
Chronic Liver Disease*	39,234	7.4%	34,351	6.9%	0.493	0.019
Chronic Kidney Disease*	167,229	31.4%	149,627	29.9%	1.457	0.032
Any Malignant Neoplasm*	173,383	32.5%	160,214	32.1%	0.494	0.011
Hemiplegia	13,784	2.6%	13,980	2.8%	-0.209	-0.013
Neurological/Neurodegenerative Conditions	12,645	2.4%	12,226	2.4%	-0.072	-0.005
Dementia*	61,752	11.6%	56,464	11.3%	0.296	0.009
Depression*	105,270	19.8%	98,029	19.6%	0.149	0.004
Schizophrenia	3,008	0.6%	3,161	0.6%	-0.068	-0.009
Rheumatic Disorders*	21,516	4.0%	19,964	4.0%	0.045	0.002
Multiple Sclerosis	1,752	0.3%	1,605	0.3%	0.008	0.001
HIV/AIDS	448	0.1%	638	0.1%	-0.043	-0.013
Coronary Artery Disease*	208,443	39.1%	189,465	37.9%	1.224	0.025
Immunodeficiency*	88,988	16.7%	80,771	16.2%	0.545	0.015
Smoking or Nicotine Use	135,527	25.4%	119,056	23.8%	1.622	0.038
Hyperlipidemia*	396,539	74.4%	370,287	74.1%	0.357	0.008
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	270,540	50.8%	252,991	50.6%	0.171	0.003
Non-Steroidal Anti-Inflammatory Drugs*	77,341	14.5%	72,825	14.6%	-0.051	-0.001
Aspirin	987	0.2%	909	0.2%	0.003	0.001
Antidepressants*	176,815	33.2%	165,508	33.1%	0.079	0.002
Statins*	311,466	58.5%	291,221	58.3%	0.205	0.004

Table 1l. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	34,249	6.4%	31,258	6.3%	0.176	0.007
Anti-Diabetic Oral Drugs*	90,867	17.1%	84,265	16.9%	0.199	0.005
Antihypertensive Drugs*	295,423	55.5%	275,598	55.1%	0.319	0.006
Anticoagulants*	101,535	19.1%	91,193	18.2%	0.816	0.021
Glucocorticoids*	93,144	17.5%	87,800	17.6%	-0.081	-0.002
Acetaminophen	78,754	14.8%	68,428	13.7%	1.094	0.031
Tumor Necrosis Factor Inhibitors	2,732	0.5%	2,409	0.5%	0.031	0.004
Immunosuppressants*	52,074	9.8%	48,574	9.7%	0.057	0.002
Inhaled Corticosteroids*	45,449	8.5%	42,888	8.6%	-0.049	-0.002
COVID-19 Vaccine*	172,860	32.5%	163,365	32.7%	-0.234	-0.005
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	13.1	14.1	12.7	0.094	0.007
Mean number of emergency room encounters*	0.4	0.9	0.4	0.8	0.010	0.011
Mean number of inpatient hospital encounters	0.4	0.8	0.4	0.7	0.055	0.071
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.013	0.023
Mean number of other ambulatory encounters*	8.6	14.7	8.3	14.4	0.347	0.024
Mean number of filled prescriptions*	18.6	15.1	18.5	14.9	0.073	0.005
Mean number of generics dispensed*	9.0	4.5	9.0	4.5	0.050	0.011
Mean number of unique drug classes dispensed*	8.7	4.1	8.6	4.1	0.046	0.011

Table 1l. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1m. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	1,380,595	N/A	301,012	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	72.1	11.2	72.0	11.4	0.076	0.007
Age*						
18-49 years	68,227	4.9%	14,976	5.0%	-0.033	-0.002
50-64 years	125,623	9.1%	27,574	9.2%	-0.061	-0.002
65-74 years	654,027	47.4%	143,543	47.7%	-0.314	-0.006
≥ 75 years	532,718	38.6%	114,919	38.2%	0.409	0.008
Sex*						
Female	858,160	62.2%	187,188	62.2%	-0.027	-0.001
Male	522,435	37.8%	113,824	37.8%	0.027	0.001
Race[4]						
American Indian or Alaska Native	6,606	0.5%	1,543	0.5%	-0.034	-0.005
Asian	34,070	2.5%	8,283	2.8%	-0.284	-0.018
Black or African American	114,017	8.3%	27,899	9.3%	-1.010	-0.036
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	86,926	6.3%	21,017	7.0%	-0.686	-0.028
White	1,138,976	82.5%	242,269	80.5%	2.014	0.052
Hispanic origin						
Yes	34,301	2.5%	8,447	2.8%	-0.322	-0.020
No	1,293,669	93.7%	279,995	93.0%	0.686	0.028
Unknown	52,625	3.8%	12,571	4.2%	-0.364	-0.019
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	384,860	27.9%	83,980	27.9%	-0.023	-0.001
Q2	377,706	27.4%	82,231	27.3%	0.040	0.001

Table 1m. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	352,813	25.6%	77,052	25.6%	-0.042	-0.001
Q4 (Most deprived)	262,612	19.0%	57,183	19.0%	0.025	0.001
Unknown	2,604	0.2%	566	0.2%	0.001	0.000
Year-Quarter of Exposure*						
2020 Quarter 2	112,352	8.1%	24,872	8.3%	-0.125	-0.005
2020 Quarter 3	138,365	10.0%	30,534	10.1%	-0.121	-0.004
2020 Quarter 4	134,085	9.7%	29,325	9.7%	-0.030	-0.001
2021 Quarter 1	123,160	8.9%	26,746	8.9%	0.035	0.001
2021 Quarter 2	125,145	9.1%	27,057	9.0%	0.076	0.003
2021 Quarter 3	121,550	8.8%	26,534	8.8%	-0.011	-0.000
2021 Quarter 4	119,556	8.7%	26,085	8.7%	-0.006	-0.000
2022 Quarter 1	107,397	7.8%	23,370	7.8%	0.015	0.001
2022 Quarter 2	104,120	7.5%	22,509	7.5%	0.064	0.002
2022 Quarter 3	99,069	7.2%	21,544	7.2%	0.019	0.001
2022 Quarter 4	96,454	7.0%	20,823	6.9%	0.069	0.003
2023 Quarter 1	99,342	7.2%	21,614	7.2%	0.015	0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	-0.001	-0.012
Claims-Based frailty index categories						
<=0.2	1,073,589	77.8%	233,329	77.5%	0.248	0.006
>0.2	307,006	22.2%	67,683	22.5%	-0.248	-0.006
Combined comorbidity score*,[7]	2.5	3.3	2.5	3.3	-0.044	-0.013
Diabetes*	407,964	29.5%	89,561	29.8%	-0.203	-0.004
Obesity*	327,961	23.8%	72,326	24.0%	-0.272	-0.006
Hypertension*	1,011,961	73.3%	220,787	73.3%	-0.049	-0.001
Hospitalized Stroke/Transient Ischemic Attack	32,449	2.4%	7,765	2.6%	-0.229	-0.015
Coronary Revascularization	27,094	2.0%	6,524	2.2%	-0.205	-0.014
Atrial Fibrillation*	195,306	14.1%	43,070	14.3%	-0.162	-0.005

Table 1m. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	181,874	13.2%	40,480	13.4%	-0.275	-0.008
Hospitalized Acute Myocardial Infarction	32,601	2.4%	6,999	2.3%	0.036	0.002
Other Cerebrovascular Disease*	140,923	10.2%	31,301	10.4%	-0.191	-0.006
Chronic Obstructive Pulmonary Disease*	224,018	16.2%	49,712	16.5%	-0.289	-0.008
Asthma without COPD*	150,509	10.9%	33,439	11.1%	-0.207	-0.007
Chronic Liver Disease*	125,045	9.1%	27,721	9.2%	-0.152	-0.005
Chronic Kidney Disease*	357,458	25.9%	78,327	26.0%	-0.130	-0.003
Any Malignant Neoplasm*	353,446	25.6%	77,503	25.7%	-0.147	-0.003
Hemiplegia	29,846	2.2%	7,049	2.3%	-0.180	-0.012
Neurological/Neurodegenerative Conditions	21,883	1.6%	5,047	1.7%	-0.092	-0.007
Dementia*	82,055	5.9%	18,233	6.1%	-0.114	-0.005
Depression*	304,221	22.0%	67,807	22.5%	-0.491	-0.012
Schizophrenia	25,839	1.9%	6,586	2.2%	-0.316	-0.022
Rheumatic Disorders*	54,812	4.0%	12,192	4.1%	-0.080	-0.004
Multiple Sclerosis	8,900	0.6%	1,917	0.6%	0.008	0.001
HIV/AIDS	5,206	0.4%	1,738	0.6%	-0.200	-0.029
Coronary Artery Disease*	411,347	29.8%	90,675	30.1%	-0.328	-0.007
Immunodeficiency*	233,040	16.9%	51,457	17.1%	-0.215	-0.006
Smoking or Nicotine Use	376,144	27.2%	80,460	26.7%	0.515	0.012
Hyperlipidemia*	948,991	68.7%	207,293	68.9%	-0.128	-0.003
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	631,900	45.8%	137,219	45.6%	0.184	0.004
Non-Steroidal Anti-Inflammatory Drugs*	253,583	18.4%	55,745	18.5%	-0.152	-0.004
Aspirin	1,918	0.1%	388	0.1%	0.010	0.003
Antidepressants*	499,336	36.2%	110,086	36.6%	-0.404	-0.008
Statins*	736,538	53.3%	160,369	53.3%	0.073	0.001

Table 1m. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	101,802	7.4%	22,421	7.4%	-0.075	-0.003
Anti-Diabetic Oral Drugs*	244,497	17.7%	53,414	17.7%	-0.035	-0.001
Antihypertensive Drugs*	693,106	50.2%	150,692	50.1%	0.142	0.003
Anticoagulants*	176,058	12.8%	38,809	12.9%	-0.140	-0.004
Glucocorticoids*	251,026	18.2%	55,508	18.4%	-0.258	-0.007
Acetaminophen	235,077	17.0%	48,834	16.2%	0.804	0.022
Tumor Necrosis Factor Inhibitors	9,869	0.7%	2,119	0.7%	0.011	0.001
Immunosuppressants*	121,557	8.8%	26,734	8.9%	-0.077	-0.003
Inhaled Corticosteroids*	119,594	8.7%	26,437	8.8%	-0.120	-0.004
COVID-19 Vaccine*	406,671	29.5%	88,161	29.3%	0.168	0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.1	14.3	14.9	-0.193	-0.013
Mean number of emergency room encounters*	0.4	1.1	0.4	1.1	-0.020	-0.018
Mean number of inpatient hospital encounters	0.3	0.8	0.4	0.8	-0.011	-0.013
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	-0.008	-0.016
Mean number of other ambulatory encounters*	7.1	13.8	7.6	14.6	-0.456	-0.032
Mean number of filled prescriptions*	18.2	15.8	18.4	15.8	-0.200	-0.013
Mean number of generics dispensed*	8.7	4.8	8.8	4.8	-0.076	-0.016
Mean number of unique drug classes dispensed*	8.3	4.4	8.4	4.4	-0.067	-0.015

Table 1m. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after propensity score (PS) stratum weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1, and control patients are weighted by the proportion of the total treated patient population included in their PS stratum divided by the proportion of the total control patient population included in their PS stratum.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1n. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	68,136	N/A	15,906	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	40.1	7.1	40.1	7.1	-0.060	-0.008
Age*						
18-49 years	68,136	100.0%	15,906	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	37,511	55.1%	8,841	55.6%	-0.528	-0.011
Male	30,625	44.9%	7,065	44.4%	0.528	0.011
Race[4]						
American Indian or Alaska Native	881	1.3%	184	1.2%	0.139	0.013
Asian	888	1.3%	222	1.4%	-0.092	-0.008
Black or African American	13,783	20.2%	3,505	22.0%	-1.809	-0.044
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	8,274	12.1%	2,001	12.6%	-0.437	-0.013
White	44,310	65.0%	9,994	62.8%	2.200	0.046
Hispanic origin						
Yes	4,741	7.0%	1,141	7.2%	-0.217	-0.008
No	59,862	87.9%	13,905	87.4%	0.437	0.013
Unknown	3,533	5.2%	860	5.4%	-0.220	-0.010
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	9,878	14.5%	2,331	14.7%	-0.154	-0.004
Q2	15,623	22.9%	3,700	23.3%	-0.334	-0.008

Table 1n. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	21,220	31.1%	4,957	31.2%	-0.024	-0.001
Q4 (Most deprived)	21,355	31.3%	4,904	30.8%	0.513	0.011
Unknown	60	0.1%	14	0.1%	-0.001	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	7,239	10.6%	1,701	10.7%	-0.072	-0.002
2020 Quarter 3	7,985	11.7%	1,854	11.7%	0.065	0.002
2020 Quarter 4	7,288	10.7%	1,743	11.0%	-0.263	-0.008
2021 Quarter 1	6,666	9.8%	1,562	9.8%	-0.040	-0.001
2021 Quarter 2	6,387	9.4%	1,480	9.3%	0.069	0.002
2021 Quarter 3	5,802	8.5%	1,360	8.6%	-0.037	-0.001
2021 Quarter 4	5,231	7.7%	1,220	7.7%	0.005	0.000
2022 Quarter 1	4,605	6.8%	1,075	6.8%	0.001	0.000
2022 Quarter 2	4,320	6.3%	986	6.2%	0.143	0.006
2022 Quarter 3	4,337	6.4%	1,008	6.3%	0.026	0.001
2022 Quarter 4	4,059	6.0%	949	6.0%	-0.006	-0.000
2023 Quarter 1	4,217	6.2%	967	6.1%	0.110	0.005
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.0	0.2	0.0	-0.001	-0.015
Claims-Based frailty index categories						
<=0.2	55,280	81.1%	12,781	80.4%	0.781	0.020
>0.2	12,856	18.9%	3,125	19.6%	-0.781	-0.020
Combined comorbidity score*,[7]	2.2	2.6	2.2	2.7	-0.032	-0.012
Diabetes*	15,884	23.3%	3,723	23.4%	-0.094	-0.002
Obesity*	25,458	37.4%	5,968	37.5%	-0.160	-0.003
Hypertension*	30,569	44.9%	7,157	45.0%	-0.131	-0.003
Hospitalized Stroke/Transient Ischemic Attack	701	1.0%	179	1.1%	-0.096	-0.009
Coronary Revascularization	895	1.3%	192	1.2%	0.109	0.010
Atrial Fibrillation*	1,628	2.4%	383	2.4%	-0.017	-0.001

Table 1n. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	4,826	7.1%	1,148	7.2%	-0.137	-0.005
Hospitalized Acute Myocardial Infarction	830	1.2%	191	1.2%	0.017	0.002
Other Cerebrovascular Disease*	2,053	3.0%	503	3.2%	-0.150	-0.009
Chronic Obstructive Pulmonary Disease*	5,725	8.4%	1,323	8.3%	0.086	0.003
Asthma without COPD*	13,436	19.7%	3,216	20.2%	-0.499	-0.012
Chronic Liver Disease*	7,085	10.4%	1,655	10.4%	-0.007	-0.000
Chronic Kidney Disease*	14,220	20.9%	3,319	20.9%	0.002	0.000
Any Malignant Neoplasm*	4,018	5.9%	971	6.1%	-0.206	-0.009
Hemiplegia	1,315	1.9%	338	2.1%	-0.192	-0.014
Neurological/Neurodegenerative Conditions	192	0.3%	58	0.4%	-0.081	-0.014
Dementia*	441	0.6%	112	0.7%	-0.056	-0.007
Depression*	26,756	39.3%	6,341	39.9%	-0.598	-0.012
Schizophrenia	8,379	12.3%	2,100	13.2%	-0.903	-0.027
Rheumatic Disorders*	2,244	3.3%	576	3.6%	-0.325	-0.018
Multiple Sclerosis	1,124	1.6%	298	1.9%	-0.223	-0.017
HIV/AIDS	923	1.4%	279	1.8%	-0.402	-0.032
Coronary Artery Disease*	7,047	10.3%	1,675	10.5%	-0.186	-0.006
Immunodeficiency*	13,920	20.4%	3,322	20.9%	-0.454	-0.011
Smoking or Nicotine Use	26,162	38.4%	5,960	37.5%	0.925	0.019
Hyperlipidemia*	23,787	34.9%	5,582	35.1%	-0.182	-0.004
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	14,498	21.3%	3,364	21.2%	0.126	0.003
Non-Steroidal Anti-Inflammatory Drugs*	17,178	25.2%	4,083	25.7%	-0.459	-0.011
Aspirin	42	0.1%	11	0.1%	-0.007	-0.003
Antidepressants*	35,644	52.3%	8,416	52.9%	-0.597	-0.012
Statins*	13,767	20.2%	3,183	20.0%	0.194	0.005

Table 1n. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	6,289	9.2%	1,452	9.1%	0.101	0.003
Anti-Diabetic Oral Drugs*	8,249	12.1%	1,910	12.0%	0.097	0.003
Antihypertensive Drugs*	20,776	30.5%	4,854	30.5%	-0.022	-0.000
Anticoagulants*	3,333	4.9%	801	5.0%	-0.143	-0.007
Glucocorticoids*	12,760	18.7%	3,026	19.0%	-0.297	-0.008
Acetaminophen	15,714	23.1%	3,697	23.2%	-0.177	-0.004
Tumor Necrosis Factor Inhibitors	767	1.1%	211	1.3%	-0.203	-0.018
Immunosuppressants*	4,071	6.0%	983	6.2%	-0.207	-0.009
Inhaled Corticosteroids*	6,017	8.8%	1,417	8.9%	-0.080	-0.003
COVID-19 Vaccine*	10,344	15.2%	2,390	15.0%	0.153	0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	16.9	23.9	17.3	24.3	-0.423	-0.018
Mean number of emergency room encounters*	1.1	2.6	1.1	2.4	-0.043	-0.017
Mean number of inpatient hospital encounters	0.4	1.1	0.4	1.2	-0.021	-0.018
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.6	-0.008	-0.015
Mean number of other ambulatory encounters*	7.6	15.4	8.0	16.0	-0.356	-0.023
Mean number of filled prescriptions*	22.8	20.2	23.1	19.3	-0.307	-0.016
Mean number of generics dispensed*	9.2	5.5	9.3	5.5	-0.126	-0.023
Mean number of unique drug classes dispensed*	8.7	5.0	8.8	5.0	-0.110	-0.022

Table 1n. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after propensity score (PS) stratum weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1, and control patients are weighted by the proportion of the total treated patient population included in their PS stratum divided by the proportion of the total control patient population included in their PS stratum.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1o. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	125,613	N/A	26,346	N/A	N/A	N/A
Demographic Characteristics	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Age (years)[*]	58.6	4.2	58.6	4.1	-0.018	-0.004
Age[*]						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	125,613	100.0%	26,346	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex[*]						
Female	73,536	58.5%	15,565	59.1%	-0.539	-0.011
Male	52,077	41.5%	10,781	40.9%	0.539	0.011
Race[4]						
American Indian or Alaska Native	1,471	1.2%	305	1.2%	0.013	0.001
Asian	2,067	1.6%	487	1.8%	-0.203	-0.015
Black or African American	24,113	19.2%	5,518	20.9%	-1.749	-0.044
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	9,004	7.2%	2,114	8.0%	-0.854	-0.032
White	88,958	70.8%	17,922	68.0%	2.793	0.061
Hispanic origin						
Yes	6,917	5.5%	1,604	6.1%	-0.583	-0.025
No	116,609	92.8%	24,232	92.0%	0.854	0.032
Unknown	2,087	1.7%	509	1.9%	-0.271	-0.020
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	18,641	14.8%	3,967	15.1%	-0.218	-0.006
Q2	29,051	23.1%	6,145	23.3%	-0.196	-0.005

Table 1o. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	38,463	30.6%	8,058	30.6%	0.037	0.001
Q4 (Most deprived)	39,316	31.3%	8,149	30.9%	0.370	0.008
Unknown	142	0.1%	28	0.1%	0.007	0.002
Year-Quarter of Exposure*						
2020 Quarter 2	12,970	10.3%	2,708	10.3%	0.045	0.001
2020 Quarter 3	14,579	11.6%	3,083	11.7%	-0.096	-0.003
2020 Quarter 4	13,846	11.0%	2,890	11.0%	0.052	0.002
2021 Quarter 1	11,953	9.5%	2,521	9.6%	-0.054	-0.002
2021 Quarter 2	11,558	9.2%	2,393	9.1%	0.119	0.004
2021 Quarter 3	10,855	8.6%	2,273	8.6%	0.013	0.000
2021 Quarter 4	10,181	8.1%	2,093	7.9%	0.161	0.006
2022 Quarter 1	8,664	6.9%	1,841	7.0%	-0.091	-0.004
2022 Quarter 2	8,238	6.6%	1,720	6.5%	0.031	0.001
2022 Quarter 3	7,977	6.4%	1,682	6.4%	-0.032	-0.001
2022 Quarter 4	7,334	5.8%	1,565	5.9%	-0.103	-0.004
2023 Quarter 1	7,458	5.9%	1,576	6.0%	-0.045	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	-0.000	-0.008
Claims-Based frailty index categories						
<=0.2	90,582	72.1%	18,895	71.7%	0.392	0.009
>0.2	35,031	27.9%	7,451	28.3%	-0.392	-0.009
Combined comorbidity score*,[7]	2.8	3.3	2.9	3.3	-0.020	-0.006
Diabetes*	46,509	37.0%	9,754	37.0%	0.004	0.000
Obesity*	43,204	34.4%	9,043	34.3%	0.072	0.002
Hypertension*	86,742	69.1%	18,170	69.0%	0.087	0.002
Hospitalized Stroke/Transient Ischemic Attack	3,014	2.4%	682	2.6%	-0.190	-0.012
Coronary Revascularization	2,860	2.3%	597	2.3%	0.013	0.001
Atrial Fibrillation*	8,974	7.1%	1,934	7.3%	-0.198	-0.008

Table 1o. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	17,188	13.7%	3,690	14.0%	-0.324	-0.009
Hospitalized Acute Myocardial Infarction	3,135	2.5%	618	2.3%	0.151	0.010
Other Cerebrovascular Disease*	10,014	8.0%	2,104	8.0%	-0.012	-0.000
Chronic Obstructive Pulmonary Disease*	31,247	24.9%	6,660	25.3%	-0.403	-0.009
Asthma without COPD*	19,052	15.2%	4,079	15.5%	-0.315	-0.009
Chronic Liver Disease*	16,549	13.2%	3,476	13.2%	-0.020	-0.001
Chronic Kidney Disease*	37,255	29.7%	7,739	29.4%	0.283	0.006
Any Malignant Neoplasm*	17,463	13.9%	3,755	14.3%	-0.351	-0.010
Hemiplegia	4,278	3.4%	908	3.4%	-0.040	-0.002
Neurological/Neurodegenerative Conditions	1,286	1.0%	306	1.2%	-0.137	-0.013
Dementia*	3,224	2.6%	692	2.6%	-0.060	-0.004
Depression*	46,929	37.4%	9,924	37.7%	-0.310	-0.006
Schizophrenia	8,560	6.8%	2,072	7.9%	-1.050	-0.040
Rheumatic Disorders*	6,619	5.3%	1,425	5.4%	-0.140	-0.006
Multiple Sclerosis	2,259	1.8%	469	1.8%	0.017	0.001
HIV/AIDS	2,226	1.8%	661	2.5%	-0.736	-0.051
Coronary Artery Disease*	31,248	24.9%	6,625	25.1%	-0.271	-0.006
Immunodeficiency*	30,180	24.0%	6,308	23.9%	0.085	0.002
Smoking or Nicotine Use	54,487	43.4%	11,094	42.1%	1.267	0.026
Hyperlipidemia*	74,419	59.2%	15,650	59.4%	-0.158	-0.003
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	48,915	38.9%	10,205	38.7%	0.205	0.004
Non-Steroidal Anti-Inflammatory Drugs*	32,807	26.1%	6,907	26.2%	-0.100	-0.002
Aspirin	153	0.1%	32	0.1%	0.002	0.001
Antidepressants*	65,168	51.9%	13,720	52.1%	-0.196	-0.004
Statins*	56,806	45.2%	11,844	45.0%	0.268	0.005

Table 1o. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	17,345	13.8%	3,654	13.9%	-0.060	-0.002
Anti-Diabetic Oral Drugs*	26,157	20.8%	5,473	20.8%	0.050	0.001
Antihypertensive Drugs*	57,152	45.5%	11,946	45.3%	0.156	0.003
Anticoagulants*	10,967	8.7%	2,346	8.9%	-0.173	-0.006
Glucocorticoids*	26,379	21.0%	5,625	21.4%	-0.350	-0.009
Acetaminophen	35,382	28.2%	6,921	26.3%	1.897	0.043
Tumor Necrosis Factor Inhibitors	1,387	1.1%	305	1.2%	-0.054	-0.005
Immunosuppressants*	9,813	7.8%	2,062	7.8%	-0.013	-0.000
Inhaled Corticosteroids*	16,545	13.2%	3,544	13.5%	-0.282	-0.008
COVID-19 Vaccine*	24,920	19.8%	5,211	19.8%	0.060	0.002
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	21.7	17.0	21.5	0.003	0.000
Mean number of emergency room encounters*	0.7	1.8	0.8	1.8	-0.040	-0.022
Mean number of inpatient hospital encounters	0.4	1.0	0.5	1.0	-0.012	-0.012
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	-0.004	-0.007
Mean number of other ambulatory encounters*	9.1	17.5	9.4	17.8	-0.302	-0.017
Mean number of filled prescriptions*	25.8	21.0	26.1	20.8	-0.216	-0.010
Mean number of generics dispensed*	10.5	5.5	10.5	5.5	-0.077	-0.014
Mean number of unique drug classes dispensed*	9.8	4.9	9.9	4.9	-0.068	-0.014

Table 1o. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after propensity score (PS) stratum weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1, and control patients are weighted by the proportion of the total treated patient population included in their PS stratum divided by the proportion of the total control patient population included in their PS stratum.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1p. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	653,964	N/A	133,768	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.1	2.7	70.1	2.7	0.009	0.003
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	653,964	100.0%	133,768	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	404,284	61.8%	82,629	61.8%	0.050	0.001
Male	249,680	38.2%	51,139	38.2%	-0.050	-0.001
Race[4]						
American Indian or Alaska Native	2,398	0.4%	531	0.4%	-0.030	-0.005
Asian	17,161	2.6%	3,990	3.0%	-0.359	-0.022
Black or African American	45,161	6.9%	10,470	7.8%	-0.921	-0.035
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	46,622	7.1%	10,511	7.9%	-0.729	-0.028
White	542,622	83.0%	108,266	80.9%	2.039	0.053
Hispanic origin						
Yes	13,556	2.1%	3,220	2.4%	-0.334	-0.023
No	607,342	92.9%	123,257	92.1%	0.729	0.028
Unknown	33,066	5.1%	7,291	5.5%	-0.394	-0.018
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	195,047	29.8%	39,857	29.8%	0.030	0.001
Q2	183,335	28.0%	37,486	28.0%	0.011	0.000

Table 1p. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	162,400	24.8%	33,289	24.9%	-0.052	-0.001
Q4 (Most deprived)	111,824	17.1%	22,858	17.1%	0.012	0.000
Unknown	1,358	0.2%	278	0.2%	-0.000	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	50,424	7.7%	10,479	7.8%	-0.124	-0.005
2020 Quarter 3	64,125	9.8%	13,323	10.0%	-0.154	-0.005
2020 Quarter 4	63,638	9.7%	13,077	9.8%	-0.044	-0.001
2021 Quarter 1	59,074	9.0%	12,014	9.0%	0.052	0.002
2021 Quarter 2	58,775	9.0%	11,970	8.9%	0.039	0.001
2021 Quarter 3	57,063	8.7%	11,671	8.7%	0.001	0.000
2021 Quarter 4	57,421	8.8%	11,747	8.8%	-0.001	-0.000
2022 Quarter 1	51,849	7.9%	10,584	7.9%	0.016	0.001
2022 Quarter 2	49,514	7.6%	10,065	7.5%	0.047	0.002
2022 Quarter 3	46,916	7.2%	9,511	7.1%	0.064	0.002
2022 Quarter 4	46,768	7.2%	9,487	7.1%	0.059	0.002
2023 Quarter 1	48,397	7.4%	9,840	7.4%	0.044	0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	-0.001	-0.019
Claims-Based frailty index categories						
<=0.2	557,639	85.3%	113,410	84.8%	0.490	0.014
>0.2	96,325	14.7%	20,358	15.2%	-0.490	-0.014
Combined comorbidity score*,[7]	1.9	3.0	1.9	3.0	-0.060	-0.020
Diabetes*	182,420	27.9%	37,687	28.2%	-0.279	-0.006
Obesity*	165,058	25.2%	34,136	25.5%	-0.279	-0.006
Hypertension*	453,305	69.3%	93,008	69.5%	-0.213	-0.005
Hospitalized Stroke/Transient Ischemic Attack	10,565	1.6%	2,364	1.8%	-0.152	-0.012
Coronary Revascularization	11,666	1.8%	2,682	2.0%	-0.221	-0.016
Atrial Fibrillation*	64,833	9.9%	13,523	10.1%	-0.195	-0.007

Table 1p. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	57,164	8.7%	12,169	9.1%	-0.356	-0.012
Hospitalized Acute Myocardial Infarction	11,368	1.7%	2,368	1.8%	-0.032	-0.002
Other Cerebrovascular Disease*	52,001	8.0%	10,925	8.2%	-0.215	-0.008
Chronic Obstructive Pulmonary Disease*	88,407	13.5%	18,528	13.9%	-0.332	-0.010
Asthma without COPD*	68,101	10.4%	14,132	10.6%	-0.151	-0.005
Chronic Liver Disease*	62,116	9.5%	12,888	9.6%	-0.136	-0.005
Chronic Kidney Disease*	138,625	21.2%	28,724	21.5%	-0.276	-0.007
Any Malignant Neoplasm*	158,530	24.2%	32,666	24.4%	-0.178	-0.004
Hemiplegia	10,460	1.6%	2,390	1.8%	-0.187	-0.015
Neurological/Neurodegenerative Conditions	7,756	1.2%	1,725	1.3%	-0.103	-0.009
Dementia*	16,625	2.5%	3,592	2.7%	-0.143	-0.009
Depression*	125,183	19.1%	26,211	19.6%	-0.452	-0.011
Schizophrenia	5,878	0.9%	1,467	1.1%	-0.198	-0.020
Rheumatic Disorders*	24,423	3.7%	5,092	3.8%	-0.072	-0.004
Multiple Sclerosis	3,764	0.6%	751	0.6%	0.014	0.002
HIV/AIDS	1,606	0.2%	567	0.4%	-0.178	-0.031
Coronary Artery Disease*	164,499	25.2%	34,198	25.6%	-0.411	-0.009
Immunodeficiency*	99,854	15.3%	20,825	15.6%	-0.299	-0.008
Smoking or Nicotine Use	159,834	24.4%	32,267	24.1%	0.319	0.007
Hyperlipidemia*	454,117	69.4%	93,008	69.5%	-0.089	-0.002
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	297,856	45.5%	60,821	45.5%	0.079	0.002
Non-Steroidal Anti-Inflammatory Drugs*	126,214	19.3%	26,028	19.5%	-0.158	-0.004
Aspirin	736	0.1%	139	0.1%	0.008	0.003
Antidepressants*	221,624	33.9%	45,957	34.4%	-0.467	-0.010
Statins*	354,405	54.2%	72,460	54.2%	0.025	0.001

Table 1p. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	43,873	6.7%	9,126	6.8%	-0.114	-0.005
Anti-Diabetic Oral Drugs*	119,191	18.2%	24,457	18.3%	-0.057	-0.001
Antihypertensive Drugs*	319,631	48.9%	65,429	48.9%	-0.036	-0.001
Anticoagulants*	60,173	9.2%	12,535	9.4%	-0.170	-0.006
Glucocorticoids*	118,708	18.2%	24,596	18.4%	-0.235	-0.006
Acetaminophen	105,159	16.1%	22,037	16.5%	-0.393	-0.011
Tumor Necrosis Factor Inhibitors	4,983	0.8%	1,015	0.8%	0.003	0.000
Immunosuppressants*	55,579	8.5%	11,629	8.7%	-0.195	-0.007
Inhaled Corticosteroids*	51,566	7.9%	10,698	8.0%	-0.113	-0.004
COVID-19 Vaccine*	198,524	30.4%	40,395	30.2%	0.159	0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.3	13.6	13.5	13.7	-0.212	-0.016
Mean number of emergency room encounters*	0.3	0.8	0.3	0.8	-0.014	-0.018
Mean number of inpatient hospital encounters	0.2	0.7	0.3	0.7	-0.012	-0.018
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	-0.009	-0.022
Mean number of other ambulatory encounters*	5.4	11.7	5.9	12.7	-0.432	-0.035
Mean number of filled prescriptions*	16.0	14.0	16.2	14.2	-0.216	-0.015
Mean number of generics dispensed*	8.1	4.6	8.2	4.7	-0.081	-0.017
Mean number of unique drug classes dispensed*	7.7	4.2	7.8	4.3	-0.073	-0.017

Table 1p. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after propensity score (PS) stratum weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1, and control patients are weighted by the proportion of the total treated patient population included in their PS stratum divided by the proportion of the total control patient population included in their PS stratum.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1q. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	532,676	N/A	124,983	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	81.9	5.4	81.9	5.4	0.030	0.006
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	532,676	100.0%	124,983	100.0%	0.000	NaN
Sex*						
Female	342,753	64.3%	80,472	64.4%	-0.041	-0.001
Male	189,923	35.7%	44,511	35.6%	0.041	0.001
Race[4]						
American Indian or Alaska Native	1,855	0.3%	550	0.4%	-0.092	-0.015
Asian	13,948	2.6%	3,545	2.8%	-0.218	-0.013
Black or African American	30,923	5.8%	8,311	6.6%	-0.844	-0.035
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	23,009	4.3%	5,948	4.8%	-0.439	-0.021
White	462,941	86.9%	106,630	85.3%	1.593	0.046
Hispanic origin						
Yes	9,079	1.7%	2,376	1.9%	-0.196	-0.015
No	509,667	95.7%	119,035	95.2%	0.439	0.021
Unknown	13,930	2.6%	3,572	2.9%	-0.243	-0.015
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	161,254	30.3%	37,868	30.3%	-0.026	-0.001
Q2	149,635	28.1%	34,912	27.9%	0.158	0.004

Table 1q. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	130,677	24.5%	30,740	24.6%	-0.063	-0.001
Q4 (Most deprived)	90,066	16.9%	21,209	17.0%	-0.061	-0.002
Unknown	1,044	0.2%	255	0.2%	-0.008	-0.002
Year-Quarter of Exposure*						
2020 Quarter 2	41,683	7.8%	9,856	7.9%	-0.061	-0.002
2020 Quarter 3	51,621	9.7%	12,163	9.7%	-0.041	-0.001
2020 Quarter 4	49,295	9.3%	11,610	9.3%	-0.035	-0.001
2021 Quarter 1	45,456	8.5%	10,630	8.5%	0.028	0.001
2021 Quarter 2	48,412	9.1%	11,334	9.1%	0.020	0.001
2021 Quarter 3	47,816	9.0%	11,269	9.0%	-0.040	-0.001
2021 Quarter 4	46,712	8.8%	11,022	8.8%	-0.050	-0.002
2022 Quarter 1	42,270	7.9%	9,940	8.0%	-0.018	-0.001
2022 Quarter 2	42,037	7.9%	9,769	7.8%	0.075	0.003
2022 Quarter 3	39,829	7.5%	9,340	7.5%	0.004	0.000
2022 Quarter 4	38,282	7.2%	8,870	7.1%	0.090	0.003
2023 Quarter 1	39,263	7.4%	9,178	7.3%	0.027	0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	-0.001	-0.012
Claims-Based frailty index categories						
<=0.2	370,002	69.5%	86,692	69.4%	0.098	0.002
>0.2	162,674	30.5%	38,291	30.6%	-0.098	-0.002
Combined comorbidity score*,[7]	3.2	3.5	3.3	3.6	-0.054	-0.015
Diabetes*	163,047	30.6%	38,427	30.7%	-0.137	-0.003
Obesity*	94,158	17.7%	22,325	17.9%	-0.186	-0.005
Hypertension*	441,163	82.8%	103,556	82.9%	-0.036	-0.001
Hospitalized Stroke/Transient Ischemic Attack	18,163	3.4%	4,887	3.9%	-0.500	-0.027
Coronary Revascularization	11,660	2.2%	3,038	2.4%	-0.242	-0.016
Atrial Fibrillation*	119,810	22.5%	28,523	22.8%	-0.329	-0.008

Table 1q. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	102,613	19.3%	24,343	19.5%	-0.214	-0.005
Hospitalized Acute Myocardial Infarction	17,240	3.2%	3,973	3.2%	0.057	0.003
Other Cerebrovascular Disease*	76,830	14.4%	18,416	14.7%	-0.312	-0.009
Chronic Obstructive Pulmonary Disease*	98,577	18.5%	23,508	18.8%	-0.303	-0.008
Asthma without COPD*	49,899	9.4%	11,938	9.6%	-0.184	-0.006
Chronic Liver Disease*	39,234	7.4%	9,420	7.5%	-0.172	-0.007
Chronic Kidney Disease*	167,229	31.4%	39,456	31.6%	-0.175	-0.004
Any Malignant Neoplasm*	173,383	32.5%	40,945	32.8%	-0.211	-0.005
Hemiplegia	13,784	2.6%	3,714	3.0%	-0.384	-0.023
Neurological/Neurodegenerative Conditions	12,645	2.4%	3,118	2.5%	-0.121	-0.008
Dementia*	61,752	11.6%	14,844	11.9%	-0.284	-0.009
Depression*	105,270	19.8%	25,339	20.3%	-0.511	-0.013
Schizophrenia	3,008	0.6%	807	0.6%	-0.081	-0.010
Rheumatic Disorders*	21,516	4.0%	5,083	4.1%	-0.028	-0.001
Multiple Sclerosis	1,752	0.3%	417	0.3%	-0.005	-0.001
HIV/AIDS	448	0.1%	170	0.1%	-0.052	-0.016
Coronary Artery Disease*	208,443	39.1%	49,363	39.5%	-0.364	-0.007
Immunodeficiency*	88,988	16.7%	21,199	17.0%	-0.256	-0.007
Smoking or Nicotine Use	135,527	25.4%	31,706	25.4%	0.074	0.002
Hyperlipidemia*	396,539	74.4%	93,185	74.6%	-0.115	-0.003
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	270,540	50.8%	63,203	50.6%	0.219	0.004
Non-Steroidal Anti-Inflammatory Drugs*	77,341	14.5%	18,251	14.6%	-0.083	-0.002
Aspirin	987	0.2%	218	0.2%	0.011	0.003
Anti-depressants*	176,815	33.2%	41,906	33.5%	-0.335	-0.007
Statins*	311,466	58.5%	72,861	58.3%	0.176	0.004

Table 1q. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	34,249	6.4%	8,119	6.5%	-0.067	-0.003
Anti-Diabetic Oral Drugs*	90,867	17.1%	21,335	17.1%	-0.011	-0.000
Antihypertensive Drugs*	295,423	55.5%	68,997	55.2%	0.255	0.005
Anticoagulants*	101,535	19.1%	24,054	19.2%	-0.184	-0.005
Glucocorticoids*	93,144	17.5%	22,132	17.7%	-0.222	-0.006
Acetaminophen	78,754	14.8%	17,495	14.0%	0.786	0.022
Tumor Necrosis Factor Inhibitors	2,732	0.5%	590	0.5%	0.041	0.006
Immunosuppressants*	52,074	9.8%	12,245	9.8%	-0.022	-0.001
Inhaled Corticosteroids*	45,449	8.5%	10,827	8.7%	-0.130	-0.005
COVID-19 Vaccine*	172,860	32.5%	40,421	32.3%	0.110	0.002
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	13.1	14.4	13.0	-0.183	-0.014
Mean number of emergency room encounters*	0.4	0.9	0.4	0.9	-0.008	-0.010
Mean number of inpatient hospital encounters	0.4	0.8	0.4	0.8	-0.011	-0.013
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	-0.011	-0.019
Mean number of other ambulatory encounters*	8.6	14.7	9.1	15.5	-0.519	-0.034
Mean number of filled prescriptions*	18.6	15.1	18.7	15.1	-0.168	-0.011
Mean number of generics dispensed*	9.0	4.5	9.1	4.5	-0.069	-0.015
Mean number of unique drug classes dispensed*	8.7	4.1	8.7	4.1	-0.061	-0.015

Table 1q. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment (Propensity Score Stratum Weighted, Trimmed, Percentiles: 50, Weight: Average Treatment Effect in the Treated (ATT)), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after propensity score (PS) stratum weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1, and control patients are weighted by the proportion of the total treated patient population included in their PS stratum divided by the proportion of the total control patient population included in their PS stratum.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1r. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1]	Number/Mean	Percent/ Standard Deviation[2]	Number/Mean	Percent/ Standard Deviation[2]	Absolute Difference	Standardized Difference
Weighted patients	242,430	N/A	242,429	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	72.4	11.5	72.4	11.7	0.000	0.000
Age*						
18-49 years	12,703	5.2%	12,702	5.2%	-0.000	-0.000
50-64 years	21,354	8.8%	21,354	8.8%	0.000	0.000
65-74 years	109,476	45.2%	109,476	45.2%	-0.000	-0.000
≥ 75 years	98,897	40.8%	98,896	40.8%	0.000	0.000
Sex*						
Female	159,372	65.7%	159,372	65.7%	-0.000	-0.000
Male	83,057	34.3%	83,057	34.3%	0.000	0.000
Race[3]						
American Indian or Alaska Native	1,166	0.5%	1,261	0.5%	-0.039	-0.006
Asian	6,226	2.6%	6,865	2.8%	-0.264	-0.016
Black or African American	20,892	8.6%	23,224	9.6%	-0.962	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	15,287	6.3%	16,913	7.0%	-0.671	-0.027
White	198,859	82.0%	194,166	80.1%	1.936	0.049
Hispanic origin						
Yes	6,197	2.6%	6,958	2.9%	-0.314	-0.019
No	227,143	93.7%	225,516	93.0%	0.671	0.027
Unknown	9,090	3.7%	9,955	4.1%	-0.357	-0.018
ZCTA Social Deprivation Index Score, National Quartile*,4						
Q1 (Least deprived)	66,953	27.6%	66,953	27.6%	-0.000	-0.000
Q2	65,000	26.8%	65,000	26.8%	-0.000	-0.000
Q3	61,083	25.2%	61,083	25.2%	-0.000	-0.000

Table 1r. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q4 (Most deprived)	48,887	20.2%	48,887	20.2%	0.000	0.000
Unknown	506	0.2%	506	0.2%	-0.000	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	17,578	7.3%	17,578	7.3%	0.000	0.000
2020 Quarter 3	19,353	8.0%	19,353	8.0%	-0.000	-0.000
2020 Quarter 4	23,985	9.9%	23,985	9.9%	-0.000	-0.000
2021 Quarter 1	22,985	9.5%	22,985	9.5%	-0.000	-0.000
2021 Quarter 2	22,815	9.4%	22,815	9.4%	0.000	0.000
2021 Quarter 3	22,099	9.1%	22,099	9.1%	0.000	0.000
2021 Quarter 4	21,789	9.0%	21,789	9.0%	0.000	0.000
2022 Quarter 1	19,579	8.1%	19,579	8.1%	-0.000	-0.000
2022 Quarter 2	18,804	7.8%	18,804	7.8%	-0.000	-0.000
2022 Quarter 3	17,943	7.4%	17,943	7.4%	0.000	0.000
2022 Quarter 4	17,658	7.3%	17,658	7.3%	0.000	0.000
2023 Quarter 1	17,842	7.4%	17,842	7.4%	-0.000	-0.000
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,5	0.2	0.1	0.2	0.1	0.000	0.000
Claims-Based frailty index categories						
<=0.2	187,428	77.3%	187,736	77.4%	-0.127	-0.003
>0.2	55,002	22.7%	54,693	22.6%	0.127	0.003
Combined comorbidity score*,6	2.4	3.2	2.4	3.2	0.000	0.000
Diabetes*	70,953	29.3%	70,952	29.3%	0.000	0.000
Obesity*	54,737	22.6%	54,737	22.6%	0.000	0.000
Hypertension*	176,840	72.9%	176,839	72.9%	0.000	0.000
Hospitalized Stroke/Transient Ischemic Attack	6,173	2.5%	6,529	2.7%	-0.147	-0.009
Coronary Revascularization	4,438	1.8%	4,784	2.0%	-0.143	-0.010
Atrial Fibrillation*	32,250	13.3%	32,249	13.3%	0.000	0.000
Congestive Heart Failure*	30,658	12.6%	30,657	12.6%	0.000	0.000
Hospitalized Acute Myocardial Infarction	5,216	2.2%	5,051	2.1%	0.068	0.005

Table 1r. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Other Cerebrovascular Disease*	26,491	10.9%	26,490	10.9%	0.000	0.000
Chronic Obstructive Pulmonary Disease*	37,422	15.4%	37,422	15.4%	0.000	0.000
Asthma without COPD*	27,023	11.1%	27,023	11.1%	0.000	0.000
Chronic Liver Disease*	18,904	7.8%	18,904	7.8%	0.000	0.000
Chronic Kidney Disease*	62,925	26.0%	62,924	26.0%	0.000	0.000
Any Malignant Neoplasm*	60,769	25.1%	60,769	25.1%	0.000	0.000
Hemiplegia	6,141	2.5%	6,373	2.6%	-0.096	-0.006
Neurological/Neurodegenerative Conditions	4,077	1.7%	4,256	1.8%	-0.074	-0.006
Dementia*	17,114	7.1%	17,114	7.1%	0.000	0.000
Depression*	53,445	22.0%	53,444	22.0%	0.000	0.000
Schizophrenia	5,106	2.1%	5,883	2.4%	-0.321	-0.022
Rheumatic Disorders*	9,364	3.9%	9,364	3.9%	0.000	0.000
Multiple Sclerosis	1,660	0.7%	1,607	0.7%	0.022	0.003
HIV/AIDS	915	0.4%	1,349	0.6%	-0.179	-0.026
Coronary Artery Disease*	69,862	28.8%	69,861	28.8%	0.000	0.000
Immunodeficiency*	41,142	17.0%	41,142	17.0%	0.000	0.000
Smoking or Nicotine Use	61,768	25.5%	60,187	24.8%	0.652	0.015
Hyperlipidemia*	166,515	68.7%	166,514	68.7%	0.000	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	109,496	45.2%	109,495	45.2%	0.000	0.000
Non-Steroidal Anti-Inflammatory Drugs*	41,834	17.3%	41,834	17.3%	-0.000	-0.000
Aspirin	354	0.1%	344	0.1%	0.004	0.001
Anti-depressants*	85,976	35.5%	85,975	35.5%	0.000	0.000
Statins*	129,482	53.4%	129,481	53.4%	0.000	0.000
Insulin*	17,893	7.4%	17,892	7.4%	0.000	0.000
Anti-Diabetic Oral Drugs*	42,049	17.3%	42,049	17.3%	0.000	0.000
Antihypertensive Drugs*	120,209	49.6%	120,208	49.6%	0.000	0.000

Table 1r. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Anticoagulants*	29,527	12.2%	29,527	12.2%	0.000	0.000
Glucocorticoids*	44,865	18.5%	44,865	18.5%	0.000	0.000
Acetaminophen	39,846	16.4%	37,250	15.4%	1.071	0.029
Tumor Necrosis Factor Inhibitors	1,713	0.7%	1,648	0.7%	0.027	0.003
Immunosuppressants*	21,685	8.9%	21,685	8.9%	0.000	0.000
Inhaled Corticosteroids*	21,279	8.8%	21,279	8.8%	0.000	0.000
COVID-19 Vaccine*	75,447	31.1%	75,447	31.1%	-0.000	-0.000
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.5	14.2	15.2	0.000	0.000
Mean number of emergency room encounters*	0.4	1.4	0.4	1.1	0.000	0.000
Mean number of inpatient hospital encounters	0.3	0.7	0.3	0.7	-0.000	-0.000
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	0.000	0.000
Mean number of other ambulatory encounters*	7.7	15.6	7.7	15.1	0.000	0.000
Mean number of filled prescriptions*	18.7	17.2	18.7	16.7	0.000	0.000
Mean number of generics dispensed*	8.7	4.8	8.7	4.7	0.000	0.000
Mean number of unique drug classes dispensed*	8.3	4.4	8.3	4.3	0.000	0.000

Table 1r. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Value represents standard deviation where no % follows the value.

[3]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[4]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[5]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[6]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1s. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1]	Number/Mean	Percent/ Standard Deviation[2]	Number/Mean	Percent/ Standard Deviation[2]	Absolute Difference	Standardized Difference
Weighted patients	12,545	N/A	12,545	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	39.3	7.4	39.3	7.4	0.000	0.000
Age*						
18-49 years	12,545	100.0%	12,545	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	6,998	55.8%	6,998	55.8%	-0.000	-0.000
Male	5,547	44.2%	5,547	44.2%	0.000	0.000
Race[3]						
American Indian or Alaska Native	161	1.3%	147	1.2%	0.110	0.010
Asian	175	1.4%	187	1.5%	-0.091	-0.008
Black or African American	2,572	20.5%	2,794	22.3%	-1.771	-0.043
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	1,630	13.0%	1,681	13.4%	-0.403	-0.012
White	8,006	63.8%	7,736	61.7%	2.155	0.045
Hispanic origin						
Yes	902	7.2%	932	7.4%	-0.239	-0.009
No	10,914	87.0%	10,864	86.6%	0.403	0.012
Unknown	728	5.8%	749	6.0%	-0.164	-0.007
ZCTA Social Deprivation Index Score, National Quartile*,4						
Q1 (Least deprived)	*****	*****	*****	*****	0.000	0.000
Q2	2,767	22.1%	2,767	22.1%	-0.000	-0.000
Q3	3,777	30.1%	3,777	30.1%	-0.000	-0.000

Table 1s. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q4 (Most deprived)	4,134	33.0%	4,134	33.0%	0.000	0.000
Unknown	*****	*****	*****	*****	-0.000	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	1,087	8.7%	1,087	8.7%	0.000	0.000
2020 Quarter 3	1,204	9.6%	1,204	9.6%	-0.000	-0.000
2020 Quarter 4	1,353	10.8%	1,353	10.8%	-0.000	-0.000
2021 Quarter 1	1,269	10.1%	1,269	10.1%	-0.000	-0.000
2021 Quarter 2	1,250	10.0%	1,250	10.0%	0.000	0.000
2021 Quarter 3	1,143	9.1%	1,143	9.1%	0.000	0.000
2021 Quarter 4	1,056	8.4%	1,056	8.4%	-0.000	-0.000
2022 Quarter 1	884	7.0%	884	7.0%	-0.000	-0.000
2022 Quarter 2	844	6.7%	844	6.7%	0.000	0.000
2022 Quarter 3	827	6.6%	827	6.6%	-0.000	-0.000
2022 Quarter 4	805	6.4%	805	6.4%	-0.000	-0.000
2023 Quarter 1	824	6.6%	824	6.6%	-0.000	-0.000
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,5	0.2	0.0	0.2	0.0	0.000	0.000
Claims-Based frailty index categories						
<=0.2	10,245	81.7%	10,191	81.2%	0.434	0.011
>0.2	2,300	18.3%	2,354	18.8%	-0.434	-0.011
Combined comorbidity score*,6	2.1	2.6	2.1	2.6	0.000	0.000
Diabetes*	2,785	22.2%	2,785	22.2%	0.000	0.000
Obesity*	4,557	36.3%	4,557	36.3%	-0.000	-0.000
Hypertension*	5,351	42.7%	5,351	42.7%	0.000	0.000
Hospitalized Stroke/Transient Ischemic Attack	133	1.1%	133	1.1%	0.001	0.000
Coronary Revascularization	156	1.2%	144	1.1%	0.092	0.008
Atrial Fibrillation*	277	2.2%	277	2.2%	0.000	0.000
Congestive Heart Failure*	818	6.5%	818	6.5%	0.000	0.000
Hospitalized Acute Myocardial Infarction	128	1.0%	117	0.9%	0.089	0.009

Table 1s. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Other Cerebrovascular Disease*	402	3.2%	402	3.2%	0.000	0.000
Chronic Obstructive Pulmonary Disease*	929	7.4%	929	7.4%	0.000	0.000
Asthma without COPD*	2,557	20.4%	2,557	20.4%	0.000	0.000
Chronic Liver Disease*	1,120	8.9%	1,120	8.9%	0.000	0.000
Chronic Kidney Disease*	2,589	20.6%	2,589	20.6%	0.000	0.000
Any Malignant Neoplasm*	690	5.5%	690	5.5%	0.000	0.000
Hemiplegia	268	2.1%	273	2.2%	-0.044	-0.003
Neurological/Neurodegenerative Conditions	39	0.3%	46	0.4%	-0.053	-0.009
Dementia*	103	0.8%	103	0.8%	0.000	0.000
Depression*	4,741	37.8%	4,741	37.8%	0.000	0.000
Schizophrenia	1,684	13.4%	1,790	14.3%	-0.842	-0.024
Rheumatic Disorders*	345	2.7%	345	2.7%	0.000	0.000
Multiple Sclerosis	202	1.6%	220	1.8%	-0.145	-0.011
HIV/AIDS	165	1.3%	215	1.7%	-0.397	-0.032
Coronary Artery Disease*	1,202	9.6%	1,202	9.6%	0.000	0.000
Immunodeficiency*	2,518	20.1%	2,518	20.1%	0.000	0.000
Smoking or Nicotine Use	4,568	36.4%	4,446	35.4%	0.972	0.020
Hyperlipidemia*	4,255	33.9%	4,255	33.9%	0.000	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	2,447	19.5%	2,447	19.5%	0.000	0.000
Non-Steroidal Anti-Inflammatory Drugs*	3,096	24.7%	3,096	24.7%	-0.000	-0.000
Aspirin	*****	*****	*****	*****	-0.014	-0.006
Anti-depressants*	6,363	50.7%	6,363	50.7%	-0.000	-0.000
Statins*	2,458	19.6%	2,458	19.6%	0.000	0.000
Insulin*	1,072	8.5%	1,072	8.5%	0.000	0.000
Anti-Diabetic Oral Drugs*	1,543	12.3%	1,543	12.3%	-0.000	-0.000
Antihypertensive Drugs*	3,605	28.7%	3,605	28.7%	0.000	0.000

Table 1s. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Anticoagulants*	613	4.9%	613	4.9%	0.000	0.000
Glucocorticoids*	2,261	18.0%	2,261	18.0%	0.000	0.000
Acetaminophen	2,580	20.6%	2,534	20.2%	0.370	0.009
Tumor Necrosis Factor Inhibitors	132	1.0%	139	1.1%	-0.062	-0.006
Immunosuppressants*	760	6.1%	760	6.1%	0.000	0.000
Inhaled Corticosteroids*	1,128	9.0%	1,128	9.0%	-0.000	-0.000
COVID-19 Vaccine*	2,180	17.4%	2,180	17.4%	0.000	0.000
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	24.5	17.0	24.5	0.000	0.000
Mean number of emergency room encounters*	1.2	3.2	1.2	2.7	0.000	0.000
Mean number of inpatient hospital encounters	0.4	1.0	0.4	1.1	-0.004	-0.004
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.6	0.000	0.000
Mean number of other ambulatory encounters*	8.2	16.8	8.2	16.6	0.000	0.000
Mean number of filled prescriptions*	23.1	21.9	23.1	20.1	0.000	0.000
Mean number of generics dispensed*	9.0	5.5	9.0	5.4	0.000	0.000
Mean number of unique drug classes dispensed*	8.5	5.0	8.5	4.9	0.000	0.000

Table 1s. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Value represents standard deviation where no % follows the value.

[3]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[4]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[5]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[6]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 1t. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1]	Number/Mean	Percent/ Standard Deviation[2]	Number/Mean	Percent/ Standard Deviation[2]	Absolute Difference	Standardized Difference
Weighted patients	21,294	N/A	21,294	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	58.7	4.1	58.7	4.1	0.000	0.000
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	21,294	100.0%	21,294	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	12,587	59.1%	12,587	59.1%	-0.000	-0.000
Male	8,707	40.9%	8,707	40.9%	0.000	0.000
Race[3]						
American Indian or Alaska Native	252	1.2%	257	1.2%	-0.023	-0.002
Asian	370	1.7%	419	2.0%	-0.233	-0.017
Black or African American	4,282	20.1%	4,660	21.9%	-1.773	-0.044
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	1,587	7.5%	1,755	8.2%	-0.789	-0.029
White	14,804	69.5%	14,204	66.7%	2.818	0.060
Hispanic origin						
Yes	1,220	5.7%	1,330	6.2%	-0.513	-0.022
No	19,707	92.5%	19,539	91.8%	0.789	0.029
Unknown	366	1.7%	425	2.0%	-0.276	-0.020
ZCTA Social Deprivation Index Score, National Quartile*,4						
Q1 (Least deprived)	*****	*****	*****	*****	0.000	0.000
Q2	4,641	21.8%	4,641	21.8%	-0.000	-0.000
Q3	6,496	30.5%	6,496	30.5%	-0.000	-0.000

Table 1t. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q4 (Most deprived)	7,099	33.3%	7,099	33.3%	0.000	0.000
Unknown	*****	*****	*****	*****	-0.000	-0.000
Year-Quarter of Exposure[*]						
2020 Quarter 2	1,961	9.2%	1,961	9.2%	0.000	0.000
2020 Quarter 3	2,002	9.4%	2,002	9.4%	-0.000	-0.000
2020 Quarter 4	2,386	11.2%	2,386	11.2%	0.000	0.000
2021 Quarter 1	2,238	10.5%	2,238	10.5%	-0.000	-0.000
2021 Quarter 2	2,065	9.7%	2,065	9.7%	0.000	0.000
2021 Quarter 3	1,897	8.9%	1,897	8.9%	-0.000	-0.000
2021 Quarter 4	1,776	8.3%	1,776	8.3%	0.000	0.000
2022 Quarter 1	1,541	7.2%	1,541	7.2%	-0.000	-0.000
2022 Quarter 2	1,436	6.7%	1,436	6.7%	-0.000	-0.000
2022 Quarter 3	1,364	6.4%	1,364	6.4%	0.000	0.000
2022 Quarter 4	1,305	6.1%	1,305	6.1%	0.000	0.000
2023 Quarter 1	1,323	6.2%	1,323	6.2%	-0.000	-0.000
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index[*,5]	0.2	0.1	0.2	0.1	0.000	0.000
Claims-Based frailty index categories						
<=0.2	15,289	71.8%	15,256	71.6%	0.155	0.003
>0.2	6,005	28.2%	6,038	28.4%	-0.155	-0.003
Combined comorbidity score[*,6]	2.8	3.3	2.8	3.2	0.000	0.000
Diabetes[*]	8,054	37.8%	8,054	37.8%	0.000	0.000
Obesity[*]	7,284	34.2%	7,284	34.2%	0.000	0.000
Hypertension[*]	14,752	69.3%	14,752	69.3%	0.000	0.000
Hospitalized Stroke/Transient Ischemic Attack	569	2.7%	597	2.8%	-0.134	-0.008
Coronary Revascularization	483	2.3%	485	2.3%	-0.010	-0.001
Atrial Fibrillation[*]	1,469	6.9%	1,469	6.9%	0.000	0.000
Congestive Heart Failure[*]	2,881	13.5%	2,881	13.5%	0.000	0.000
Hospitalized Acute Myocardial Infarction	507	2.4%	483	2.3%	0.112	0.007

Table 1t. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Other Cerebrovascular Disease*	1,918	9.0%	1,918	9.0%	0.000	0.000
Chronic Obstructive Pulmonary Disease*	4,978	23.4%	4,978	23.4%	0.000	0.000
Asthma without COPD*	3,270	15.4%	3,270	15.4%	-0.000	-0.000
Chronic Liver Disease*	2,377	11.2%	2,377	11.2%	0.000	0.000
Chronic Kidney Disease*	6,485	30.5%	6,485	30.5%	0.000	0.000
Any Malignant Neoplasm*	2,906	13.6%	2,906	13.6%	0.000	0.000
Hemiplegia	889	4.2%	901	4.2%	-0.055	-0.003
Neurological/Neurodegenerative Conditions	240	1.1%	259	1.2%	-0.092	-0.009
Dementia*	706	3.3%	706	3.3%	0.000	0.000
Depression*	7,947	37.3%	7,947	37.3%	0.000	0.000
Schizophrenia	1,627	7.6%	1,878	8.8%	-1.179	-0.043
Rheumatic Disorders*	1,014	4.8%	1,014	4.8%	-0.000	-0.000
Multiple Sclerosis	412	1.9%	398	1.9%	0.069	0.005
HIV/AIDS	402	1.9%	569	2.7%	-0.786	-0.053
Coronary Artery Disease*	5,245	24.6%	5,245	24.6%	0.000	0.000
Immunodeficiency*	5,233	24.6%	5,233	24.6%	0.000	0.000
Smoking or Nicotine Use	8,856	41.6%	8,598	40.4%	1.215	0.025
Hyperlipidemia*	12,741	59.8%	12,741	59.8%	0.000	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	8,340	39.2%	8,340	39.2%	-0.000	-0.000
Non-Steroidal Anti-Inflammatory Drugs*	5,360	25.2%	5,360	25.2%	-0.000	-0.000
Aspirin	*****	*****	*****	*****	-0.001	-0.000
Anti-depressants*	10,868	51.0%	10,868	51.0%	-0.000	-0.000
Statins*	10,007	47.0%	10,007	47.0%	0.000	0.000
Insulin*	2,986	14.0%	2,986	14.0%	0.000	0.000
Anti-Diabetic Oral Drugs*	4,618	21.7%	4,618	21.7%	-0.000	-0.000
Antihypertensive Drugs*	9,718	45.6%	9,718	45.6%	0.000	0.000

Table 1t. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Anticoagulants*	1,918	9.0%	1,918	9.0%	0.000	0.000
Glucocorticoids*	4,454	20.9%	4,454	20.9%	-0.000	-0.000
Acetaminophen	5,817	27.3%	5,363	25.2%	2.134	0.049
Tumor Necrosis Factor Inhibitors	227	1.1%	225	1.1%	0.009	0.001
Immunosuppressants*	1,710	8.0%	1,710	8.0%	0.000	0.000
Inhaled Corticosteroids*	2,809	13.2%	2,809	13.2%	-0.000	-0.000
COVID-19 Vaccine*	4,599	21.6%	4,599	21.6%	0.000	0.000
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.1	22.1	17.1	22.4	0.000	0.000
Mean number of emergency room encounters*	0.7	2.3	0.7	1.9	0.000	0.000
Mean number of inpatient hospital encounters	0.4	1.0	0.4	1.0	0.000	0.000
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.000	0.000
Mean number of other ambulatory encounters*	10.3	19.9	10.3	19.4	0.000	0.000
Mean number of filled prescriptions*	27.0	23.4	27.0	22.5	0.000	0.000
Mean number of generics dispensed*	10.5	5.5	10.5	5.4	0.000	0.000
Mean number of unique drug classes dispensed*	9.9	5.0	9.9	4.9	0.000	0.000

Table 1t. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Value represents standard deviation where no % follows the value.

[3]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[4]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[5]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[6]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 1u. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1]	Number/Mean	Percent/ Standard Deviation[2]	Number/Mean	Percent/ Standard Deviation[2]	Absolute Difference	Standardized Difference
Weighted patients	109,345	N/A	109,344	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.2	2.7	70.2	2.7	0.000	0.000
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	109,345	100.0%	109,344	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	71,863	65.7%	71,863	65.7%	-0.000	-0.000
Male	37,481	34.3%	37,481	34.3%	0.000	0.000
Race[3]						
American Indian or Alaska Native	404	0.4%	442	0.4%	-0.035	-0.006
Asian	3,010	2.8%	3,419	3.1%	-0.374	-0.022
Black or African American	7,967	7.3%	8,922	8.2%	-0.873	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	7,830	7.2%	8,724	8.0%	-0.817	-0.031
White	90,133	82.4%	87,838	80.3%	2.099	0.054
Hispanic origin						
Yes	2,334	2.1%	2,728	2.5%	-0.360	-0.024
No	101,514	92.8%	100,621	92.0%	0.817	0.031
Unknown	5,496	5.0%	5,996	5.5%	-0.457	-0.020
ZCTA Social Deprivation Index Score, National Quartile*,4						
Q1 (Least deprived)	32,252	29.5%	32,252	29.5%	-0.000	-0.000
Q2	30,185	27.6%	30,185	27.6%	-0.000	-0.000
Q3	26,731	24.4%	26,731	24.4%	0.000	0.000

Table 1u. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q4 (Most deprived)	19,946	18.2%	19,946	18.2%	0.000	0.000
Unknown	230	0.2%	230	0.2%	-0.000	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	7,678	7.0%	7,678	7.0%	0.000	0.000
2020 Quarter 3	8,490	7.8%	8,490	7.8%	0.000	0.000
2020 Quarter 4	10,781	9.9%	10,781	9.9%	-0.000	-0.000
2021 Quarter 1	10,459	9.6%	10,459	9.6%	-0.000	-0.000
2021 Quarter 2	10,071	9.2%	10,071	9.2%	0.000	0.000
2021 Quarter 3	9,972	9.1%	9,972	9.1%	0.000	0.000
2021 Quarter 4	9,925	9.1%	9,925	9.1%	0.000	0.000
2022 Quarter 1	8,981	8.2%	8,980	8.2%	-0.000	-0.000
2022 Quarter 2	8,528	7.8%	8,528	7.8%	-0.000	-0.000
2022 Quarter 3	8,110	7.4%	8,110	7.4%	0.000	0.000
2022 Quarter 4	8,061	7.4%	8,061	7.4%	-0.000	-0.000
2023 Quarter 1	8,290	7.6%	8,290	7.6%	-0.000	-0.000
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,5	0.2	0.1	0.2	0.1	0.000	0.000
Claims-Based frailty index categories						
<=0.2	92,760	84.8%	92,854	84.9%	-0.085	-0.002
>0.2	16,584	15.2%	16,491	15.1%	0.085	0.002
Combined comorbidity score*,6	1.9	3.0	1.9	2.9	0.000	0.000
Diabetes*	30,484	27.9%	30,484	27.9%	0.000	0.000
Obesity*	26,374	24.1%	26,374	24.1%	0.000	0.000
Hypertension*	75,093	68.7%	75,092	68.7%	0.000	0.000
Hospitalized Stroke/Transient Ischemic Attack	2,032	1.9%	2,095	1.9%	-0.058	-0.004
Coronary Revascularization	1,916	1.8%	2,128	1.9%	-0.194	-0.014
Atrial Fibrillation*	9,952	9.1%	9,952	9.1%	0.000	0.000
Congestive Heart Failure*	9,258	8.5%	9,258	8.5%	0.000	0.000
Hospitalized Acute Myocardial Infarction	1,813	1.7%	1,787	1.6%	0.023	0.002

Table 1u. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Other Cerebrovascular Disease*	9,466	8.7%	9,466	8.7%	0.000	0.000
Chronic Obstructive Pulmonary Disease*	14,250	13.0%	14,250	13.0%	0.000	0.000
Asthma without COPD*	11,812	10.8%	11,812	10.8%	0.000	0.000
Chronic Liver Disease*	9,201	8.4%	9,201	8.4%	0.000	0.000
Chronic Kidney Disease*	23,723	21.7%	23,723	21.7%	0.000	0.000
Any Malignant Neoplasm*	26,162	23.9%	26,162	23.9%	0.000	0.000
Hemiplegia	2,129	1.9%	2,196	2.0%	-0.062	-0.004
Neurological/Neurodegenerative Conditions	1,380	1.3%	1,449	1.3%	-0.063	-0.006
Dementia*	3,404	3.1%	3,404	3.1%	0.000	0.000
Depression*	20,861	19.1%	20,861	19.1%	0.000	0.000
Schizophrenia	1,221	1.1%	1,399	1.3%	-0.162	-0.015
Rheumatic Disorders*	4,048	3.7%	4,048	3.7%	0.000	0.000
Multiple Sclerosis	683	0.6%	658	0.6%	0.022	0.003
HIV/AIDS	274	0.3%	434	0.4%	-0.147	-0.026
Coronary Artery Disease*	26,695	24.4%	26,695	24.4%	0.000	0.000
Immunodeficiency*	17,025	15.6%	17,025	15.6%	0.000	0.000
Smoking or Nicotine Use	25,271	23.1%	24,777	22.7%	0.452	0.011
Hyperlipidemia*	76,474	69.9%	76,473	69.9%	0.000	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	48,937	44.8%	48,937	44.8%	0.000	0.000
Non-Steroidal Anti-Inflammatory Drugs*	20,043	18.3%	20,043	18.3%	-0.000	-0.000
Aspirin	126	0.1%	121	0.1%	0.005	0.001
Anti-depressants*	36,050	33.0%	36,050	33.0%	0.000	0.000
Statins*	59,775	54.7%	59,775	54.7%	0.000	0.000
Insulin*	7,516	6.9%	7,516	6.9%	0.000	0.000
Anti-Diabetic Oral Drugs*	19,637	18.0%	19,637	18.0%	0.000	0.000
Antihypertensive Drugs*	52,461	48.0%	52,461	48.0%	0.000	0.000

Table 1u. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Anticoagulants*	9,337	8.5%	9,337	8.5%	0.000	0.000
Glucocorticoids*	20,736	19.0%	20,736	19.0%	0.000	0.000
Acetaminophen	16,400	15.0%	16,419	15.0%	-0.018	-0.000
Tumor Necrosis Factor Inhibitors	840	0.8%	813	0.7%	0.024	0.003
Immunosuppressants*	9,556	8.7%	9,556	8.7%	0.000	0.000
Inhaled Corticosteroids*	8,852	8.1%	8,852	8.1%	0.000	0.000
COVID-19 Vaccine*	34,941	32.0%	34,941	32.0%	-0.000	-0.000
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.4	14.1	13.4	13.9	0.000	0.000
Mean number of emergency room encounters*	0.3	1.0	0.3	0.8	0.000	0.000
Mean number of inpatient hospital encounters	0.2	0.6	0.2	0.6	-0.001	-0.001
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	0.000	0.000
Mean number of other ambulatory encounters*	5.9	13.4	5.9	13.0	0.000	0.000
Mean number of filled prescriptions*	16.3	15.0	16.3	14.8	0.000	0.000
Mean number of generics dispensed*	8.1	4.7	8.1	4.6	0.000	0.000
Mean number of unique drug classes dispensed*	7.7	4.3	7.7	4.2	0.000	0.000

Table 1u. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Value represents standard deviation where no % follows the value.

[3]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[4]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[5]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[6]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1v. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1]	Number/Mean	Percent/ Standard Deviation[2]	Number/ Mean	Percent/ Standard Deviation[2]	Absolute Difference	Standardized Difference
Weighted patients	98,913	N/A	98,912	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/ Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	82.2	5.5	82.2	5.5	0.000	0.000
Age[*]						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	98,913	100.0%	98,912	100.0%	0.000	NaN
Sex[*]						
Female	67,734	68.5%	67,734	68.5%	-0.000	-0.000
Male	31,178	31.5%	31,178	31.5%	0.000	0.000
Race[3]						
American Indian or Alaska Native	344	0.3%	411	0.4%	-0.068	-0.011
Asian	2,683	2.7%	2,831	2.9%	-0.150	-0.009
Black or African American	5,970	6.0%	6,798	6.9%	-0.837	-0.034
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	4,329	4.4%	4,689	4.7%	-0.364	-0.017
White	85,587	86.5%	84,183	85.1%	1.419	0.041
Hispanic origin						
Yes	1,759	1.8%	1,941	2.0%	-0.184	-0.014
No	94,584	95.6%	94,223	95.3%	0.364	0.017
Unknown	2,570	2.6%	2,748	2.8%	-0.180	-0.011
ZCTA Social Deprivation Index Score, National Quartile[*,4]						
Q1 (Least deprived)	29,732	30.1%	29,732	30.1%	0.000	0.000
Q2	27,332	27.6%	27,332	27.6%	-0.000	-0.000
Q3	23,994	24.3%	23,993	24.3%	-0.000	-0.000
Q4 (Most deprived)	17,614	17.8%	17,613	17.8%	0.000	0.000

Table 1v. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Unknown	241	0.2%	241	0.2%	-0.000	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	6,832	6.9%	6,832	6.9%	0.000	0.000
2020 Quarter 3	7,633	7.7%	7,633	7.7%	-0.000	-0.000
2020 Quarter 4	9,433	9.5%	9,433	9.5%	-0.000	-0.000
2021 Quarter 1	8,988	9.1%	8,988	9.1%	-0.000	-0.000
2021 Quarter 2	9,391	9.5%	9,391	9.5%	0.000	0.000
2021 Quarter 3	9,063	9.2%	9,063	9.2%	0.000	0.000
2021 Quarter 4	8,994	9.1%	8,994	9.1%	0.000	0.000
2022 Quarter 1	8,151	8.2%	8,151	8.2%	-0.000	-0.000
2022 Quarter 2	7,971	8.1%	7,971	8.1%	0.000	0.000
2022 Quarter 3	7,618	7.7%	7,618	7.7%	-0.000	-0.000
2022 Quarter 4	7,460	7.5%	7,460	7.5%	0.000	0.000
2023 Quarter 1	7,378	7.5%	7,378	7.5%	-0.000	-0.000
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/ Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[5]	0.2	0.1	0.2	0.1	0.000	0.000
Claims-Based frailty index categories						
<=0.2	68,926	69.7%	69,165	69.9%	-0.242	-0.005
>0.2	29,986	30.3%	29,747	30.1%	0.242	0.005
Combined comorbidity score*,[6]	3.1	3.5	3.1	3.4	0.000	0.000
Diabetes*	29,540	29.9%	29,540	29.9%	0.000	0.000
Obesity*	16,416	16.6%	16,416	16.6%	0.000	0.000
Hypertension*	81,432	82.3%	81,431	82.3%	0.000	0.000
Hospitalized Stroke/Transient Ischemic Attack	3,376	3.4%	3,713	3.8%	-0.341	-0.018
Coronary Revascularization	1,874	1.9%	2,013	2.0%	-0.140	-0.010
Atrial Fibrillation*	20,522	20.7%	20,522	20.7%	0.000	0.000
Congestive Heart Failure*	17,665	17.9%	17,665	17.9%	0.000	0.000
Hospitalized Acute Myocardial Infarction	2,722	2.8%	2,665	2.7%	0.057	0.004
Other Cerebrovascular Disease*	14,694	14.9%	14,694	14.9%	0.000	0.000

Table 1v. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Chronic Obstructive Pulmonary Disease*	17,220	17.4%	17,220	17.4%	0.000	0.000
Asthma without COPD*	9,333	9.4%	9,333	9.4%	0.000	0.000
Chronic Liver Disease*	6,175	6.2%	6,175	6.2%	0.000	0.000
Chronic Kidney Disease*	30,046	30.4%	30,045	30.4%	0.000	0.000
Any Malignant Neoplasm*	30,968	31.3%	30,968	31.3%	0.000	0.000
Hemiplegia	2,714	2.7%	3,031	3.1%	-0.320	-0.019
Neurological/Neurodegenerative Conditions	2,422	2.4%	2,501	2.5%	-0.080	-0.005
Dementia*	12,894	13.0%	12,894	13.0%	0.000	0.000
Depression*	19,797	20.0%	19,797	20.0%	0.000	0.000
Schizophrenia	673	0.7%	759	0.8%	-0.087	-0.010
Rheumatic Disorders*	3,940	4.0%	3,940	4.0%	0.000	0.000
Multiple Sclerosis	341	0.3%	333	0.3%	0.008	0.001
HIV/AIDS	80	0.1%	124	0.1%	-0.045	-0.014
Coronary Artery Disease*	36,655	37.1%	36,655	37.1%	0.000	0.000
Immunodeficiency*	16,281	16.5%	16,280	16.5%	0.000	0.000
Smoking or Nicotine Use	22,660	22.9%	22,341	22.6%	0.322	0.008
Hyperlipidemia*	72,886	73.7%	72,886	73.7%	0.000	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/ Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	49,673	50.2%	49,673	50.2%	0.000	0.000
Non-Steroidal Anti-Inflammatory Drugs*	13,288	13.4%	13,287	13.4%	-0.000	-0.000
Aspirin	191	0.2%	187	0.2%	0.003	0.001
Anti-depressants*	32,564	32.9%	32,564	32.9%	0.000	0.000
Statins*	57,134	57.8%	57,134	57.8%	0.000	0.000
Insulin*	6,289	6.4%	6,289	6.4%	0.000	0.000
Anti-Diabetic Oral Drugs*	16,213	16.4%	16,213	16.4%	0.000	0.000
Antihypertensive Drugs*	54,295	54.9%	54,294	54.9%	0.000	0.000
Anticoagulants*	17,619	17.8%	17,618	17.8%	0.000	0.000
Glucocorticoids*	17,350	17.5%	17,350	17.5%	0.000	0.000

Table 1v. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights (Overlap Weighted, Weight: ATO), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Acetaminophen	13,967	14.1%	13,082	13.2%	0.894	0.026
Tumor Necrosis Factor Inhibitors	498	0.5%	471	0.5%	0.027	0.004
Immunosuppressants*	9,628	9.7%	9,628	9.7%	0.000	0.000
Inhaled Corticosteroids*	8,456	8.5%	8,456	8.5%	0.000	0.000
COVID-19 Vaccine*	33,632	34.0%	33,632	34.0%	-0.000	-0.000
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[2]**	**Number/ Mean**	**Percent/ Standard Deviation[2]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.9	13.2	13.9	12.8	0.000	0.000
Mean number of emergency room encounters*	0.4	0.9	0.4	0.9	0.000	0.000
Mean number of inpatient hospital encounters	0.4	0.7	0.4	0.7	-0.000	-0.000
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.000	0.000
Mean number of other ambulatory encounters*	9.0	16.2	9.0	15.8	0.000	0.000
Mean number of filled prescriptions*	18.9	16.4	18.9	16.1	0.000	0.000
Mean number of generics dispensed*	9.0	4.5	9.0	4.4	0.000	0.000
Mean number of unique drug classes dispensed*	8.6	4.1	8.6	4.1	0.000	0.000

*Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Value represents standard deviation where no % follows the value.

[3]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[4]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[5]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[6]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1w. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	1,681,938	N/A	1,611,156	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	72.2	11.3	72.1	11.5	0.066	0.006
Age[*]						
18-49 years	84,207	5.0%	82,150	5.1%	-0.092	-0.004
50-64 years	152,041	9.0%	145,332	9.0%	0.019	0.001
65-74 years	787,837	46.8%	757,463	47.0%	-0.173	-0.003
≥ 75 years	657,852	39.1%	626,210	38.9%	0.246	0.005
Sex[*]						
Female	1,058,462	62.9%	1,024,874	63.6%	-0.680	-0.014
Male	623,476	37.1%	586,282	36.4%	0.680	0.014
Race[4]						
American Indian or Alaska Native	8,066	0.5%	8,325	0.5%	-0.037	-0.005
Asian	41,835	2.5%	45,119	2.8%	-0.313	-0.020
Black or African American	140,443	8.4%	149,955	9.3%	-0.957	-0.034
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	105,862	6.3%	113,188	7.0%	-0.731	-0.029
White	1,385,732	82.4%	1,294,569	80.4%	2.039	0.052
Hispanic origin						
Yes	42,037	2.5%	45,730	2.8%	-0.339	-0.021
No	1,576,076	93.7%	1,497,968	93.0%	0.731	0.029
Unknown	63,825	3.8%	67,457	4.2%	-0.392	-0.020
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	467,737	27.8%	448,289	27.8%	-0.015	-0.000

Table 1w. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q2	458,042	27.2%	437,787	27.2%	0.061	0.001
Q3	428,501	25.5%	409,629	25.4%	0.052	0.001
Q4 (Most deprived)	324,412	19.3%	312,273	19.4%	-0.094	-0.002
Unknown	3,245	0.2%	3,178	0.2%	-0.004	-0.001
Year-Quarter of Exposure[*]						
2020 Quarter 2	133,655	7.9%	127,274	7.9%	0.047	0.002
2020 Quarter 3	161,288	9.6%	150,094	9.3%	0.274	0.009
2020 Quarter 4	163,956	9.7%	157,823	9.8%	-0.048	-0.002
2021 Quarter 1	152,055	9.0%	146,625	9.1%	-0.060	-0.002
2021 Quarter 2	153,723	9.1%	147,318	9.1%	-0.004	-0.000
2021 Quarter 3	149,232	8.9%	143,486	8.9%	-0.033	-0.001
2021 Quarter 4	146,851	8.7%	141,332	8.8%	-0.041	-0.001
2022 Quarter 1	131,873	7.8%	127,247	7.9%	-0.057	-0.002
2022 Quarter 2	127,606	7.6%	122,396	7.6%	-0.010	-0.000
2022 Quarter 3	121,522	7.2%	116,691	7.2%	-0.018	-0.001
2022 Quarter 4	118,590	7.1%	113,813	7.1%	-0.013	-0.001
2023 Quarter 1	121,585	7.2%	117,057	7.3%	-0.037	-0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index[*,6]	0.2	0.1	0.2	0.1	0.001	0.020
Claims-Based frailty index categories						
<=0.2	1,304,181	77.5%	1,264,553	78.5%	-0.947	-0.023
>0.2	377,757	22.5%	346,603	21.5%	0.947	0.023
Combined comorbidity score[*,7]	2.5	3.3	2.4	3.2	0.107	0.033
Diabetes[*]	496,743	29.5%	470,365	29.2%	0.340	0.007
Obesity[*]	395,489	23.5%	374,748	23.3%	0.254	0.006
Hypertension[*]	1,232,424	73.3%	1,172,162	72.8%	0.521	0.012
Hospitalized Stroke/Transient Ischemic Attack	40,607	2.4%	39,465	2.4%	-0.035	-0.002
Coronary Revascularization	32,608	1.9%	32,825	2.0%	-0.099	-0.007

Table 1w. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Atrial Fibrillation*	235,622	14.0%	215,795	13.4%	0.615	0.018
Congestive Heart Failure*	220,710	13.1%	201,016	12.5%	0.646	0.019
Hospitalized Acute Myocardial Infarction	39,201	2.3%	33,246	2.1%	0.267	0.018
Other Cerebrovascular Disease*	175,095	10.4%	165,409	10.3%	0.144	0.005
Chronic Obstructive Pulmonary Disease*	270,665	16.1%	252,674	15.7%	0.410	0.011
Asthma without COPD*	184,328	11.0%	177,838	11.0%	-0.079	-0.003
Chronic Liver Disease*	148,132	8.8%	134,055	8.3%	0.487	0.017
Chronic Kidney Disease*	437,257	26.0%	404,831	25.1%	0.870	0.020
Any Malignant Neoplasm*	428,864	25.5%	405,490	25.2%	0.331	0.008
Hemiplegia	38,116	2.3%	37,342	2.3%	-0.052	-0.003
Neurological/Neurodegenerative Conditions	27,126	1.6%	26,988	1.7%	-0.062	-0.005
Dementia*	105,084	6.2%	98,652	6.1%	0.125	0.005
Depression*	371,483	22.1%	353,883	22.0%	0.122	0.003
Schizophrenia	32,550	1.9%	36,274	2.3%	-0.316	-0.022
Rheumatic Disorders*	66,428	3.9%	63,261	3.9%	0.023	0.001
Multiple Sclerosis	11,017	0.7%	10,288	0.6%	0.016	0.002
HIV/AIDS	6,354	0.4%	9,011	0.6%	-0.182	-0.027
Coronary Artery Disease*	498,697	29.7%	465,688	28.9%	0.746	0.016
Immunodeficiency*	285,080	16.9%	266,027	16.5%	0.438	0.012
Smoking or Nicotine Use	452,598	26.9%	409,429	25.4%	1.497	0.034
Hyperlipidemia*	1,156,248	68.7%	1,104,773	68.6%	0.175	0.004
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	767,655	45.6%	732,266	45.4%	0.191	0.004
Non-Steroidal Anti-Inflammatory Drugs*	304,638	18.1%	292,966	18.2%	-0.071	-0.002
Aspirin	2,367	0.1%	2,181	0.1%	0.005	0.001
Anti-depressants*	606,183	36.0%	579,503	36.0%	0.073	0.002

Table 1w. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Statins*	897,719	53.4%	858,764	53.3%	0.073	0.001
Insulin*	124,425	7.4%	116,818	7.3%	0.147	0.006
Anti-Diabetic Oral Drugs*	296,655	17.6%	282,466	17.5%	0.106	0.003
Antihypertensive Drugs*	842,386	50.1%	802,076	49.8%	0.302	0.006
Anticoagulants*	212,997	12.7%	197,008	12.2%	0.436	0.013
Glucocorticoids*	307,035	18.3%	295,909	18.4%	-0.111	-0.003
Acetaminophen	284,486	16.9%	252,846	15.7%	1.221	0.033
Tumor Necrosis Factor Inhibitors	11,985	0.7%	11,121	0.7%	0.022	0.003
Immunosuppressants*	148,679	8.8%	141,955	8.8%	0.029	0.001
Inhaled Corticosteroids*	146,182	8.7%	140,805	8.7%	-0.048	-0.002
COVID-19 Vaccine*	501,651	29.8%	483,135	30.0%	-0.161	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.2	14.1	14.8	0.077	0.005
Mean number of emergency room encounters*	0.4	1.3	0.4	1.1	0.005	0.004
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.033	0.044
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	0.006	0.012
Mean number of other ambulatory encounters*	7.3	14.4	7.1	13.9	0.205	0.014
Mean number of filled prescriptions*	18.4	16.2	18.3	15.9	0.042	0.003
Mean number of generics dispensed*	8.7	4.8	8.7	4.7	0.035	0.007
Mean number of unique drug classes dispensed*	8.3	4.4	8.3	4.3	0.032	0.007

Table 1w. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are weighted by the inverse of their propensity score (PS), while reference patients are weighted by the inverse of 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1x. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	84,064	N/A	80,932	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	39.9	7.2	39.8	7.2	0.069	0.009
Age*						
18-49 years	84,064	100.0%	80,932	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	46,424	55.2%	44,843	55.4%	-0.182	-0.004
Male	37,639	44.8%	36,090	44.6%	0.182	0.004
Race[4]						
American Indian or Alaska Native	1,086	1.3%	925	1.1%	0.149	0.014
Asian	1,116	1.3%	1,164	1.4%	-0.111	-0.010
Black or African American	17,077	20.3%	17,800	22.0%	-1.678	-0.041
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	10,386	12.4%	10,438	12.9%	-0.543	-0.016
White	54,399	64.7%	50,606	62.5%	2.183	0.045
Hispanic origin						
Yes	5,901	7.0%	5,898	7.3%	-0.268	-0.010
No	73,678	87.6%	70,494	87.1%	0.543	0.016
Unknown	4,484	5.3%	4,540	5.6%	-0.275	-0.012
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	12,250	14.6%	11,877	14.7%	-0.103	-0.003
Q2	19,100	22.7%	18,410	22.7%	-0.027	-0.001

Table 1x. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	25,962	30.9%	24,916	30.8%	0.097	0.002
Q4 (Most deprived)	26,682	31.7%	25,659	31.7%	0.035	0.001
Unknown	70	0.1%	69	0.1%	-0.002	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	8,553	10.2%	8,148	10.1%	0.107	0.004
2020 Quarter 3	9,438	11.2%	8,871	11.0%	0.267	0.008
2020 Quarter 4	9,001	10.7%	8,746	10.8%	-0.099	-0.003
2021 Quarter 1	8,286	9.9%	8,032	9.9%	-0.069	-0.002
2021 Quarter 2	7,996	9.5%	7,677	9.5%	0.026	0.001
2021 Quarter 3	7,277	8.7%	7,064	8.7%	-0.072	-0.003
2021 Quarter 4	6,601	7.9%	6,393	7.9%	-0.047	-0.002
2022 Quarter 1	5,735	6.8%	5,555	6.9%	-0.042	-0.002
2022 Quarter 2	5,403	6.4%	5,176	6.4%	0.032	0.001
2022 Quarter 3	5,397	6.4%	5,193	6.4%	0.003	0.000
2022 Quarter 4	5,100	6.1%	4,963	6.1%	-0.066	-0.003
2023 Quarter 1	5,277	6.3%	5,112	6.3%	-0.040	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.0	0.2	0.0	0.001	0.013
Claims-Based frailty index categories						
<=0.2	68,199	81.1%	65,724	81.2%	-0.080	-0.002
>0.2	15,864	18.9%	15,208	18.8%	0.080	0.002
Combined comorbidity score*,[7]	2.2	2.6	2.1	2.6	0.060	0.023
Diabetes*	19,426	23.1%	18,326	22.6%	0.464	0.011
Obesity*	31,210	37.1%	29,973	37.0%	0.092	0.002
Hypertension*	37,373	44.5%	35,437	43.8%	0.672	0.014
Hospitalized Stroke/Transient Ischemic Attack	881	1.0%	820	1.0%	0.035	0.003
Coronary Revascularization	1,098	1.3%	933	1.2%	0.153	0.014
Atrial Fibrillation*	1,982	2.4%	1,879	2.3%	0.037	0.002

Table 1x. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	5,883	7.0%	5,438	6.7%	0.278	0.011
Hospitalized Acute Myocardial Infarction	994	1.2%	784	1.0%	0.213	0.021
Other Cerebrovascular Disease*	2,595	3.1%	2,480	3.1%	0.023	0.001
Chronic Obstructive Pulmonary Disease*	6,887	8.2%	6,415	7.9%	0.266	0.010
Asthma without COPD*	16,723	19.9%	16,323	20.2%	-0.274	-0.007
Chronic Liver Disease*	8,487	10.1%	7,690	9.5%	0.595	0.020
Chronic Kidney Disease*	17,606	20.9%	16,363	20.2%	0.725	0.018
Any Malignant Neoplasm*	4,889	5.8%	4,638	5.7%	0.085	0.004
Hemiplegia	1,677	2.0%	1,670	2.1%	-0.068	-0.005
Neurological/Neurodegenerative Conditions	245	0.3%	280	0.3%	-0.054	-0.010
Dementia*	595	0.7%	590	0.7%	-0.021	-0.003
Depression*	32,746	39.0%	31,442	38.8%	0.104	0.002
Schizophrenia	10,567	12.6%	11,013	13.6%	-1.038	-0.031
Rheumatic Disorders*	2,666	3.2%	2,538	3.1%	0.035	0.002
Multiple Sclerosis	1,380	1.6%	1,467	1.8%	-0.171	-0.013
HIV/AIDS	1,132	1.3%	1,424	1.8%	-0.412	-0.033
Coronary Artery Disease*	8,600	10.2%	7,962	9.8%	0.393	0.013
Immunodeficiency*	17,199	20.5%	16,162	20.0%	0.489	0.012
Smoking or Nicotine Use	31,914	38.0%	29,500	36.5%	1.514	0.031
Hyperlipidemia*	29,172	34.7%	27,910	34.5%	0.217	0.005
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	17,546	20.9%	16,671	20.6%	0.273	0.007
Non-Steroidal Anti-Inflammatory Drugs*	21,066	25.1%	20,575	25.4%	-0.364	-0.008
Aspirin	50	0.1%	56	0.1%	-0.010	-0.004
Anti-depressants*	43,657	51.9%	42,122	52.0%	-0.112	-0.002
Statins*	16,875	20.1%	16,095	19.9%	0.187	0.005

Table 1x. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	7,647	9.1%	7,100	8.8%	0.324	0.011
Anti-Diabetic Oral Drugs*	10,215	12.2%	9,904	12.2%	-0.085	-0.003
Antihypertensive Drugs*	25,319	30.1%	24,081	29.8%	0.364	0.008
Anticoagulants*	4,136	4.9%	3,916	4.8%	0.082	0.004
Glucocorticoids*	15,613	18.6%	15,081	18.6%	-0.062	-0.002
Acetaminophen	18,929	22.5%	17,571	21.7%	0.807	0.019
Tumor Necrosis Factor Inhibitors	930	1.1%	983	1.2%	-0.107	-0.010
Immunosuppressants*	5,057	6.0%	4,897	6.1%	-0.035	-0.001
Inhaled Corticosteroids*	7,452	8.9%	7,243	8.9%	-0.085	-0.003
COVID-19 Vaccine*	13,230	15.7%	12,810	15.8%	-0.089	-0.002
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	24.2	16.8	24.0	0.196	0.008
Mean number of emergency room encounters*	1.1	2.9	1.1	2.5	0.006	0.002
Mean number of inpatient hospital encounters	0.4	1.1	0.4	1.1	0.027	0.025
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.6	-0.003	-0.006
Mean number of other ambulatory encounters*	7.8	15.9	7.7	15.7	0.132	0.008
Mean number of filled prescriptions*	22.9	20.8	23.0	19.5	-0.056	-0.003
Mean number of generics dispensed*	9.2	5.5	9.2	5.4	0.020	0.004
Mean number of unique drug classes dispensed*	8.7	5.0	8.6	4.9	0.018	0.004

Table 1x. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are weighted by the inverse of their propensity score (PS), while reference patients are weighted by the inverse of 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

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[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1y. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	151,981	N/A	145,489	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	58.6	4.2	58.6	4.1	-0.011	-0.003
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	151,981	100.0%	145,489	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	89,108	58.6%	86,107	59.2%	-0.554	-0.011
Male	62,873	41.4%	59,382	40.8%	0.554	0.011
Race[4]						
American Indian or Alaska Native	1,783	1.2%	1,737	1.2%	-0.020	-0.002
Asian	2,526	1.7%	2,768	1.9%	-0.240	-0.018
Black or African American	29,493	19.4%	30,787	21.2%	-1.755	-0.044
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	10,981	7.2%	11,829	8.1%	-0.905	-0.034
White	107,198	70.5%	98,369	67.6%	2.921	0.063
Hispanic origin						
Yes	8,436	5.6%	8,958	6.2%	-0.607	-0.026
No	141,000	92.8%	133,661	91.9%	0.905	0.034
Unknown	2,544	1.7%	2,870	2.0%	-0.299	-0.022
ZCTA Social Deprivation Index Score, National Quartile*[,5]						
Q1 (Least deprived)	22,367	14.7%	21,310	14.6%	0.069	0.002
Q2	34,715	22.8%	33,098	22.7%	0.092	0.002

Table 1y. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	46,487	30.6%	44,579	30.6%	-0.054	-0.001
Q4 (Most deprived)	48,242	31.7%	46,341	31.9%	-0.110	-0.002
Unknown	171	0.1%	160	0.1%	0.002	0.001
Year-Quarter of Exposure*						
2020 Quarter 2	15,337	10.1%	14,545	10.0%	0.094	0.003
2020 Quarter 3	16,946	11.2%	15,773	10.8%	0.309	0.010
2020 Quarter 4	16,805	11.1%	16,127	11.1%	-0.027	-0.001
2021 Quarter 1	14,778	9.7%	14,360	9.9%	-0.147	-0.005
2021 Quarter 2	14,144	9.3%	13,531	9.3%	0.006	0.000
2021 Quarter 3	13,217	8.7%	12,679	8.7%	-0.018	-0.001
2021 Quarter 4	12,392	8.2%	11,836	8.1%	0.018	0.001
2022 Quarter 1	10,587	7.0%	10,277	7.1%	-0.098	-0.004
2022 Quarter 2	10,022	6.6%	9,605	6.6%	-0.008	-0.000
2022 Quarter 3	9,671	6.4%	9,276	6.4%	-0.013	-0.001
2022 Quarter 4	8,973	5.9%	8,655	5.9%	-0.045	-0.002
2023 Quarter 1	9,108	6.0%	8,823	6.1%	-0.072	-0.003
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.021
Claims-Based frailty index categories						
<=0.2	109,266	71.9%	105,692	72.6%	-0.751	-0.017
>0.2	42,715	28.1%	39,797	27.4%	0.751	0.017
Combined comorbidity score*,[7]	2.8	3.3	2.7	3.2	0.108	0.033
Diabetes*	56,624	37.3%	53,703	36.9%	0.345	0.007
Obesity*	52,237	34.4%	49,759	34.2%	0.169	0.004
Hypertension*	105,120	69.2%	99,877	68.6%	0.518	0.011
Hospitalized Stroke/Transient Ischemic Attack	3,781	2.5%	3,629	2.5%	-0.007	-0.000
Coronary Revascularization	3,469	2.3%	3,206	2.2%	0.079	0.005
Atrial Fibrillation*	10,833	7.1%	9,999	6.9%	0.255	0.010

Table 1y. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	20,852	13.7%	19,195	13.2%	0.527	0.015
Hospitalized Acute Myocardial Infarction	3,782	2.5%	3,186	2.2%	0.299	0.020
Other Cerebrovascular Disease*	12,543	8.3%	11,770	8.1%	0.163	0.006
Chronic Obstructive Pulmonary Disease*	37,385	24.6%	35,302	24.3%	0.334	0.008
Asthma without COPD*	23,111	15.2%	22,287	15.3%	-0.112	-0.003
Chronic Liver Disease*	19,448	12.8%	17,370	11.9%	0.857	0.026
Chronic Kidney Disease*	45,505	29.9%	42,245	29.0%	0.904	0.020
Any Malignant Neoplasm*	21,067	13.9%	19,915	13.7%	0.173	0.005
Hemiplegia	5,488	3.6%	5,198	3.6%	0.038	0.002
Neurological/Neurodegenerative Conditions	1,599	1.1%	1,660	1.1%	-0.088	-0.008
Dementia*	4,205	2.8%	4,022	2.8%	0.002	0.000
Depression*	56,845	37.4%	54,234	37.3%	0.126	0.003
Schizophrenia	10,666	7.0%	11,895	8.2%	-1.158	-0.044
Rheumatic Disorders*	7,845	5.2%	7,480	5.1%	0.021	0.001
Multiple Sclerosis	2,788	1.8%	2,632	1.8%	0.025	0.002
HIV/AIDS	2,732	1.8%	3,739	2.6%	-0.772	-0.053
Coronary Artery Disease*	37,845	24.9%	35,393	24.3%	0.574	0.013
Immunodeficiency*	36,835	24.2%	34,220	23.5%	0.716	0.017
Smoking or Nicotine Use	65,413	43.0%	59,814	41.1%	1.928	0.039
Hyperlipidemia*	90,277	59.4%	86,406	59.4%	0.011	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	59,243	39.0%	56,766	39.0%	-0.037	-0.001
Non-Steroidal Anti-Inflammatory Drugs*	39,335	25.9%	37,986	26.1%	-0.228	-0.005
Aspirin	189	0.1%	181	0.1%	-0.000	-0.000
Anti-depressants*	78,604	51.7%	75,267	51.7%	-0.014	-0.000
Statins*	69,332	45.6%	66,500	45.7%	-0.089	-0.002

Table 1y. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	21,110	13.9%	19,843	13.6%	0.251	0.007
Anti-Diabetic Oral Drugs*	31,929	21.0%	30,712	21.1%	-0.100	-0.002
Antihypertensive Drugs*	69,214	45.5%	66,026	45.4%	0.159	0.003
Anticoagulants*	13,417	8.8%	12,621	8.7%	0.153	0.005
Glucocorticoids*	31,881	21.0%	30,753	21.1%	-0.161	-0.004
Acetaminophen	42,548	28.0%	37,396	25.7%	2.292	0.052
Tumor Necrosis Factor Inhibitors	1,664	1.1%	1,620	1.1%	-0.019	-0.002
Immunosuppressants*	11,951	7.9%	11,495	7.9%	-0.037	-0.001
Inhaled Corticosteroids*	20,020	13.2%	19,413	13.3%	-0.171	-0.005
COVID-19 Vaccine*	30,757	20.2%	29,665	20.4%	-0.153	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	21.8	16.8	21.7	0.237	0.011
Mean number of emergency room encounters*	0.7	1.9	0.7	1.8	-0.005	-0.003
Mean number of inpatient hospital encounters	0.4	1.0	0.4	0.9	0.039	0.040
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.005	0.009
Mean number of other ambulatory encounters*	9.5	18.3	9.2	17.7	0.249	0.014
Mean number of filled prescriptions*	26.2	21.7	26.3	21.2	-0.098	-0.005
Mean number of generics dispensed*	10.5	5.5	10.5	5.4	0.018	0.003
Mean number of unique drug classes dispensed*	9.8	4.9	9.8	4.9	0.015	0.003

Table 1y. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are weighted by the inverse of their propensity score (PS), while reference patients are weighted by the inverse of 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

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N/A: Not Applicable

Table 1z. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	787,895	N/A	761,034	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.1	2.7	70.1	2.7	-0.002	-0.001
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	787,895	100.0%	761,034	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	493,249	62.6%	481,793	63.3%	-0.704	-0.015
Male	294,646	37.4%	279,240	36.7%	0.704	0.015
Race[4]						
American Indian or Alaska Native	2,898	0.4%	3,051	0.4%	-0.033	-0.005
Asian	20,868	2.6%	23,288	3.1%	-0.411	-0.025
Black or African American	55,129	7.0%	59,811	7.9%	-0.862	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	56,202	7.1%	60,480	7.9%	-0.814	-0.031
White	652,799	82.9%	614,405	80.7%	2.121	0.055
Hispanic origin						
Yes	16,428	2.1%	18,572	2.4%	-0.355	-0.024
No	731,693	92.9%	700,554	92.1%	0.814	0.031
Unknown	39,773	5.0%	41,908	5.5%	-0.459	-0.021
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	234,358	29.7%	226,786	29.8%	-0.055	-0.001
Q2	220,140	27.9%	212,220	27.9%	0.054	0.001

Table 1z. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	195,053	24.8%	187,788	24.7%	0.081	0.002
Q4 (Most deprived)	136,705	17.4%	132,625	17.4%	-0.076	-0.002
Unknown	1,639	0.2%	1,614	0.2%	-0.004	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	59,653	7.6%	57,331	7.5%	0.038	0.001
2020 Quarter 3	74,065	9.4%	69,150	9.1%	0.314	0.011
2020 Quarter 4	76,852	9.8%	74,610	9.8%	-0.050	-0.002
2021 Quarter 1	72,011	9.1%	69,963	9.2%	-0.053	-0.002
2021 Quarter 2	71,160	9.0%	68,717	9.0%	0.002	0.000
2021 Quarter 3	69,393	8.8%	67,420	8.9%	-0.052	-0.002
2021 Quarter 4	69,655	8.8%	67,630	8.9%	-0.046	-0.002
2022 Quarter 1	62,908	8.0%	61,279	8.1%	-0.068	-0.002
2022 Quarter 2	60,010	7.6%	58,051	7.6%	-0.012	-0.000
2022 Quarter 3	56,915	7.2%	55,064	7.2%	-0.012	-0.000
2022 Quarter 4	56,691	7.2%	54,887	7.2%	-0.017	-0.001
2023 Quarter 1	58,582	7.4%	56,931	7.5%	-0.046	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.014
Claims-Based frailty index categories						
<=0.2	670,433	85.1%	651,917	85.7%	-0.570	-0.016
>0.2	117,462	14.9%	109,117	14.3%	0.570	0.016
Combined comorbidity score*,[7]	1.9	3.0	1.8	2.9	0.072	0.025
Diabetes*	220,097	27.9%	210,671	27.7%	0.253	0.006
Obesity*	197,218	25.0%	188,374	24.8%	0.279	0.006
Hypertension*	545,430	69.2%	523,779	68.8%	0.402	0.009
Hospitalized Stroke/Transient Ischemic Attack	13,263	1.7%	12,780	1.7%	0.004	0.000
Coronary Revascularization	14,044	1.8%	14,788	1.9%	-0.161	-0.012
Atrial Fibrillation*	77,036	9.8%	71,306	9.4%	0.408	0.014

Table 1z. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	68,786	8.7%	63,502	8.3%	0.386	0.014
Hospitalized Acute Myocardial Infarction	13,655	1.7%	12,105	1.6%	0.142	0.011
Other Cerebrovascular Disease*	64,081	8.1%	61,346	8.1%	0.072	0.003
Chronic Obstructive Pulmonary Disease*	106,010	13.5%	100,222	13.2%	0.286	0.008
Asthma without COPD*	82,717	10.5%	80,411	10.6%	-0.068	-0.002
Chronic Liver Disease*	73,269	9.3%	67,324	8.8%	0.453	0.016
Chronic Kidney Disease*	168,391	21.4%	158,565	20.8%	0.537	0.013
Any Malignant Neoplasm*	190,589	24.2%	182,367	24.0%	0.227	0.005
Hemiplegia	13,325	1.7%	13,241	1.7%	-0.049	-0.004
Neurological/Neurodegenerative Conditions	9,509	1.2%	9,651	1.3%	-0.061	-0.006
Dementia*	21,212	2.7%	20,245	2.7%	0.032	0.002
Depression*	151,038	19.2%	144,967	19.0%	0.121	0.003
Schizophrenia	7,537	1.0%	8,404	1.1%	-0.148	-0.015
Rheumatic Disorders*	29,394	3.7%	28,348	3.7%	0.006	0.000
Multiple Sclerosis	4,628	0.6%	4,328	0.6%	0.019	0.002
HIV/AIDS	1,949	0.2%	2,988	0.4%	-0.145	-0.026
Coronary Artery Disease*	197,408	25.1%	186,890	24.6%	0.498	0.012
Immunodeficiency*	121,137	15.4%	114,484	15.0%	0.332	0.009
Smoking or Nicotine Use	190,804	24.2%	175,450	23.1%	1.163	0.027
Hyperlipidemia*	548,039	69.6%	529,019	69.5%	0.044	0.001
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	357,622	45.4%	344,174	45.2%	0.165	0.003
Non-Steroidal Anti-Inflammatory Drugs*	150,441	19.1%	145,708	19.1%	-0.052	-0.001
Aspirin	893	0.1%	815	0.1%	0.006	0.002
Anti-depressants*	265,711	33.7%	255,998	33.6%	0.086	0.002
Statins*	427,851	54.3%	413,548	54.3%	-0.037	-0.001

Table 1z. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	53,309	6.8%	50,719	6.7%	0.102	0.004
Anti-Diabetic Oral Drugs*	143,255	18.2%	137,543	18.1%	0.109	0.003
Antihypertensive Drugs*	383,761	48.7%	368,836	48.5%	0.242	0.005
Anticoagulants*	71,625	9.1%	66,724	8.8%	0.323	0.011
Glucocorticoids*	144,384	18.3%	140,694	18.5%	-0.162	-0.004
Acetaminophen	125,088	15.9%	119,300	15.7%	0.200	0.005
Tumor Necrosis Factor Inhibitors	6,011	0.8%	5,632	0.7%	0.023	0.003
Immunosuppressants*	67,405	8.6%	65,095	8.6%	0.002	0.000
Inhaled Corticosteroids*	62,512	7.9%	60,662	8.0%	-0.037	-0.001
COVID-19 Vaccine*	241,754	30.7%	234,839	30.9%	-0.174	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.3	13.7	13.3	13.5	0.040	0.003
Mean number of emergency room encounters*	0.3	0.8	0.3	0.8	0.003	0.003
Mean number of inpatient hospital encounters	0.2	0.7	0.2	0.6	0.021	0.033
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	0.003	0.007
Mean number of other ambulatory encounters*	5.6	12.2	5.5	11.9	0.117	0.010
Mean number of filled prescriptions*	16.1	14.2	16.1	14.1	0.047	0.003
Mean number of generics dispensed*	8.1	4.6	8.1	4.6	0.026	0.006
Mean number of unique drug classes dispensed*	7.7	4.3	7.7	4.2	0.023	0.005

Table 1z. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are weighted by the inverse of their propensity score (PS), while reference patients are weighted by the inverse of 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1aa. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	657,762	N/A	624,784	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	82.0	5.4	82.0	5.4	0.028	0.005
Age[*]						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	657,762	100.0%	624,784	100.0%	0.000	NaN
Sex[*]						
Female	429,569	65.3%	412,816	66.1%	-0.766	-0.016
Male	228,194	34.7%	211,969	33.9%	0.766	0.016
Race[4]						
American Indian or Alaska Native	2,291	0.3%	2,595	0.4%	-0.067	-0.011
Asian	17,346	2.6%	17,825	2.9%	-0.216	-0.013
Black or African American	38,596	5.9%	41,662	6.7%	-0.800	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	28,476	4.3%	29,767	4.8%	-0.435	-0.021
White	571,053	86.8%	532,935	85.3%	1.518	0.044
Hispanic origin						
Yes	11,320	1.7%	12,035	1.9%	-0.205	-0.015
No	629,286	95.7%	595,018	95.2%	0.435	0.021
Unknown	17,157	2.6%	17,731	2.8%	-0.230	-0.014
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	198,736	30.2%	188,859	30.2%	-0.014	-0.000
Q2	184,033	28.0%	174,523	27.9%	0.045	0.001

Table 1aa. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	160,941	24.5%	152,567	24.4%	0.049	0.001
Q4 (Most deprived)	112,686	17.1%	107,488	17.2%	-0.072	-0.002
Unknown	1,366	0.2%	1,347	0.2%	-0.008	-0.002
Year-Quarter of Exposure*						
2020 Quarter 2	50,067	7.6%	47,111	7.5%	0.071	0.003
2020 Quarter 3	60,773	9.2%	56,222	9.0%	0.241	0.008
2020 Quarter 4	61,283	9.3%	58,547	9.4%	-0.054	-0.002
2021 Quarter 1	56,972	8.7%	54,441	8.7%	-0.052	-0.002
2021 Quarter 2	60,413	9.2%	57,609	9.2%	-0.036	-0.001
2021 Quarter 3	59,331	9.0%	56,488	9.0%	-0.021	-0.001
2021 Quarter 4	58,184	8.8%	55,517	8.9%	-0.040	-0.001
2022 Quarter 1	52,644	8.0%	50,353	8.1%	-0.056	-0.002
2022 Quarter 2	52,153	7.9%	49,551	7.9%	-0.002	-0.000
2022 Quarter 3	49,522	7.5%	47,207	7.6%	-0.027	-0.001
2022 Quarter 4	47,826	7.3%	45,487	7.3%	-0.010	-0.000
2023 Quarter 1	48,596	7.4%	46,250	7.4%	-0.014	-0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.002	0.025
Claims-Based frailty index categories						
<=0.2	456,301	69.4%	441,990	70.7%	-1.371	-0.030
>0.2	201,461	30.6%	182,795	29.3%	1.371	0.030
Combined comorbidity score*,[7]	3.2	3.5	3.0	3.4	0.143	0.041
Diabetes*	200,460	30.5%	187,781	30.1%	0.421	0.009
Obesity*	114,709	17.4%	106,977	17.1%	0.317	0.008
Hypertension*	544,284	82.7%	513,949	82.3%	0.488	0.013
Hospitalized Stroke/Transient Ischemic Attack	22,577	3.4%	22,557	3.6%	-0.178	-0.010
Coronary Revascularization	13,980	2.1%	13,676	2.2%	-0.064	-0.004
Atrial Fibrillation*	145,682	22.1%	132,176	21.2%	0.993	0.024

Table 1aa. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	125,054	19.0%	112,652	18.0%	0.982	0.025
Hospitalized Acute Myocardial Infarction	20,670	3.1%	17,283	2.8%	0.376	0.022
Other Cerebrovascular Disease*	95,824	14.6%	89,789	14.4%	0.197	0.006
Chronic Obstructive Pulmonary Disease*	120,304	18.3%	111,082	17.8%	0.511	0.013
Asthma without COPD*	61,733	9.4%	58,889	9.4%	-0.040	-0.001
Chronic Liver Disease*	46,860	7.1%	41,943	6.7%	0.411	0.016
Chronic Kidney Disease*	205,606	31.3%	187,868	30.1%	1.189	0.026
Any Malignant Neoplasm*	212,272	32.3%	199,054	31.9%	0.412	0.009
Hemiplegia	17,379	2.6%	17,959	2.9%	-0.232	-0.014
Neurological/Neurodegenerative Conditions	15,779	2.4%	15,443	2.5%	-0.073	-0.005
Dementia*	79,033	12.0%	73,657	11.8%	0.226	0.007
Depression*	130,732	19.9%	123,369	19.7%	0.129	0.003
Schizophrenia	3,944	0.6%	4,200	0.7%	-0.073	-0.009
Rheumatic Disorders*	26,509	4.0%	24,942	4.0%	0.038	0.002
Multiple Sclerosis	2,194	0.3%	2,034	0.3%	0.008	0.001
HIV/AIDS	549	0.1%	794	0.1%	-0.044	-0.013
Coronary Artery Disease*	254,693	38.7%	235,585	37.7%	1.014	0.021
Immunodeficiency*	109,802	16.7%	101,498	16.2%	0.448	0.012
Smoking or Nicotine Use	163,822	24.9%	146,878	23.5%	1.397	0.033
Hyperlipidemia*	488,602	74.3%	462,224	74.0%	0.301	0.007
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	333,167	50.7%	315,577	50.5%	0.142	0.003
Non-Steroidal Anti-Inflammatory Drugs*	93,758	14.3%	89,219	14.3%	-0.026	-0.001
Aspirin	1,232	0.2%	1,149	0.2%	0.003	0.001
Anti-depressants*	218,115	33.2%	206,713	33.1%	0.075	0.002
Statins*	383,542	58.3%	363,210	58.1%	0.176	0.004

Table 1aa. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	42,311	6.4%	39,288	6.3%	0.144	0.006
Anti-Diabetic Oral Drugs*	111,226	16.9%	104,601	16.7%	0.168	0.004
Antihypertensive Drugs*	363,984	55.3%	344,100	55.1%	0.262	0.005
Anticoagulants*	123,746	18.8%	113,347	18.1%	0.671	0.017
Glucocorticoids*	115,112	17.5%	109,705	17.6%	-0.058	-0.002
Acetaminophen	96,320	14.6%	84,828	13.6%	1.066	0.031
Tumor Necrosis Factor Inhibitors	3,358	0.5%	3,000	0.5%	0.030	0.004
Immunosuppressants*	64,247	9.8%	60,723	9.7%	0.049	0.002
Inhaled Corticosteroids*	56,170	8.5%	53,560	8.6%	-0.033	-0.001
COVID-19 Vaccine*	215,871	32.8%	206,319	33.0%	-0.204	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.1	13.2	14.0	12.7	0.084	0.006
Mean number of emergency room encounters*	0.4	0.9	0.4	0.8	0.008	0.009
Mean number of inpatient hospital encounters	0.4	0.8	0.4	0.7	0.045	0.059
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.011	0.019
Mean number of other ambulatory encounters*	8.8	15.2	8.5	14.8	0.291	0.019
Mean number of filled prescriptions*	18.7	15.5	18.6	15.3	0.063	0.004
Mean number of generics dispensed*	9.0	4.5	9.0	4.5	0.044	0.010
Mean number of unique drug classes dispensed*	8.6	4.1	8.6	4.1	0.040	0.010

Table 1aa. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect (ATE), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: COVID-19 Hospitalization)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are weighted by the inverse of their propensity score (PS), while reference patients are weighted by the inverse of 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

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N/A: Not Applicable

Table 1ab. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	1,380,787	N/A	1,368,711	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	72.1	11.2	72.1	11.5	-0.015	-0.001
Age[*]						
18-49 years	68,232	4.9%	68,414	5.0%	-0.057	-0.003
50-64 years	125,638	9.1%	124,323	9.1%	0.016	0.001
65-74 years	654,083	47.4%	645,526	47.2%	0.207	0.004
≥ 75 years	532,834	38.6%	530,448	38.8%	-0.166	-0.003
Sex[*]						
Female	858,260	62.2%	855,822	62.5%	-0.370	-0.008
Male	522,527	37.8%	512,889	37.5%	0.370	0.008
Race[4]						
American Indian or Alaska Native	6,609	0.5%	6,915	0.5%	-0.027	-0.004
Asian	34,071	2.5%	37,981	2.8%	-0.307	-0.019
Black or African American	114,034	8.3%	127,792	9.3%	-1.078	-0.038
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	86,930	6.3%	95,813	7.0%	-0.705	-0.028
White	1,139,143	82.5%	1,100,210	80.4%	2.117	0.054
Hispanic origin						
Yes	34,304	2.5%	38,634	2.8%	-0.338	-0.021
No	1,293,857	93.7%	1,272,899	93.0%	0.705	0.028
Unknown	52,626	3.8%	57,179	4.2%	-0.366	-0.019
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	384,902	27.9%	381,425	27.9%	0.008	0.000
Q2	377,744	27.4%	373,655	27.3%	0.057	0.001

Table 1ab. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	352,871	25.6%	349,349	25.5%	0.032	0.001
Q4 (Most deprived)	262,666	19.0%	261,670	19.1%	-0.095	-0.002
Unknown	2,604	0.2%	2,612	0.2%	-0.002	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	112,379	8.1%	110,714	8.1%	0.050	0.002
2020 Quarter 3	138,384	10.0%	130,810	9.6%	0.465	0.016
2020 Quarter 4	134,105	9.7%	133,680	9.8%	-0.055	-0.002
2021 Quarter 1	123,173	8.9%	123,010	9.0%	-0.067	-0.002
2021 Quarter 2	125,152	9.1%	124,844	9.1%	-0.057	-0.002
2021 Quarter 3	121,558	8.8%	121,432	8.9%	-0.069	-0.002
2021 Quarter 4	119,573	8.7%	119,220	8.7%	-0.051	-0.002
2022 Quarter 1	107,410	7.8%	107,347	7.8%	-0.064	-0.002
2022 Quarter 2	104,126	7.5%	103,785	7.6%	-0.042	-0.002
2022 Quarter 3	99,086	7.2%	98,774	7.2%	-0.040	-0.002
2022 Quarter 4	96,475	7.0%	96,027	7.0%	-0.029	-0.001
2023 Quarter 1	99,366	7.2%	99,068	7.2%	-0.042	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,6	0.2	0.1	0.2	0.1	-0.000	-0.002
Claims-Based frailty index categories						
<=0.2	1,073,640	77.8%	1,067,468	78.0%	-0.235	-0.006
>0.2	307,147	22.2%	301,243	22.0%	0.235	0.006
Combined comorbidity score*,7	2.5	3.3	2.5	3.2	0.005	0.001
Diabetes*	408,053	29.6%	404,312	29.5%	0.013	0.000
Obesity*	328,018	23.8%	324,204	23.7%	0.069	0.002
Hypertension*	1,012,137	73.3%	1,002,623	73.3%	0.048	0.001
Hospitalized Stroke/Transient Ischemic Attack	32,466	2.4%	34,721	2.5%	-0.185	-0.012
Coronary Revascularization	27,100	2.0%	28,981	2.1%	-0.155	-0.011
Atrial Fibrillation*	195,370	14.1%	192,251	14.0%	0.103	0.003

Table 1ab. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	181,954	13.2%	180,060	13.2%	0.022	0.001
Hospitalized Acute Myocardial Infarction	32,625	2.4%	29,232	2.1%	0.227	0.015
Other Cerebrovascular Disease*	140,961	10.2%	140,920	10.3%	-0.087	-0.003
Chronic Obstructive Pulmonary Disease*	224,090	16.2%	220,898	16.1%	0.090	0.002
Asthma without COPD*	150,532	10.9%	150,026	11.0%	-0.059	-0.002
Chronic Liver Disease*	125,077	9.1%	121,118	8.8%	0.209	0.007
Chronic Kidney Disease*	357,585	25.9%	355,886	26.0%	-0.104	-0.002
Any Malignant Neoplasm*	353,504	25.6%	349,733	25.6%	0.050	0.001
Hemiplegia	29,862	2.2%	33,607	2.5%	-0.293	-0.019
Neurological/Neurodegenerative Conditions	21,890	1.6%	22,852	1.7%	-0.084	-0.007
Dementia*	82,106	5.9%	82,018	6.0%	-0.046	-0.002
Depression*	304,287	22.0%	301,818	22.1%	-0.014	-0.000
Schizophrenia	25,852	1.9%	31,476	2.3%	-0.427	-0.030
Rheumatic Disorders*	54,825	4.0%	54,348	4.0%	-0.000	-0.000
Multiple Sclerosis	8,901	0.6%	8,758	0.6%	0.005	0.001
HIV/AIDS	5,207	0.4%	7,626	0.6%	-0.180	-0.026
Coronary Artery Disease*	411,457	29.8%	407,357	29.8%	0.037	0.001
Immunodeficiency*	233,105	16.9%	231,341	16.9%	-0.020	-0.001
Smoking or Nicotine Use	376,244	27.2%	350,749	25.6%	1.622	0.037
Hyperlipidemia*	949,132	68.7%	941,802	68.8%	-0.071	-0.002
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	631,987	45.8%	626,341	45.8%	0.009	0.000
Non-Steroidal Anti-Inflammatory Drugs*	253,609	18.4%	250,492	18.3%	0.066	0.002
Aspirin	1,918	0.1%	1,875	0.1%	0.002	0.001
Anti-depressants*	499,415	36.2%	494,507	36.1%	0.039	0.001
Statins*	736,652	53.4%	731,912	53.5%	-0.124	-0.002

Table 1ab. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	101,820	7.4%	101,029	7.4%	-0.007	-0.000
Anti-Diabetic Oral Drugs*	244,540	17.7%	242,170	17.7%	0.017	0.000
Antihypertensive Drugs*	693,216	50.2%	686,848	50.2%	0.022	0.000
Anticoagulants*	176,119	12.8%	173,697	12.7%	0.064	0.002
Glucocorticoids*	251,068	18.2%	250,529	18.3%	-0.121	-0.003
Acetaminophen	235,113	17.0%	214,535	15.7%	1.353	0.037
Tumor Necrosis Factor Inhibitors	9,870	0.7%	9,340	0.7%	0.032	0.004
Immunosuppressants*	121,578	8.8%	120,820	8.8%	-0.022	-0.001
Inhaled Corticosteroids*	119,616	8.7%	119,061	8.7%	-0.036	-0.001
COVID-19 Vaccine*	406,718	29.5%	405,307	29.6%	-0.157	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.1	14.2	15.1	-0.041	-0.003
Mean number of emergency room encounters*	0.4	1.1	0.4	1.2	-0.001	-0.001
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.040	0.053
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	-0.002	-0.004
Mean number of other ambulatory encounters*	7.1	13.8	7.1	13.8	-0.034	-0.002
Mean number of filled prescriptions*	18.2	15.8	18.3	15.5	-0.065	-0.004
Mean number of generics dispensed*	8.7	4.8	8.8	4.7	-0.011	-0.002
Mean number of unique drug classes dispensed*	8.3	4.4	8.3	4.3	-0.011	-0.002

Table 1ab. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ac. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	68,190	N/A	67,573	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	40.1	7.1	40.0	7.2	0.034	0.005
Age*						
18-49 years	68,190	100.0%	67,573	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	37,529	55.0%	37,220	55.1%	-0.045	-0.001
Male	30,661	45.0%	30,353	44.9%	0.045	0.001
Race[4]						
American Indian or Alaska Native	881	1.3%	780	1.2%	0.137	0.012
Asian	891	1.3%	996	1.5%	-0.168	-0.014
Black or African American	13,805	20.2%	14,893	22.0%	-1.795	-0.044
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	8,284	12.1%	8,630	12.8%	-0.622	-0.019
White	44,329	65.0%	42,274	62.6%	2.447	0.051
Hispanic origin						
Yes	4,746	7.0%	4,985	7.4%	-0.417	-0.016
No	59,906	87.9%	58,944	87.2%	0.622	0.019
Unknown	3,538	5.2%	3,645	5.4%	-0.205	-0.009
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	9,886	14.5%	9,856	14.6%	-0.088	-0.002
Q2	15,640	22.9%	15,503	22.9%	-0.007	-0.000

Table 1ac. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Q3	21,219	31.1%	20,938	31.0%	0.131	0.003
Q4 (Most deprived)	21,385	31.4%	21,215	31.4%	-0.035	-0.001
Unknown	60	0.1%	60	0.1%	-0.001	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	7,237	10.6%	7,021	10.4%	0.222	0.007
2020 Quarter 3	7,992	11.7%	7,748	11.5%	0.255	0.008
2020 Quarter 4	7,295	10.7%	7,328	10.8%	-0.146	-0.005
2021 Quarter 1	6,669	9.8%	6,649	9.8%	-0.059	-0.002
2021 Quarter 2	6,392	9.4%	6,378	9.4%	-0.065	-0.002
2021 Quarter 3	5,809	8.5%	5,799	8.6%	-0.063	-0.002
2021 Quarter 4	5,236	7.7%	5,230	7.7%	-0.061	-0.002
2022 Quarter 1	4,611	6.8%	4,604	6.8%	-0.052	-0.002
2022 Quarter 2	4,325	6.3%	4,268	6.3%	0.027	0.001
2022 Quarter 3	4,343	6.4%	4,290	6.3%	0.021	0.001
2022 Quarter 4	4,062	6.0%	4,068	6.0%	-0.063	-0.003
2023 Quarter 1	4,219	6.2%	4,192	6.2%	-0.017	-0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.0	0.2	0.0	-0.000	-0.001
Claims-Based frailty index categories						
<=0.2	55,300	81.1%	54,464	80.6%	0.497	0.013
>0.2	12,890	18.9%	13,109	19.4%	-0.497	-0.013
Combined comorbidity score*,[7]	2.2	2.7	2.2	2.6	-0.012	-0.005
Diabetes*	15,912	23.3%	15,811	23.4%	-0.064	-0.002
Obesity*	25,466	37.3%	25,221	37.3%	0.021	0.000
Hypertension*	30,609	44.9%	30,237	44.7%	0.140	0.003

Table 1ac. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Hospitalized Stroke/Transient Ischemic Attack	704	1.0%	698	1.0%	-0.001	-0.000
Coronary Revascularization	900	1.3%	849	1.3%	0.063	0.006
Atrial Fibrillation*	1,634	2.4%	1,664	2.5%	-0.066	-0.004
Congestive Heart Failure*	4,842	7.1%	4,867	7.2%	-0.101	-0.004
Hospitalized Acute Myocardial Infarction	845	1.2%	675	1.0%	0.240	0.023
Other Cerebrovascular Disease*	2,056	3.0%	2,059	3.0%	-0.032	-0.002
Chronic Obstructive Pulmonary Disease*	5,725	8.4%	5,550	8.2%	0.183	0.007
Asthma without COPD*	13,439	19.7%	13,469	19.9%	-0.224	-0.006
Chronic Liver Disease*	7,086	10.4%	6,900	10.2%	0.180	0.006
Chronic Kidney Disease*	14,273	20.9%	14,285	21.1%	-0.208	-0.005
Any Malignant Neoplasm*	4,027	5.9%	4,036	6.0%	-0.068	-0.003
Hemiplegia	1,316	1.9%	1,427	2.1%	-0.182	-0.013
Neurological/Neurodegenerative Conditions	193	0.3%	258	0.4%	-0.099	-0.017
Dementia*	439	0.6%	453	0.7%	-0.027	-0.003
Depression*	26,781	39.3%	26,584	39.3%	-0.068	-0.001
Schizophrenia	8,383	12.3%	9,120	13.5%	-1.203	-0.036
Rheumatic Disorders*	2,230	3.3%	2,182	3.2%	0.042	0.002
Multiple Sclerosis	1,124	1.6%	1,215	1.8%	-0.149	-0.011
HIV/AIDS	927	1.4%	1,184	1.8%	-0.393	-0.032
Coronary Artery Disease*	7,080	10.4%	7,019	10.4%	-0.005	-0.000
Immunodeficiency*	13,971	20.5%	13,983	20.7%	-0.205	-0.005
Smoking or Nicotine Use	26,195	38.4%	24,476	36.2%	2.193	0.045
Hyperlipidemia*	23,808	34.9%	23,600	34.9%	-0.011	-0.000
Medical Product Use	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference

Table 1ac. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	14,505	21.3%	14,401	21.3%	-0.040	-0.001
Non-Steroidal Anti-Inflammatory Drugs*	17,173	25.2%	17,066	25.3%	-0.071	-0.002
Aspirin	41	0.1%	43	0.1%	-0.004	-0.001
Anti-depressants*	35,651	52.3%	35,344	52.3%	-0.023	-0.000
Statins*	13,783	20.2%	13,702	20.3%	-0.064	-0.002
Insulin*	6,311	9.3%	6,276	9.3%	-0.033	-0.001
Anti-Diabetic Oral Drugs*	8,243	12.1%	8,198	12.1%	-0.044	-0.001
Antihypertensive Drugs*	20,794	30.5%	20,573	30.4%	0.048	0.001
Anticoagulants*	3,340	4.9%	3,369	5.0%	-0.088	-0.004
Glucocorticoids*	12,761	18.7%	12,675	18.8%	-0.043	-0.001
Acetaminophen	15,731	23.1%	14,073	20.8%	2.243	0.054
Tumor Necrosis Factor Inhibitors	767	1.1%	789	1.2%	-0.043	-0.004
Immunosuppressants*	4,081	6.0%	4,139	6.1%	-0.140	-0.006
Inhaled Corticosteroids*	6,019	8.8%	5,969	8.8%	-0.007	-0.000
COVID-19 Vaccine*	10,346	15.2%	10,335	15.3%	-0.123	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	16.9	23.9	17.1	24.5	-0.188	-0.008
Mean number of emergency room encounters*	1.1	2.5	1.1	2.4	-0.023	-0.010
Mean number of inpatient hospital encounters	0.4	1.1	0.4	1.0	0.041	0.040
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.5	-0.003	-0.005
Mean number of other ambulatory encounters*	7.6	15.4	7.7	15.2	-0.076	-0.005
Mean number of filled prescriptions*	22.8	20.1	22.9	19.3	-0.134	-0.007
Mean number of generics dispensed*	9.2	5.5	9.2	5.5	-0.011	-0.002

Table 1ac. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Mean number of unique drug classes dispensed*	8.7	5.0	8.7	4.9	-0.009	-0.002

*Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ad. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	125,617	N/A	124,507	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	58.6	4.2	58.6	4.1	-0.015	-0.004
Age[*]						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	125,617	100.0%	124,507	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex[*]						
Female	73,540	58.5%	73,093	58.7%	-0.163	-0.003
Male	52,077	41.5%	51,415	41.3%	0.163	0.003
Race[4]						
American Indian or Alaska Native	1,473	1.2%	1,484	1.2%	-0.019	-0.002
Asian	2,068	1.6%	2,386	1.9%	-0.270	-0.020
Black or African American	24,116	19.2%	26,360	21.2%	-1.974	-0.049
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	9,003	7.2%	10,104	8.1%	-0.948	-0.036
White	88,957	70.8%	84,173	67.6%	3.211	0.070
Hispanic origin						
Yes	6,916	5.5%	7,661	6.2%	-0.647	-0.028
No	116,614	92.8%	114,404	91.9%	0.948	0.036
Unknown	2,087	1.7%	2,442	2.0%	-0.300	-0.023
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	18,640	14.8%	18,394	14.8%	0.065	0.002
Q2	29,046	23.1%	28,634	23.0%	0.125	0.003

Table 1ad. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	38,467	30.6%	38,138	30.6%	-0.008	-0.000
Q4 (Most deprived)	39,322	31.3%	39,201	31.5%	-0.182	-0.004
Unknown	142	0.1%	140	0.1%	0.001	0.000
Year-Quarter of Exposure*						
2020 Quarter 2	12,969	10.3%	12,784	10.3%	0.056	0.002
2020 Quarter 3	14,567	11.6%	13,914	11.2%	0.421	0.013
2020 Quarter 4	13,850	11.0%	13,827	11.1%	-0.080	-0.003
2021 Quarter 1	11,956	9.5%	11,927	9.6%	-0.061	-0.002
2021 Quarter 2	11,559	9.2%	11,535	9.3%	-0.063	-0.002
2021 Quarter 3	10,856	8.6%	10,811	8.7%	-0.041	-0.001
2021 Quarter 4	10,182	8.1%	10,126	8.1%	-0.027	-0.001
2022 Quarter 1	8,665	6.9%	8,667	7.0%	-0.063	-0.002
2022 Quarter 2	8,238	6.6%	8,171	6.6%	-0.005	-0.000
2022 Quarter 3	7,980	6.4%	7,963	6.4%	-0.043	-0.002
2022 Quarter 4	7,335	5.8%	7,317	5.9%	-0.037	-0.002
2023 Quarter 1	7,460	5.9%	7,466	6.0%	-0.058	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.000	0.001
Claims-Based frailty index categories						
<=0.2	90,579	72.1%	89,771	72.1%	0.007	0.000
>0.2	35,038	27.9%	34,737	27.9%	-0.007	-0.000
Combined comorbidity score*,[7]	2.8	3.3	2.8	3.2	-0.001	-0.000
Diabetes*	46,515	37.0%	46,154	37.1%	-0.040	-0.001
Obesity*	43,207	34.4%	42,843	34.4%	-0.014	-0.000
Hypertension*	86,750	69.1%	85,925	69.0%	0.047	0.001
Hospitalized Stroke/Transient Ischemic Attack	3,016	2.4%	3,143	2.5%	-0.123	-0.008
Coronary Revascularization	2,862	2.3%	2,887	2.3%	-0.040	-0.003
Atrial Fibrillation*	8,973	7.1%	8,894	7.1%	-0.000	-0.000

Table 1ad. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	17,185	13.7%	17,094	13.7%	-0.049	-0.001
Hospitalized Acute Myocardial Infarction	3,139	2.5%	2,844	2.3%	0.215	0.014
Other Cerebrovascular Disease*	10,020	8.0%	9,982	8.0%	-0.041	-0.002
Chronic Obstructive Pulmonary Disease*	31,244	24.9%	30,681	24.6%	0.231	0.005
Asthma without COPD*	19,057	15.2%	18,933	15.2%	-0.036	-0.001
Chronic Liver Disease*	16,536	13.2%	16,032	12.9%	0.288	0.009
Chronic Kidney Disease*	37,261	29.7%	37,147	29.8%	-0.173	-0.004
Any Malignant Neoplasm*	17,464	13.9%	17,297	13.9%	0.010	0.000
Hemiplegia	4,282	3.4%	4,615	3.7%	-0.297	-0.016
Neurological/Neurodegenerative Conditions	1,286	1.0%	1,406	1.1%	-0.105	-0.010
Dementia*	3,230	2.6%	3,260	2.6%	-0.047	-0.003
Depression*	46,932	37.4%	46,504	37.4%	0.011	0.000
Schizophrenia	8,565	6.8%	10,328	8.3%	-1.477	-0.056
Rheumatic Disorders*	6,610	5.3%	6,501	5.2%	0.041	0.002
Multiple Sclerosis	2,259	1.8%	2,213	1.8%	0.021	0.002
HIV/AIDS	2,225	1.8%	3,086	2.5%	-0.708	-0.049
Coronary Artery Disease*	31,245	24.9%	31,076	25.0%	-0.086	-0.002
Immunodeficiency*	30,183	24.0%	30,062	24.1%	-0.117	-0.003
Smoking or Nicotine Use	54,490	43.4%	51,214	41.1%	2.245	0.045
Hyperlipidemia*	74,423	59.2%	73,994	59.4%	-0.183	-0.004
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	48,917	38.9%	48,508	39.0%	-0.018	-0.000
Non-Steroidal Anti-Inflammatory Drugs*	32,804	26.1%	32,387	26.0%	0.102	0.002
Aspirin	153	0.1%	151	0.1%	0.000	0.000
Anti-depressants*	65,167	51.9%	64,482	51.8%	0.088	0.002
Statins*	56,818	45.2%	56,555	45.4%	-0.192	-0.004

Table 1ad. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	17,349	13.8%	17,193	13.8%	0.002	0.000
Anti-Diabetic Oral Drugs*	26,161	20.8%	26,005	20.9%	-0.061	-0.001
Antihypertensive Drugs*	57,154	45.5%	56,678	45.5%	-0.023	-0.000
Anticoagulants*	10,972	8.7%	10,962	8.8%	-0.070	-0.002
Glucocorticoids*	26,380	21.0%	26,325	21.1%	-0.143	-0.004
Acetaminophen	35,378	28.2%	31,754	25.5%	2.660	0.060
Tumor Necrosis Factor Inhibitors	1,387	1.1%	1,334	1.1%	0.033	0.003
Immunosuppressants*	9,813	7.8%	9,764	7.8%	-0.030	-0.001
Inhaled Corticosteroids*	16,548	13.2%	16,404	13.2%	-0.002	-0.000
COVID-19 Vaccine*	24,925	19.8%	24,861	20.0%	-0.126	-0.003
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	21.7	17.1	22.4	-0.135	-0.006
Mean number of emergency room encounters*	0.7	1.9	0.7	1.8	-0.009	-0.005
Mean number of inpatient hospital encounters	0.4	1.0	0.4	0.9	0.038	0.040
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	-0.004	-0.007
Mean number of other ambulatory encounters*	9.1	17.5	9.3	17.2	-0.120	-0.007
Mean number of filled prescriptions*	25.9	21.0	26.0	20.5	-0.124	-0.006
Mean number of generics dispensed*	10.5	5.5	10.5	5.4	-0.007	-0.001
Mean number of unique drug classes dispensed*	9.8	4.9	9.8	4.9	-0.008	-0.002

Table 1ad. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ae. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	654,077	N/A	648,181	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.1	2.7	70.1	2.7	-0.011	-0.004
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	654,077	100.0%	648,181	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	404,324	61.8%	403,283	62.2%	-0.402	-0.008
Male	249,753	38.2%	244,898	37.8%	0.402	0.008
Race[4]						
American Indian or Alaska Native	2,398	0.4%	2,557	0.4%	-0.028	-0.005
Asian	17,164	2.6%	19,747	3.0%	-0.422	-0.025
Black or African American	45,175	6.9%	51,281	7.9%	-1.005	-0.038
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	46,627	7.1%	51,613	8.0%	-0.834	-0.032
White	542,713	83.0%	522,983	80.7%	2.289	0.059
Hispanic origin						
Yes	13,559	2.1%	15,796	2.4%	-0.364	-0.025
No	607,450	92.9%	596,568	92.0%	0.834	0.032
Unknown	33,068	5.1%	35,817	5.5%	-0.470	-0.021
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	195,072	29.8%	193,209	29.8%	0.016	0.000
Q2	183,366	28.0%	181,321	28.0%	0.061	0.001

Table 1ae. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	162,436	24.8%	160,769	24.8%	0.031	0.001
Q4 (Most deprived)	111,845	17.1%	111,516	17.2%	-0.105	-0.003
Unknown	1,358	0.2%	1,367	0.2%	-0.003	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	50,444	7.7%	49,769	7.7%	0.034	0.001
2020 Quarter 3	64,137	9.8%	60,335	9.3%	0.497	0.017
2020 Quarter 4	63,652	9.7%	63,486	9.8%	-0.063	-0.002
2021 Quarter 1	59,082	9.0%	59,037	9.1%	-0.075	-0.003
2021 Quarter 2	58,785	9.0%	58,575	9.0%	-0.049	-0.002
2021 Quarter 3	57,070	8.7%	57,064	8.8%	-0.078	-0.003
2021 Quarter 4	57,431	8.8%	57,276	8.8%	-0.056	-0.002
2022 Quarter 1	51,853	7.9%	51,817	8.0%	-0.067	-0.002
2022 Quarter 2	49,520	7.6%	49,328	7.6%	-0.039	-0.001
2022 Quarter 3	46,921	7.2%	46,751	7.2%	-0.039	-0.002
2022 Quarter 4	46,780	7.2%	46,512	7.2%	-0.024	-0.001
2023 Quarter 1	48,402	7.4%	48,232	7.4%	-0.041	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,6	0.2	0.1	0.2	0.1	-0.000	-0.002
Claims-Based frailty index categories						
<=0.2	557,689	85.3%	553,232	85.4%	-0.088	-0.002
>0.2	96,388	14.7%	94,949	14.6%	0.088	0.002
Combined comorbidity score*,7	1.9	3.0	1.9	2.9	0.002	0.001
Diabetes*	182,473	27.9%	181,204	28.0%	-0.058	-0.001
Obesity*	165,100	25.2%	163,223	25.2%	0.060	0.001
Hypertension*	453,404	69.3%	449,058	69.3%	0.040	0.001
Hospitalized Stroke/Transient Ischemic Attack	10,569	1.6%	11,422	1.8%	-0.146	-0.011
Coronary Revascularization	11,672	1.8%	13,353	2.1%	-0.276	-0.020
Atrial Fibrillation*	64,864	9.9%	63,602	9.8%	0.104	0.004

Table 1ae. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	57,208	8.7%	56,640	8.7%	0.008	0.000
Hospitalized Acute Myocardial Infarction	11,381	1.7%	10,689	1.6%	0.091	0.007
Other Cerebrovascular Disease*	52,024	8.0%	51,973	8.0%	-0.064	-0.002
Chronic Obstructive Pulmonary Disease*	88,447	13.5%	87,415	13.5%	0.036	0.001
Asthma without COPD*	68,108	10.4%	67,808	10.5%	-0.049	-0.002
Chronic Liver Disease*	62,141	9.5%	60,373	9.3%	0.186	0.006
Chronic Kidney Disease*	138,696	21.2%	138,348	21.3%	-0.139	-0.003
Any Malignant Neoplasm*	158,561	24.2%	156,686	24.2%	0.069	0.002
Hemiplegia	10,469	1.6%	11,818	1.8%	-0.223	-0.017
Neurological/Neurodegenerative Conditions	7,758	1.2%	8,119	1.3%	-0.066	-0.006
Dementia*	16,635	2.5%	16,648	2.6%	-0.025	-0.002
Depression*	125,219	19.1%	124,090	19.1%	0.000	0.000
Schizophrenia	5,885	0.9%	7,441	1.1%	-0.248	-0.025
Rheumatic Disorders*	24,430	3.7%	24,241	3.7%	-0.005	-0.000
Multiple Sclerosis	3,764	0.6%	3,685	0.6%	0.007	0.001
HIV/AIDS	1,606	0.2%	2,559	0.4%	-0.149	-0.026
Coronary Artery Disease*	164,560	25.2%	162,990	25.1%	0.013	0.000
Immunodeficiency*	99,892	15.3%	99,015	15.3%	-0.004	-0.000
Smoking or Nicotine Use	159,902	24.4%	150,430	23.2%	1.239	0.029
Hyperlipidemia*	454,198	69.4%	450,589	69.5%	-0.075	-0.002
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	297,909	45.5%	295,168	45.5%	0.009	0.000
Non-Steroidal Anti-Inflammatory Drugs*	126,237	19.3%	124,815	19.3%	0.044	0.001
Aspirin	736	0.1%	705	0.1%	0.004	0.001
Anti-depressants*	221,664	33.9%	219,486	33.9%	0.028	0.001
Statins*	354,476	54.2%	352,509	54.4%	-0.189	-0.004

Table 1ae. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	43,882	6.7%	43,671	6.7%	-0.028	-0.001
Anti-Diabetic Oral Drugs*	119,221	18.2%	118,264	18.2%	-0.018	-0.000
Antihypertensive Drugs*	319,694	48.9%	316,659	48.9%	0.024	0.000
Anticoagulants*	60,199	9.2%	59,175	9.1%	0.074	0.003
Glucocorticoids*	118,721	18.2%	118,653	18.3%	-0.155	-0.004
Acetaminophen	105,186	16.1%	97,503	15.0%	1.039	0.029
Tumor Necrosis Factor Inhibitors	4,984	0.8%	4,762	0.7%	0.027	0.003
Immunosuppressants*	55,591	8.5%	55,206	8.5%	-0.018	-0.001
Inhaled Corticosteroids*	51,578	7.9%	51,340	7.9%	-0.035	-0.001
COVID-19 Vaccine*	198,546	30.4%	197,824	30.5%	-0.165	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.3	13.6	13.3	13.7	-0.038	-0.003
Mean number of emergency room encounters*	0.3	0.8	0.3	0.8	-0.001	-0.001
Mean number of inpatient hospital encounters	0.2	0.7	0.2	0.6	0.025	0.039
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	-0.002	-0.004
Mean number of other ambulatory encounters*	5.4	11.7	5.5	11.7	-0.036	-0.003
Mean number of filled prescriptions*	16.0	13.9	16.1	13.8	-0.045	-0.003
Mean number of generics dispensed*	8.1	4.6	8.1	4.6	-0.013	-0.003
Mean number of unique drug classes dispensed*	7.7	4.2	7.8	4.2	-0.012	-0.003

Table 1ae. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1af. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	532,816	N/A	528,301	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	81.9	5.4	81.9	5.4	-0.020	-0.004
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	532,816	100.0%	528,301	100.0%	0.000	NaN
Sex*						
Female	342,832	64.3%	341,997	64.7%	-0.392	-0.008
Male	189,984	35.7%	186,304	35.3%	0.392	0.008
Race[4]						
American Indian or Alaska Native	1,857	0.3%	2,094	0.4%	-0.048	-0.008
Asian	13,948	2.6%	14,859	2.8%	-0.195	-0.012
Black or African American	30,929	5.8%	35,145	6.7%	-0.848	-0.035
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	23,013	4.3%	24,827	4.7%	-0.380	-0.018
White	463,069	86.9%	451,376	85.4%	1.470	0.043
Hispanic origin						
Yes	9,081	1.7%	10,004	1.9%	-0.189	-0.014
No	509,803	95.7%	503,474	95.3%	0.380	0.018
Unknown	13,932	2.6%	14,823	2.8%	-0.191	-0.012
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	161,289	30.3%	160,069	30.3%	-0.028	-0.001
Q2	149,665	28.1%	148,156	28.0%	0.046	0.001

Table 1af. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	130,715	24.5%	129,471	24.5%	0.026	0.001
Q4 (Most deprived)	90,103	16.9%	89,550	17.0%	-0.040	-0.001
Unknown	1,044	0.2%	1,056	0.2%	-0.004	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	41,706	7.8%	40,973	7.8%	0.072	0.003
2020 Quarter 3	51,635	9.7%	48,856	9.2%	0.443	0.015
2020 Quarter 4	49,307	9.3%	49,070	9.3%	-0.034	-0.001
2021 Quarter 1	45,464	8.5%	45,326	8.6%	-0.047	-0.002
2021 Quarter 2	48,414	9.1%	48,419	9.2%	-0.079	-0.003
2021 Quarter 3	47,823	9.0%	47,749	9.0%	-0.063	-0.002
2021 Quarter 4	46,724	8.8%	46,583	8.8%	-0.048	-0.002
2022 Quarter 1	42,280	7.9%	42,302	8.0%	-0.072	-0.003
2022 Quarter 2	42,042	7.9%	41,913	7.9%	-0.043	-0.002
2022 Quarter 3	39,841	7.5%	39,747	7.5%	-0.046	-0.002
2022 Quarter 4	38,297	7.2%	38,170	7.2%	-0.037	-0.001
2023 Quarter 1	39,283	7.4%	39,192	7.4%	-0.046	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,6	0.2	0.1	0.2	0.1	-0.000	-0.000
Claims-Based frailty index categories						
<=0.2	370,041	69.5%	369,854	70.0%	-0.558	-0.012
>0.2	162,775	30.5%	158,446	30.0%	0.558	0.012
Combined comorbidity score*,7	3.2	3.5	3.2	3.5	0.018	0.005
Diabetes*	163,108	30.6%	161,181	30.5%	0.103	0.002
Obesity*	94,193	17.7%	93,049	17.6%	0.065	0.002
Hypertension*	441,295	82.8%	437,246	82.8%	0.059	0.002
Hospitalized Stroke/Transient Ischemic Attack	18,174	3.4%	19,555	3.7%	-0.291	-0.016
Coronary Revascularization	11,666	2.2%	11,839	2.2%	-0.052	-0.004
Atrial Fibrillation*	119,873	22.5%	117,721	22.3%	0.215	0.005

Table 1af. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	102,671	19.3%	101,106	19.1%	0.132	0.003
Hospitalized Acute Myocardial Infarction	17,257	3.2%	15,039	2.8%	0.392	0.023
Other Cerebrovascular Disease*	76,854	14.4%	76,731	14.5%	-0.100	-0.003
Chronic Obstructive Pulmonary Disease*	98,624	18.5%	97,157	18.4%	0.119	0.003
Asthma without COPD*	49,914	9.4%	49,778	9.4%	-0.054	-0.002
Chronic Liver Disease*	39,248	7.4%	37,971	7.2%	0.179	0.007
Chronic Kidney Disease*	167,320	31.4%	165,734	31.4%	0.032	0.001
Any Malignant Neoplasm*	173,433	32.6%	171,475	32.5%	0.092	0.002
Hemiplegia	13,792	2.6%	15,658	3.0%	-0.375	-0.023
Neurological/Neurodegenerative Conditions	12,650	2.4%	13,155	2.5%	-0.116	-0.008
Dementia*	61,794	11.6%	61,618	11.7%	-0.066	-0.002
Depression*	105,304	19.8%	104,516	19.8%	-0.020	-0.000
Schizophrenia	3,011	0.6%	3,703	0.7%	-0.136	-0.017
Rheumatic Disorders*	21,524	4.0%	21,348	4.0%	-0.001	-0.000
Multiple Sclerosis	1,753	0.3%	1,761	0.3%	-0.004	-0.001
HIV/AIDS	448	0.1%	684	0.1%	-0.045	-0.014
Coronary Artery Disease*	208,526	39.1%	205,936	39.0%	0.156	0.003
Immunodeficiency*	89,028	16.7%	88,238	16.7%	0.007	0.000
Smoking or Nicotine Use	135,596	25.4%	125,699	23.8%	1.656	0.038
Hyperlipidemia*	396,645	74.4%	393,422	74.5%	-0.026	-0.001
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	270,604	50.8%	268,494	50.8%	-0.035	-0.001
Non-Steroidal Anti-Inflammatory Drugs*	77,364	14.5%	76,445	14.5%	0.050	0.001
Aspirin	987	0.2%	980	0.2%	-0.000	-0.000
Anti-depressants*	176,868	33.2%	175,142	33.2%	0.043	0.001
Statins*	311,543	58.5%	309,094	58.5%	-0.036	-0.001

Table 1af. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	34,260	6.4%	33,971	6.4%	-0.000	-0.000
Anti-Diabetic Oral Drugs*	90,897	17.1%	89,756	17.0%	0.070	0.002
Antihypertensive Drugs*	295,506	55.5%	293,145	55.5%	-0.027	-0.001
Anticoagulants*	101,592	19.1%	99,870	18.9%	0.163	0.004
Glucocorticoids*	93,176	17.5%	92,732	17.6%	-0.066	-0.002
Acetaminophen	78,777	14.8%	71,905	13.6%	1.174	0.034
Tumor Necrosis Factor Inhibitors	2,732	0.5%	2,511	0.5%	0.037	0.005
Immunosuppressants*	52,085	9.8%	51,660	9.8%	-0.003	-0.000
Inhaled Corticosteroids*	45,465	8.5%	45,274	8.6%	-0.037	-0.001
COVID-19 Vaccine*	172,895	32.4%	172,362	32.6%	-0.177	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	13.1	14.2	12.9	-0.007	-0.001
Mean number of emergency room encounters*	0.4	0.9	0.4	0.9	0.001	0.001
Mean number of inpatient hospital encounters	0.4	0.8	0.4	0.7	0.057	0.075
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	-0.001	-0.001
Mean number of other ambulatory encounters*	8.6	14.7	8.6	14.9	0.002	0.000
Mean number of filled prescriptions*	18.6	15.0	18.6	14.8	-0.048	-0.003
Mean number of generics dispensed*	9.0	4.5	9.0	4.5	-0.004	-0.001
Mean number of unique drug classes dispensed*	8.7	4.1	8.7	4.1	-0.004	-0.001

Table 1af. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ag. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	1,380,732	N/A	1,313,259	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)[*]	72.1	11.2	72.0	11.4	0.085	0.007
Age[*]						
18-49 years	68,231	4.9%	66,340	5.1%	-0.110	-0.005
50-64 years	125,632	9.1%	119,262	9.1%	0.018	0.001
65-74 years	654,056	47.4%	625,162	47.6%	-0.234	-0.005
≥ 75 years	532,813	38.6%	502,495	38.3%	0.326	0.007
Sex[*]						
Female	858,242	62.2%	826,986	63.0%	-0.814	-0.017
Male	522,490	37.8%	486,273	37.0%	0.814	0.017
Race[4]						
American Indian or Alaska Native	6,608	0.5%	6,768	0.5%	-0.037	-0.005
Asian	34,071	2.5%	36,655	2.8%	-0.324	-0.020
Black or African American	114,029	8.3%	120,971	9.2%	-0.953	-0.034
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	86,929	6.3%	92,455	7.0%	-0.744	-0.030
White	1,139,095	82.5%	1,056,409	80.4%	2.058	0.053
Hispanic origin						
Yes	34,304	2.5%	37,139	2.8%	-0.344	-0.021
No	1,293,803	93.7%	1,220,804	93.0%	0.744	0.030
Unknown	52,625	3.8%	55,316	4.2%	-0.401	-0.020
ZCTA Social Deprivation Index Score, National Quartile[*,5]						
Q1 (Least deprived)	384,881	27.9%	366,316	27.9%	-0.019	-0.000
Q2	377,729	27.4%	358,374	27.3%	0.068	0.002

Table 1ag. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	352,860	25.6%	334,793	25.5%	0.063	0.001
Q4 (Most deprived)	262,658	19.0%	251,233	19.1%	-0.107	-0.003
Unknown	2,604	0.2%	2,542	0.2%	-0.005	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	112,364	8.1%	106,246	8.1%	0.048	0.002
2020 Quarter 3	138,371	10.0%	127,575	9.7%	0.307	0.010
2020 Quarter 4	134,101	9.7%	128,292	9.8%	-0.057	-0.002
2021 Quarter 1	123,168	8.9%	117,987	9.0%	-0.064	-0.002
2021 Quarter 2	125,148	9.1%	119,027	9.1%	0.000	0.000
2021 Quarter 3	121,556	8.8%	116,193	8.8%	-0.044	-0.002
2021 Quarter 4	119,571	8.7%	114,316	8.7%	-0.045	-0.002
2022 Quarter 1	107,408	7.8%	103,032	7.8%	-0.066	-0.002
2022 Quarter 2	104,126	7.5%	99,142	7.5%	-0.008	-0.000
2022 Quarter 3	99,082	7.2%	94,502	7.2%	-0.020	-0.001
2022 Quarter 4	96,474	7.0%	91,887	7.0%	-0.010	-0.000
2023 Quarter 1	99,363	7.2%	95,059	7.2%	-0.042	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.024
Claims-Based frailty index categories						
<=0.2	1,073,613	77.8%	1,035,486	78.8%	-1.092	-0.026
>0.2	307,119	22.2%	277,773	21.2%	1.092	0.026
Combined comorbidity score*,[7]	2.5	3.3	2.4	3.2	0.126	0.039
Diabetes*	408,037	29.6%	382,848	29.2%	0.400	0.009
Obesity*	327,997	23.8%	308,242	23.5%	0.284	0.007
Hypertension*	1,012,087	73.3%	954,519	72.7%	0.618	0.014
Hospitalized Stroke/Transient Ischemic Attack	32,463	2.4%	31,041	2.4%	-0.013	-0.001
Coronary Revascularization	27,094	2.0%	27,014	2.1%	-0.095	-0.007
Atrial Fibrillation*	195,349	14.1%	175,909	13.4%	0.753	0.022

Table 1ag. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	181,935	13.2%	162,925	12.4%	0.771	0.023
Hospitalized Acute Myocardial Infarction	32,618	2.4%	27,031	2.1%	0.304	0.021
Other Cerebrovascular Disease*	140,957	10.2%	131,921	10.0%	0.164	0.005
Chronic Obstructive Pulmonary Disease*	224,066	16.2%	206,869	15.8%	0.476	0.013
Asthma without COPD*	150,526	10.9%	144,463	11.0%	-0.098	-0.003
Chronic Liver Disease*	125,059	9.1%	111,556	8.5%	0.563	0.020
Chronic Kidney Disease*	357,551	25.9%	326,520	24.9%	1.032	0.024
Any Malignant Neoplasm*	353,487	25.6%	331,100	25.2%	0.389	0.009
Hemiplegia	29,862	2.2%	28,948	2.2%	-0.042	-0.003
Neurological/Neurodegenerative Conditions	21,889	1.6%	21,614	1.6%	-0.061	-0.005
Dementia*	82,101	5.9%	76,045	5.8%	0.156	0.007
Depression*	304,273	22.0%	287,850	21.9%	0.118	0.003
Schizophrenia	25,850	1.9%	28,679	2.2%	-0.312	-0.022
Rheumatic Disorders*	54,823	4.0%	51,878	4.0%	0.020	0.001
Multiple Sclerosis	8,901	0.6%	8,276	0.6%	0.014	0.002
HIV/AIDS	5,206	0.4%	7,348	0.6%	-0.182	-0.027
Coronary Artery Disease*	411,424	29.8%	379,852	28.9%	0.873	0.019
Immunodeficiency*	233,085	16.9%	215,014	16.4%	0.509	0.014
Smoking or Nicotine Use	376,209	27.2%	336,299	25.6%	1.639	0.037
Hyperlipidemia*	949,089	68.7%	900,035	68.5%	0.204	0.004
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	631,957	45.8%	598,038	45.5%	0.231	0.005
Non-Steroidal Anti-Inflammatory Drugs*	253,597	18.4%	242,704	18.5%	-0.114	-0.003
Aspirin	1,918	0.1%	1,742	0.1%	0.006	0.002
Anti-depressants*	499,396	36.2%	474,229	36.1%	0.058	0.001
Statins*	736,619	53.3%	699,441	53.3%	0.090	0.002

Table 1ag. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	101,812	7.4%	94,478	7.2%	0.180	0.007
Anti-Diabetic Oral Drugs*	244,529	17.7%	230,929	17.6%	0.126	0.003
Antihypertensive Drugs*	693,181	50.2%	654,521	49.8%	0.364	0.007
Anticoagulants*	176,101	12.8%	160,402	12.2%	0.540	0.016
Glucocorticoids*	251,055	18.2%	240,645	18.3%	-0.141	-0.004
Acetaminophen	235,099	17.0%	207,357	15.8%	1.238	0.033
Tumor Necrosis Factor Inhibitors	9,870	0.7%	9,121	0.7%	0.020	0.002
Immunosuppressants*	121,573	8.8%	115,243	8.8%	0.030	0.001
Inhaled Corticosteroids*	119,613	8.7%	114,499	8.7%	-0.056	-0.002
COVID-19 Vaccine*	406,709	29.5%	389,237	29.6%	-0.183	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	15.1	14.1	14.6	0.074	0.005
Mean number of emergency room encounters*	0.4	1.1	0.4	1.1	0.000	0.000
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.7	0.039	0.052
Mean number of non-acute institutional encounters*	0.1	0.5	0.1	0.5	0.007	0.014
Mean number of other ambulatory encounters*	7.1	13.8	6.9	13.4	0.225	0.017
Mean number of filled prescriptions*	18.2	15.8	18.2	15.6	0.044	0.003
Mean number of generics dispensed*	8.7	4.8	8.7	4.7	0.039	0.008
Mean number of unique drug classes dispensed*	8.3	4.4	8.3	4.3	0.035	0.008

Table 1ag. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023 (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ah. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	67,974	N/A	65,065	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	40.1	7.1	40.0	7.2	0.070	0.010
Age*						
18-49 years	67,974	100.0%	65,065	100.0%	0.000	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	37,450	55.1%	36,008	55.3%	-0.248	-0.005
Male	30,524	44.9%	29,057	44.7%	0.248	0.005
Race[4]						
American Indian or Alaska Native	876	1.3%	729	1.1%	0.168	0.015
Asian	884	1.3%	930	1.4%	-0.128	-0.011
Black or African American	13,742	20.2%	14,240	21.9%	-1.669	-0.041
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	8,250	12.1%	8,252	12.7%	-0.546	-0.017
White	44,222	65.1%	40,914	62.9%	2.175	0.045
Hispanic origin						
Yes	4,723	6.9%	4,707	7.2%	-0.286	-0.011
No	59,724	87.9%	56,813	87.3%	0.546	0.017
Unknown	3,527	5.2%	3,545	5.4%	-0.260	-0.012
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	9,854	14.5%	9,523	14.6%	-0.139	-0.004
Q2	15,591	22.9%	14,929	22.9%	-0.008	-0.000

Table 1ah. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	21,168	31.1%	20,213	31.1%	0.075	0.002
Q4 (Most deprived)	21,301	31.3%	20,342	31.3%	0.073	0.002
Unknown	60	0.1%	58	0.1%	-0.000	-0.000
Year-Quarter of Exposure*						
2020 Quarter 2	7,212	10.6%	6,839	10.5%	0.099	0.003
2020 Quarter 3	7,955	11.7%	7,405	11.4%	0.322	0.010
2020 Quarter 4	7,276	10.7%	7,045	10.8%	-0.123	-0.004
2021 Quarter 1	6,656	9.8%	6,424	9.9%	-0.081	-0.003
2021 Quarter 2	6,372	9.4%	6,087	9.4%	0.019	0.001
2021 Quarter 3	5,787	8.5%	5,608	8.6%	-0.105	-0.004
2021 Quarter 4	5,220	7.7%	5,025	7.7%	-0.043	-0.002
2022 Quarter 1	4,595	6.8%	4,421	6.8%	-0.035	-0.001
2022 Quarter 2	4,310	6.3%	4,099	6.3%	0.041	0.002
2022 Quarter 3	4,334	6.4%	4,129	6.3%	0.031	0.001
2022 Quarter 4	4,050	6.0%	3,922	6.0%	-0.070	-0.003
2023 Quarter 1	4,207	6.2%	4,062	6.2%	-0.054	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.0	0.2	0.0	0.000	0.010
Claims-Based frailty index categories						
<=0.2	55,217	81.2%	52,877	81.3%	-0.035	-0.001
>0.2	12,757	18.8%	12,188	18.7%	0.035	0.001
Combined comorbidity score*,[7]	2.2	2.6	2.1	2.6	0.058	0.022
Diabetes*	15,802	23.2%	14,830	22.8%	0.455	0.011
Obesity*	25,399	37.4%	24,246	37.3%	0.102	0.002
Hypertension*	30,443	44.8%	28,677	44.1%	0.712	0.014
Hospitalized Stroke/Transient Ischemic Attack	694	1.0%	640	1.0%	0.038	0.004
Coronary Revascularization	886	1.3%	715	1.1%	0.205	0.019
Atrial Fibrillation*	1,616	2.4%	1,552	2.4%	-0.008	-0.001

Table 1ah. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	4,778	7.0%	4,421	6.8%	0.234	0.009
Hospitalized Acute Myocardial Infarction	806	1.2%	633	1.0%	0.212	0.021
Other Cerebrovascular Disease*	2,036	3.0%	1,951	3.0%	-0.004	-0.000
Chronic Obstructive Pulmonary Disease*	5,690	8.4%	5,269	8.1%	0.273	0.010
Asthma without COPD*	13,407	19.7%	13,071	20.1%	-0.365	-0.009
Chronic Liver Disease*	7,027	10.3%	6,297	9.7%	0.659	0.022
Chronic Kidney Disease*	14,112	20.8%	13,027	20.0%	0.740	0.018
Any Malignant Neoplasm*	4,001	5.9%	3,775	5.8%	0.084	0.004
Hemiplegia	1,306	1.9%	1,300	2.0%	-0.076	-0.005
Neurological/Neurodegenerative Conditions	192	0.3%	224	0.3%	-0.061	-0.011
Dementia*	440	0.6%	442	0.7%	-0.032	-0.004
Depression*	26,678	39.2%	25,506	39.2%	0.046	0.001
Schizophrenia	8,359	12.3%	8,713	13.4%	-1.095	-0.033
Rheumatic Disorders*	2,234	3.3%	2,122	3.3%	0.026	0.001
Multiple Sclerosis	1,119	1.6%	1,184	1.8%	-0.173	-0.013
HIV/AIDS	920	1.4%	1,143	1.8%	-0.404	-0.033
Coronary Artery Disease*	6,985	10.3%	6,434	9.9%	0.388	0.013
Immunodeficiency*	13,827	20.3%	12,901	19.8%	0.514	0.013
Smoking or Nicotine Use	26,062	38.3%	23,805	36.6%	1.755	0.036
Hyperlipidemia*	23,713	34.9%	22,538	34.6%	0.246	0.005
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	14,448	21.3%	13,643	21.0%	0.287	0.007
Non-Steroidal Anti-Inflammatory Drugs*	17,154	25.2%	16,718	25.7%	-0.458	-0.011
Aspirin	42	0.1%	45	0.1%	-0.008	-0.003
Anti-depressants*	35,561	52.3%	34,186	52.5%	-0.226	-0.005
Statins*	13,725	20.2%	12,987	20.0%	0.231	0.006

Table 1ah. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	6,240	9.2%	5,749	8.8%	0.344	0.012
Anti-Diabetic Oral Drugs*	8,235	12.1%	7,946	12.2%	-0.098	-0.003
Antihypertensive Drugs*	20,697	30.4%	19,552	30.1%	0.398	0.009
Anticoagulants*	3,315	4.9%	3,180	4.9%	-0.010	-0.000
Glucocorticoids*	12,736	18.7%	12,248	18.8%	-0.088	-0.002
Acetaminophen	15,651	23.0%	14,469	22.2%	0.788	0.019
Tumor Necrosis Factor Inhibitors	767	1.1%	808	1.2%	-0.113	-0.010
Immunosuppressants*	4,056	6.0%	3,921	6.0%	-0.059	-0.002
Inhaled Corticosteroids*	6,005	8.8%	5,818	8.9%	-0.107	-0.004
COVID-19 Vaccine*	10,325	15.2%	9,941	15.3%	-0.089	-0.002
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	16.9	23.8	16.7	23.6	0.190	0.008
Mean number of emergency room encounters*	1.1	2.5	1.1	2.4	-0.013	-0.005
Mean number of inpatient hospital encounters	0.4	1.1	0.4	1.1	0.026	0.025
Mean number of non-acute institutional encounters*	0.1	0.6	0.1	0.6	-0.006	-0.010
Mean number of other ambulatory encounters*	7.6	15.3	7.5	15.2	0.079	0.005
Mean number of filled prescriptions*	22.8	20.2	22.9	19.3	-0.121	-0.006
Mean number of generics dispensed*	9.2	5.5	9.2	5.5	0.010	0.002
Mean number of unique drug classes dispensed*	8.7	5.0	8.7	4.9	0.009	0.002

Table 1ah. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ai. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	125,622	N/A	119,072	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	58.6	4.2	58.6	4.1	-0.013	-0.003
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	125,622	100.0%	119,072	100.0%	0.000	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	73,540	58.5%	70,531	59.2%	-0.694	-0.014
Male	52,082	41.5%	48,541	40.8%	0.694	0.014
Race[4]						
American Indian or Alaska Native	1,471	1.2%	1,423	1.2%	-0.024	-0.002
Asian	2,068	1.6%	2,248	1.9%	-0.242	-0.018
Black or African American	24,116	19.2%	24,911	20.9%	-1.724	-0.043
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	9,004	7.2%	9,643	8.1%	-0.931	-0.035
White	88,963	70.8%	80,847	67.9%	2.921	0.063
Hispanic origin						
Yes	6,917	5.5%	7,303	6.1%	-0.627	-0.027
No	116,618	92.8%	109,429	91.9%	0.931	0.035
Unknown	2,087	1.7%	2,339	2.0%	-0.303	-0.023
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	18,644	14.8%	17,569	14.8%	0.087	0.002
Q2	29,051	23.1%	27,435	23.0%	0.085	0.002

Table 1ai. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	38,467	30.6%	36,553	30.7%	-0.077	-0.002
Q4 (Most deprived)	39,318	31.3%	37,386	31.4%	-0.099	-0.002
Unknown	142	0.1%	130	0.1%	0.004	0.001
Year-Quarter of Exposure*						
2020 Quarter 2	12,970	10.3%	12,162	10.2%	0.110	0.004
2020 Quarter 3	14,580	11.6%	13,394	11.2%	0.357	0.011
2020 Quarter 4	13,848	11.0%	13,170	11.1%	-0.037	-0.001
2021 Quarter 1	11,953	9.5%	11,543	9.7%	-0.179	-0.006
2021 Quarter 2	11,558	9.2%	10,938	9.2%	0.014	0.001
2021 Quarter 3	10,855	8.6%	10,312	8.7%	-0.019	-0.001
2021 Quarter 4	10,182	8.1%	9,612	8.1%	0.033	0.001
2022 Quarter 1	8,665	6.9%	8,362	7.0%	-0.125	-0.005
2022 Quarter 2	8,238	6.6%	7,813	6.6%	-0.004	-0.000
2022 Quarter 3	7,980	6.4%	7,575	6.4%	-0.009	-0.000
2022 Quarter 4	7,335	5.8%	7,032	5.9%	-0.066	-0.003
2023 Quarter 1	7,458	5.9%	7,159	6.0%	-0.076	-0.003
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.026
Claims-Based frailty index categories						
<=0.2	90,584	72.1%	87,014	73.1%	-0.968	-0.022
>0.2	35,038	27.9%	32,058	26.9%	0.968	0.022
Combined comorbidity score*,[7]	2.8	3.3	2.7	3.2	0.131	0.041
Diabetes*	46,514	37.0%	43,588	36.6%	0.420	0.009
Obesity*	43,207	34.4%	40,683	34.2%	0.227	0.005
Hypertension*	86,751	69.1%	81,442	68.4%	0.660	0.014
Hospitalized Stroke/Transient Ischemic Attack	3,015	2.4%	2,785	2.3%	0.061	0.004
Coronary Revascularization	2,861	2.3%	2,596	2.2%	0.098	0.007
Atrial Fibrillation*	8,975	7.1%	8,141	6.8%	0.307	0.012

Table 1ai. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	17,189	13.7%	15,527	13.0%	0.643	0.019
Hospitalized Acute Myocardial Infarction	3,136	2.5%	2,580	2.2%	0.330	0.022
Other Cerebrovascular Disease*	10,017	8.0%	9,225	7.7%	0.226	0.008
Chronic Obstructive Pulmonary Disease*	31,249	24.9%	29,136	24.5%	0.406	0.009
Asthma without COPD*	19,055	15.2%	18,222	15.3%	-0.135	-0.004
Chronic Liver Disease*	16,547	13.2%	14,422	12.1%	1.060	0.032
Chronic Kidney Disease*	37,258	29.7%	34,019	28.6%	1.089	0.024
Any Malignant Neoplasm*	17,466	13.9%	16,317	13.7%	0.200	0.006
Hemiplegia	4,280	3.4%	3,959	3.3%	0.082	0.005
Neurological/Neurodegenerative Conditions	1,287	1.0%	1,310	1.1%	-0.076	-0.007
Dementia*	3,227	2.6%	3,050	2.6%	0.008	0.000
Depression*	46,934	37.4%	44,285	37.2%	0.169	0.003
Schizophrenia	8,564	6.8%	9,511	8.0%	-1.170	-0.045
Rheumatic Disorders*	6,619	5.3%	6,239	5.2%	0.030	0.001
Multiple Sclerosis	2,259	1.8%	2,109	1.8%	0.027	0.002
HIV/AIDS	2,226	1.8%	3,019	2.5%	-0.763	-0.053
Coronary Artery Disease*	31,250	24.9%	28,788	24.2%	0.699	0.016
Immunodeficiency*	30,179	24.0%	27,550	23.1%	0.886	0.021
Smoking or Nicotine Use	54,493	43.4%	49,195	41.3%	2.063	0.042
Hyperlipidemia*	74,424	59.2%	70,515	59.2%	0.024	0.000
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	48,922	38.9%	46,398	39.0%	-0.023	-0.000
Non-Steroidal Anti-Inflammatory Drugs*	32,809	26.1%	31,420	26.4%	-0.270	-0.006
Aspirin	153	0.1%	144	0.1%	0.001	0.000
Anti-depressants*	65,172	51.9%	61,813	51.9%	-0.033	-0.001
Statins*	56,813	45.2%	53,973	45.3%	-0.103	-0.002

Table 1ai. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	17,349	13.8%	16,074	13.5%	0.311	0.009
Anti-Diabetic Oral Drugs*	26,161	20.8%	24,939	20.9%	-0.119	-0.003
Antihypertensive Drugs*	57,159	45.5%	53,923	45.3%	0.215	0.004
Anticoagulants*	10,967	8.7%	10,176	8.5%	0.184	0.007
Glucocorticoids*	26,384	21.0%	25,260	21.2%	-0.212	-0.005
Acetaminophen	35,381	28.2%	30,767	25.8%	2.326	0.052
Tumor Necrosis Factor Inhibitors	1,387	1.1%	1,345	1.1%	-0.025	-0.002
Immunosuppressants*	9,813	7.8%	9,367	7.9%	-0.055	-0.002
Inhaled Corticosteroids*	16,549	13.2%	15,950	13.4%	-0.221	-0.007
COVID-19 Vaccine*	24,923	19.8%	23,836	20.0%	-0.179	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	17.0	21.7	16.7	21.4	0.282	0.013
Mean number of emergency room encounters*	0.7	1.8	0.7	1.7	-0.007	-0.004
Mean number of inpatient hospital encounters	0.4	1.0	0.4	0.9	0.046	0.048
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.007	0.012
Mean number of other ambulatory encounters*	9.1	17.5	8.8	16.9	0.309	0.018
Mean number of filled prescriptions*	25.9	21.0	26.0	20.7	-0.136	-0.007
Mean number of generics dispensed*	10.5	5.5	10.4	5.4	0.019	0.003
Mean number of unique drug classes dispensed*	9.8	4.9	9.8	4.9	0.014	0.003

Table 1ai. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1aj. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	654,046	N/A	628,836	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	70.1	2.7	70.1	2.7	-0.002	-0.001
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	654,046	100.0%	628,836	100.0%	0.000	NaN
≥ 75 years	0	0.0%	0	0.0%	NaN	NaN
Sex*						
Female	404,315	61.8%	393,849	62.6%	-0.814	-0.017
Male	249,731	38.2%	234,987	37.4%	0.814	0.017
Race[4]						
American Indian or Alaska Native	2,398	0.4%	2,523	0.4%	-0.035	-0.006
Asian	17,164	2.6%	19,010	3.0%	-0.399	-0.024
Black or African American	45,169	6.9%	48,988	7.8%	-0.884	-0.034
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	46,627	7.1%	49,820	7.9%	-0.794	-0.030
White	542,688	83.0%	508,495	80.9%	2.111	0.055
Hispanic origin						
Yes	13,559	2.1%	15,223	2.4%	-0.348	-0.023
No	607,419	92.9%	579,016	92.1%	0.794	0.030
Unknown	33,068	5.1%	34,598	5.5%	-0.446	-0.020
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	195,061	29.8%	187,920	29.9%	-0.060	-0.001
Q2	183,355	28.0%	175,835	28.0%	0.072	0.002

Table 1aj. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	162,430	24.8%	155,632	24.7%	0.085	0.002
Q4 (Most deprived)	111,842	17.1%	108,115	17.2%	-0.093	-0.002
Unknown	1,358	0.2%	1,335	0.2%	-0.005	-0.001
Year-Quarter of Exposure*						
2020 Quarter 2	50,433	7.7%	48,270	7.7%	0.035	0.001
2020 Quarter 3	64,134	9.8%	59,397	9.4%	0.360	0.012
2020 Quarter 4	63,649	9.7%	61,590	9.8%	-0.063	-0.002
2021 Quarter 1	59,080	9.0%	57,178	9.1%	-0.060	-0.002
2021 Quarter 2	58,783	9.0%	56,475	9.0%	0.007	0.000
2021 Quarter 3	57,068	8.7%	55,226	8.8%	-0.057	-0.002
2021 Quarter 4	57,430	8.8%	55,525	8.8%	-0.049	-0.002
2022 Quarter 1	51,851	7.9%	50,315	8.0%	-0.074	-0.003
2022 Quarter 2	49,520	7.6%	47,681	7.6%	-0.011	-0.000
2022 Quarter 3	46,918	7.2%	45,214	7.2%	-0.017	-0.001
2022 Quarter 4	46,780	7.2%	45,101	7.2%	-0.020	-0.001
2023 Quarter 1	48,400	7.4%	46,864	7.5%	-0.052	-0.002
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.001	0.016
Claims-Based frailty index categories						
<=0.2	557,668	85.3%	540,269	85.9%	-0.651	-0.019
>0.2	96,378	14.7%	88,567	14.1%	0.651	0.019
Combined comorbidity score*,[7]	1.9	3.0	1.8	2.9	0.083	0.028
Diabetes*	182,462	27.9%	173,714	27.6%	0.273	0.006
Obesity*	165,095	25.2%	156,833	24.9%	0.302	0.007
Hypertension*	453,376	69.3%	433,036	68.9%	0.456	0.010
Hospitalized Stroke/Transient Ischemic Attack	10,569	1.6%	10,105	1.6%	0.009	0.001
Coronary Revascularization	11,671	1.8%	12,306	2.0%	-0.173	-0.013
Atrial Fibrillation*	64,854	9.9%	59,333	9.4%	0.480	0.016

Table 1aj. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	57,198	8.7%	52,209	8.3%	0.443	0.016
Hospitalized Acute Myocardial Infarction	11,376	1.7%	9,928	1.6%	0.161	0.013
Other Cerebrovascular Disease*	52,021	8.0%	49,564	7.9%	0.072	0.003
Chronic Obstructive Pulmonary Disease*	88,436	13.5%	83,018	13.2%	0.319	0.009
Asthma without COPD*	68,102	10.4%	65,962	10.5%	-0.077	-0.003
Chronic Liver Disease*	62,135	9.5%	56,464	9.0%	0.521	0.018
Chronic Kidney Disease*	138,676	21.2%	129,465	20.6%	0.615	0.015
Any Malignant Neoplasm*	158,554	24.2%	150,739	24.0%	0.271	0.006
Hemiplegia	10,469	1.6%	10,408	1.7%	-0.054	-0.004
Neurological/Neurodegenerative Conditions	7,759	1.2%	7,827	1.2%	-0.058	-0.005
Dementia*	16,635	2.5%	15,775	2.5%	0.035	0.002
Depression*	125,217	19.1%	119,609	19.0%	0.124	0.003
Schizophrenia	5,883	0.9%	6,600	1.0%	-0.150	-0.015
Rheumatic Disorders*	24,428	3.7%	23,463	3.7%	0.004	0.000
Multiple Sclerosis	3,764	0.6%	3,519	0.6%	0.016	0.002
HIV/AIDS	1,605	0.2%	2,469	0.4%	-0.147	-0.026
Coronary Artery Disease*	164,548	25.2%	154,648	24.6%	0.566	0.013
Immunodeficiency*	99,883	15.3%	93,615	14.9%	0.385	0.011
Smoking or Nicotine Use	159,882	24.4%	145,807	23.2%	1.258	0.030
Hyperlipidemia*	454,180	69.4%	436,350	69.4%	0.052	0.001
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	297,885	45.5%	285,280	45.4%	0.179	0.004
Non-Steroidal Anti-Inflammatory Drugs*	126,229	19.3%	121,801	19.4%	-0.070	-0.002
Aspirin	736	0.1%	665	0.1%	0.007	0.002
Anti-depressants*	221,660	33.9%	212,565	33.8%	0.088	0.002
Statins*	354,461	54.2%	341,071	54.2%	-0.043	-0.001

Table 1aj. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	43,880	6.7%	41,458	6.6%	0.116	0.005
Anti-Diabetic Oral Drugs*	119,211	18.2%	113,894	18.1%	0.115	0.003
Antihypertensive Drugs*	319,669	48.9%	305,642	48.6%	0.271	0.005
Anticoagulants*	60,193	9.2%	55,464	8.8%	0.383	0.013
Glucocorticoids*	118,714	18.2%	115,399	18.4%	-0.200	-0.005
Acetaminophen	105,179	16.1%	99,734	15.9%	0.221	0.006
Tumor Necrosis Factor Inhibitors	4,984	0.8%	4,654	0.7%	0.022	0.003
Immunosuppressants*	55,586	8.5%	53,429	8.5%	0.002	0.000
Inhaled Corticosteroids*	51,576	7.9%	49,830	7.9%	-0.039	-0.001
COVID-19 Vaccine*	198,539	30.4%	192,074	30.5%	-0.189	-0.004
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	13.3	13.6	13.3	13.3	0.039	0.003
Mean number of emergency room encounters*	0.3	0.8	0.3	0.8	0.001	0.001
Mean number of inpatient hospital encounters	0.2	0.7	0.2	0.6	0.025	0.038
Mean number of non-acute institutional encounters*	0.1	0.4	0.1	0.4	0.003	0.007
Mean number of other ambulatory encounters*	5.4	11.7	5.3	11.4	0.120	0.010
Mean number of filled prescriptions*	16.0	14.0	16.0	13.8	0.047	0.003
Mean number of generics dispensed*	8.1	4.6	8.1	4.6	0.026	0.006
Mean number of unique drug classes dispensed*	7.7	4.2	7.7	4.2	0.024	0.006

Table 1aj. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 1ak. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Patient Characteristics[1,2]	Number/Mean	Percent/ Standard Deviation[3]	Number/Mean	Percent/ Standard Deviation[3]	Absolute Difference	Standardized Difference
Weighted patients	532,811	N/A	499,422	N/A	N/A	N/A
Demographic Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Age (years)*	81.9	5.4	81.9	5.4	0.038	0.007
Age*						
18-49 years	0	0.0%	0	0.0%	NaN	NaN
50-64 years	0	0.0%	0	0.0%	NaN	NaN
65-74 years	0	0.0%	0	0.0%	NaN	NaN
≥ 75 years	532,811	100.0%	499,422	100.0%	0.000	NaN
Sex*						
Female	342,828	64.3%	325,949	65.3%	-0.922	-0.019
Male	189,983	35.7%	173,473	34.7%	0.922	0.019
Race[4]						
American Indian or Alaska Native	1,857	0.3%	2,075	0.4%	-0.067	-0.011
Asian	13,948	2.6%	14,235	2.9%	-0.232	-0.014
Black or African American	30,927	5.8%	32,912	6.6%	-0.785	-0.033
Multi-racial	0	0.0%	0	0.0%	NaN	NaN
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	NaN	NaN
Unknown	23,013	4.3%	23,835	4.8%	-0.453	-0.022
White	463,066	86.9%	426,366	85.4%	1.538	0.045
Hispanic origin						
Yes	9,081	1.7%	9,553	1.9%	-0.208	-0.016
No	509,798	95.7%	475,587	95.2%	0.453	0.022
Unknown	13,932	2.6%	14,282	2.9%	-0.245	-0.015
ZCTA Social Deprivation Index Score, National Quartile*,5						
Q1 (Least deprived)	161,286	30.3%	151,296	30.3%	-0.023	-0.001
Q2	149,664	28.1%	140,061	28.0%	0.045	0.001

Table 1ak. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Q3	130,716	24.5%	122,204	24.5%	0.064	0.001
Q4 (Most deprived)	90,101	16.9%	84,837	17.0%	-0.077	-0.002
Unknown	1,044	0.2%	1,024	0.2%	-0.009	-0.002
Year-Quarter of Exposure*						
2020 Quarter 2	41,703	7.8%	38,719	7.8%	0.074	0.003
2020 Quarter 3	51,639	9.7%	47,039	9.4%	0.273	0.009
2020 Quarter 4	49,307	9.3%	46,523	9.3%	-0.061	-0.002
2021 Quarter 1	45,465	8.5%	42,903	8.6%	-0.058	-0.002
2021 Quarter 2	48,414	9.1%	45,586	9.1%	-0.041	-0.001
2021 Quarter 3	47,821	9.0%	44,952	9.0%	-0.026	-0.001
2021 Quarter 4	46,722	8.8%	44,030	8.8%	-0.047	-0.002
2022 Quarter 1	42,279	7.9%	39,953	8.0%	-0.065	-0.002
2022 Quarter 2	42,043	7.9%	39,398	7.9%	0.002	0.000
2022 Quarter 3	39,840	7.5%	37,493	7.5%	-0.030	-0.001
2022 Quarter 4	38,297	7.2%	35,927	7.2%	-0.006	-0.000
2023 Quarter 1	39,281	7.4%	36,898	7.4%	-0.016	-0.001
Health Characteristics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Claims-Based frailty index*,[6]	0.2	0.1	0.2	0.1	0.002	0.031
Claims-Based frailty index categories						
<=0.2	370,038	69.5%	355,062	71.1%	-1.644	-0.036
>0.2	162,773	30.5%	144,360	28.9%	1.644	0.036
Combined comorbidity score*,[7]	3.2	3.5	3.0	3.4	0.179	0.051
Diabetes*	163,110	30.6%	150,256	30.1%	0.527	0.011
Obesity*	94,191	17.7%	86,340	17.3%	0.390	0.010
Hypertension*	441,292	82.8%	410,588	82.2%	0.611	0.016
Hospitalized Stroke/Transient Ischemic Attack	18,173	3.4%	17,778	3.6%	-0.149	-0.008
Coronary Revascularization	11,662	2.2%	11,031	2.2%	-0.020	-0.001
Atrial Fibrillation*	119,876	22.5%	106,206	21.3%	1.233	0.030

Table 1ak. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Congestive Heart Failure*	102,676	19.3%	90,135	18.0%	1.223	0.031
Hospitalized Acute Myocardial Infarction	17,259	3.2%	13,911	2.8%	0.454	0.027
Other Cerebrovascular Disease*	76,857	14.4%	70,779	14.2%	0.253	0.007
Chronic Obstructive Pulmonary Disease*	98,625	18.5%	89,294	17.9%	0.631	0.016
Asthma without COPD*	49,914	9.4%	47,053	9.4%	-0.054	-0.002
Chronic Liver Disease*	39,256	7.4%	34,279	6.9%	0.504	0.020
Chronic Kidney Disease*	167,318	31.4%	149,385	29.9%	1.491	0.032
Any Malignant Neoplasm*	173,433	32.6%	160,031	32.0%	0.507	0.011
Hemiplegia	13,793	2.6%	13,994	2.8%	-0.213	-0.013
Neurological/Neurodegenerative Conditions	12,650	2.4%	12,203	2.4%	-0.069	-0.005
Dementia*	61,794	11.6%	56,413	11.3%	0.302	0.009
Depression*	105,307	19.8%	97,938	19.6%	0.154	0.004
Schizophrenia	3,011	0.6%	3,163	0.6%	-0.068	-0.009
Rheumatic Disorders*	21,525	4.0%	19,939	4.0%	0.047	0.002
Multiple Sclerosis	1,753	0.3%	1,601	0.3%	0.008	0.001
HIV/AIDS	448	0.1%	636	0.1%	-0.043	-0.013
Coronary Artery Disease*	208,526	39.1%	189,177	37.9%	1.258	0.026
Immunodeficiency*	89,028	16.7%	80,630	16.1%	0.564	0.015
Smoking or Nicotine Use	135,594	25.4%	118,768	23.8%	1.668	0.039
Hyperlipidemia*	396,639	74.4%	369,946	74.1%	0.368	0.008
Medical Product Use	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Angiotensin Converting Enzyme Inhibitors/Angiotensin Receptor Blockers*	270,605	50.8%	252,784	50.6%	0.173	0.003
Non-Steroidal Anti-Inflammatory Drugs*	77,363	14.5%	72,751	14.6%	-0.047	-0.001
Aspirin	987	0.2%	908	0.2%	0.003	0.001
Anti-depressants*	176,868	33.2%	165,386	33.1%	0.080	0.002
Statins*	311,538	58.5%	290,930	58.3%	0.217	0.004

Table 1ak. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product				Covariate Balance	
	Proton Pump Inhibitor New Users		Famotidine New Users			
Insulin*	34,258	6.4%	31,202	6.2%	0.182	0.007
Anti-Diabetic Oral Drugs*	90,899	17.1%	84,157	16.9%	0.209	0.006
Antihypertensive Drugs*	295,508	55.5%	275,363	55.1%	0.326	0.007
Anticoagulants*	101,594	19.1%	91,079	18.2%	0.831	0.021
Glucocorticoids*	93,172	17.5%	87,723	17.6%	-0.078	-0.002
Acetaminophen	78,776	14.8%	68,058	13.6%	1.158	0.033
Tumor Necrosis Factor Inhibitors	2,732	0.5%	2,412	0.5%	0.030	0.004
Immunosuppressants*	52,090	9.8%	48,540	9.7%	0.057	0.002
Inhaled Corticosteroids*	45,464	8.5%	42,845	8.6%	-0.046	-0.002
COVID-19 Vaccine*	172,897	32.4%	163,217	32.7%	-0.231	-0.005
Health Service Utilization Intensity Metrics	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Number/Mean**	**Percent/ Standard Deviation[3]**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters*	14.2	13.1	14.1	12.7	0.099	0.008
Mean number of emergency room encounters*	0.4	0.9	0.4	0.8	0.010	0.011
Mean number of inpatient hospital encounters	0.4	0.8	0.4	0.7	0.056	0.073
Mean number of non-acute institutional encounters*	0.2	0.6	0.2	0.6	0.013	0.024
Mean number of other ambulatory encounters*	8.6	14.7	8.3	14.3	0.361	0.025
Mean number of filled prescriptions*	18.6	15.1	18.5	14.9	0.076	0.005
Mean number of generics dispensed*	9.0	4.5	9.0	4.5	0.052	0.012
Mean number of unique drug classes dispensed*	8.7	4.1	8.6	4.1	0.048	0.012

Table 1ak. Weighted Characteristics of Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation (Inverse Probability of Treatment Weighted, Trimmed, Weight: Average Treatment Effect in the Treated (ATT), Truncation: 1%), in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years (Outcome: Severe COVID-19 Outcome or Death)

	Medical Product		Covariate Balance
	Proton Pump Inhibitor New Users	Famotidine New Users	

[*]Covariate included in the propensity score logistic regression model.

[1]Covariates in blue show (if displayed) a standardized difference greater than 0.1.

[2]Weighted patient characteristics tables facilitate the assessment of covariate balance after inverse probability weighting and should not be interpreted as a description of the unweighted population. Treated patients are assigned a weight of 1. Reference patients are weighted by their propensity score (PS) divided by 1 minus their PS.

[3]Value represents standard deviation where no % follows the value.

[4]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[5]The Social Deprivation Index score is a composite measure of zip code tabulation area (ZCTA)-level deprivation constructed from seven demographic and household characteristics collected in the American Community Survey, where higher values indication greater levels of deprivation. For this project, each patient's most recent geographic information is used. For more information, see Butler DC et al. Health Services Research. 2013;48(2pt1):539-559. doi:10.1111/j.1475-6773.2012.01449.x.

[6]Kim DH, Schneeweiss S, Glynn RJ, Lipsitz LA, Rockwood K, Avorn J. Measuring frailty in Medicare data: development and validation of a claims-based frailty index. J Gerontol A Biol Sci Med Sci. 2018;73(7)980-987.

[7]Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759. Sun JW, Rogers JR, Her Q, Welch EC, Panozzo CA, Toh S, Gagne JJ. Adaptation and validation of the combined comorbidity score for ICD-10-CM. Med Care. 2017;55(12):1046-1051.

N/A: Not Applicable

Table 2a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,629	404,537.44	107.02	0.29	13,756	34.00	9.96	0.95 (0.91, 0.99)	N/A
Famotidine New Users	1,380,599	351,131.18	92.89	0.25	12,704	36.18	9.20		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 23.5%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 2b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,629	404,537.44	107.02	0.29	13,756	34.00	9.96	0.95 (0.91, 0.99)	N/A
Famotidine New Users	1,380,599	351,131.18	92.89	0.25	12,704	36.18	9.20		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	31.99	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,189	18,382.61	98.47	0.27	588	31.99	8.62	1.05 (0.86, 1.28)	N/A
Famotidine New Users	68,226	15,618.53	83.61	0.23	486	31.09	7.12		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.02	11.84	N/A	N/A
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		

Table 2b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	125,605	35,389.15	102.91	0.28	1,487	42.02	11.84	0.93 (0.82, 1.05)	N/A
Famotidine New Users	125,535	29,907.94	87.02	0.24	1,372	45.87	10.93		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	654,039	196,779.04	109.89	0.30	4,534	23.04	6.93	0.95 (0.88, 1.02)	N/A
Famotidine New Users	654,054	169,994.45	94.93	0.26	4,212	24.78	6.44		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.40	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	532,711	153,962.82	105.56	0.29	7,144	46.40	13.41	0.96 (0.91, 1.02)	N/A
Famotidine New Users	532,761	135,554.66	92.93	0.25	6,599	48.68	12.39		

Table 2b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 3a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,629	404,537.44	107.02	0.29	13,756	34.00	9.96	0.95 (0.92, 0.99)	N/A
Famotidine New Users	1,368,549	348,145.43	92.92	0.25	12,568	36.10	9.18		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 18.3%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 3b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,629	404,537.44	107.02	0.29	13,756	34.00	9.96	0.95 (0.92, 0.99)	N/A
Famotidine New Users	1,368,549	348,145.43	92.92	0.25	12,568	36.10	9.18		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	31.99	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,189	18,382.61	98.47	0.27	588	31.99	8.62	1.05 (0.86, 1.28)	N/A
Famotidine New Users	67,561	15,470.18	83.64	0.23	482	31.17	7.14		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.02	11.84	N/A	N/A

Table 3b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50	N/A	N/A
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	125,605	35,389.15	102.91	0.28	1,487	42.02	11.84	0.93 (0.82, 1.06)	N/A
Famotidine New Users	124,501	29,682.15	87.08	0.24	1,357	45.72	10.90		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	654,039	196,779.04	109.89	0.30	4,534	23.04	6.93	0.95 (0.88, 1.02)	N/A
Famotidine New Users	648,145	168,467.04	94.94	0.26	4,164	24.71	6.42		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.40	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	532,711	153,962.82	105.56	0.29	7,144	46.40	13.41	0.97 (0.91, 1.02)	N/A
Famotidine New Users	528,200	134,452.76	92.97	0.25	6,522	48.51	12.35		

Table 3b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 4a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,595	404,526.53	107.02	0.29	13,756	34.01	9.96	0.93 (0.88, 0.98)	N/A
Famotidine New Users	1,380,787	348,382.70	92.16	0.25	12,908	37.05	9.35		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (95% CI 0%) (0.0%, 72.2%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 4b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,595	404,526.53	107.02	0.29	13,756	34.01	9.96	0.93 (0.88, 0.98)	N/A
Famotidine New Users	1,380,787	348,382.70	92.16	0.25	12,908	37.05	9.35		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.51	0.27	*****	31.94	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.52	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,136	18,376.18	98.51	0.27	587	31.94	8.62	0.90 (0.65, 1.23)	N/A
Famotidine New Users	68,227	15,397.58	82.43	0.23	561	36.41	8.22		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.85	N/A	N/A
Famotidine New Users	*****	*****	87.48	0.24	*****	48.02	11.50		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	125,613	35,392.91	102.91	0.28	1,488	42.04	11.85	0.91 (0.78, 1.06)	N/A
Famotidine New Users	125,710	29,500.32	85.71	0.23	1,385	46.94	11.02		

Table 4b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.03	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	653,964	196,759.40	109.89	0.30	4,532	23.03	6.93	0.96 (0.88, 1.04)	N/A
Famotidine New Users	653,462	168,768.19	94.33	0.26	4,127	24.46	6.32		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	532,676	153,950.93	105.56	0.29	7,145	46.41	13.41	0.92 (0.84, 1.00)	N/A
Famotidine New Users	532,613	134,475.32	92.22	0.25	6,885	51.20	12.93		

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 5a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,595	404,526.53	107.02	0.29	13,756	34.01	9.96	0.99 (0.95, 1.03)	N/A
Famotidine New Users	1,310,162	332,855.03	92.79	0.25	11,583	34.80	8.84		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 59.8%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 5b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,595	404,526.53	107.02	0.29	13,756	34.01	9.96	0.99 (0.95, 1.03)	N/A
Famotidine New Users	1,310,162	332,855.03	92.79	0.25	11,583	34.80	8.84		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.51	0.27	*****	31.94	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.52	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,136	18,376.18	98.51	0.27	587	31.94	8.62	1.12 (0.90, 1.38)	N/A
Famotidine New Users	65,044	14,770.74	82.94	0.23	431	29.18	6.63		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.85	N/A	N/A
Famotidine New Users	*****	*****	87.48	0.24	*****	48.02	11.50		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	125,613	35,392.91	102.91	0.28	1,488	42.04	11.85	0.97 (0.85, 1.11)	N/A
Famotidine New Users	119,151	28,272.02	86.67	0.24	1,242	43.91	10.42		

Table 5b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.03	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	653,964	196,759.40	109.89	0.30	4,532	23.03	6.93	0.98 (0.91, 1.06)	N/A
Famotidine New Users	627,277	162,942.10	94.88	0.26	3,878	23.80	6.18		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	532,676	153,950.93	105.56	0.29	7,145	46.41	13.41	1.00 (0.94, 1.06)	N/A
Famotidine New Users	499,808	127,107.83	92.89	0.25	5,979	47.04	11.96		

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 6a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Propensity Score Stratum Adjusted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Propensity Score Stratum Adjusted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,595	404,526.53	107.02	0.29	13,756	34.01	9.96	0.94 (0.89, 0.99)	N/A
Famotidine New Users	301,012	75,993.51	92.21	0.25	2,788	36.69	9.26		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (0.0%, 73.5%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 6b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Propensity Score Stratum Adjusted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Propensity Score Stratum Adjusted Analysis; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,595	404,526.53	107.02	0.29	13,756	34.01	9.96	0.94 (0.89, 0.99)	N/A
Famotidine New Users	301,012	75,993.51	92.21	0.25	2,788	36.69	9.26		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Propensity Score Stratum Adjusted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.51	0.27	*****	31.94	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.52	0.23	*****	33.54	7.67		
Propensity Score Stratum Adjusted Analysis; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,136	18,376.18	98.51	0.27	587	31.94	8.62	0.98 (0.75, 1.27)	N/A
Famotidine New Users	15,906	3,593.34	82.51	0.23	119	33.21	7.50		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Propensity Score Stratum Adjusted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.85	N/A	N/A
Famotidine New Users	*****	*****	87.48	0.24	*****	48.02	11.50		
Propensity Score Stratum Adjusted Analysis; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	125,613	35,392.91	102.91	0.28	1,488	42.04	11.85	0.91 (0.78, 1.06)	N/A
Famotidine New Users	26,346	6,187.64	85.78	0.23	290	46.83	11.00		

Table 6b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Propensity Score Stratum Adjusted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.03	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Propensity Score Stratum Adjusted Analysis; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	653,964	196,759.40	109.89	0.30	4,532	23.03	6.93	0.94 (0.87, 1.02)	N/A
Famotidine New Users	133,768	34,574.13	94.40	0.26	857	24.79	6.41		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Propensity Score Stratum Adjusted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Propensity Score Stratum Adjusted Analysis; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	532,676	153,950.93	105.56	0.29	7,145	46.41	13.41	0.93 (0.86, 0.99)	N/A
Famotidine New Users	124,983	31,556.04	92.22	0.25	1,598	50.64	12.79		

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 7a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Overlap Weighted Analysis; Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Overlap Weighted Analysis[2]									
Proton Pump Inhibitor New Users	242,430	70,952.71	106.90	0.29	2,436	34.33	10.05	0.95 (0.91, 0.99)	N/A
Famotidine New Users	242,429	61,655.79	92.89	0.25	2,264	36.72	9.34		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 59.2%).

[2]All values in this section are weighted.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 7b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Overlap Weighted Analysis; Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Overlap Weighted Analysis [1]									
Proton Pump Inhibitor New Users	242,430	70,952.71	106.90	0.29	2,436	34.33	10.05	0.95 (0.91, 0.99)	N/A
Famotidine New Users	242,429	61,655.79	92.89	0.25	2,264	36.72	9.34		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Overlap Weighted Analysis; Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	N/A	N/A
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Overlap Weighted Analysis [1]									
Proton Pump Inhibitor New Users	12,545	3,387.02	98.61	0.27	116	34.23	9.24	1.10 (0.90, 1.34)	N/A
Famotidine New Users	12,545	2,864.39	83.40	0.23	91	31.83	7.27		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Overlap Weighted Analysis; Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	N/A	N/A
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Overlap Weighted Analysis [1]									
Proton Pump Inhibitor New Users	21,294	6,034.59	103.51	0.28	263	43.57	12.35	0.95 (0.84, 1.08)	N/A
Famotidine New Users	21,294	5,091.56	87.33	0.24	237	46.56	11.13		

Table 7b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Overlap Weighted Analysis; Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Overlap Weighted Analysis [1]									
Proton Pump Inhibitor New Users	109,345	32,827.04	109.65	0.30	770	23.45	7.04	0.95 (0.88, 1.02)	N/A
Famotidine New Users	109,344	28,390.59	94.83	0.26	716	25.22	6.55		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Overlap Weighted Analysis; Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Overlap Weighted Analysis [1]									
Proton Pump Inhibitor New Users	98,913	28,633.61	105.73	0.29	1,288	44.99	13.02	0.94 (0.89, 1.00)	N/A
Famotidine New Users	98,912	25,222.75	93.14	0.26	1,214	48.15	12.28		

[1]All values in this section are weighted.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 8a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATE, Trimmed[3]									
Proton Pump Inhibitor New Users	1,681,828	492,525.68	106.96	0.29	16,866	34.24	10.03	0.93 (0.89, 0.98)	N/A
Famotidine New Users	1,681,799	424,935.41	92.29	0.25	15,788	37.15	9.39		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 72.3%).

[2]All values in this section are weighted.

[3]ATE = Average Treatment Effect.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 8b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	1,681,828	492,525.68	106.96	0.29	16,866	34.24	10.03	0.93 (0.89, 0.98)	N/A
Famotidine New Users	1,681,799	424,935.41	92.29	0.25	15,788	37.15	9.39		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.51	0.27	*****	31.94	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.52	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	84,054	22,667.59	98.50	0.27	743	32.79	8.84	0.93 (0.70, 1.24)	N/A
Famotidine New Users	84,133	19,034.69	82.64	0.23	683	35.86	8.11		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.85	N/A	N/A
Famotidine New Users	*****	*****	87.48	0.24	*****	48.02	11.50		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	151,969	42,855.95	103.00	0.28	1,826	42.60	12.01	0.92 (0.80, 1.06)	N/A
Famotidine New Users	152,056	35,810.62	86.02	0.24	1,688	47.13	11.10		

Table 8b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.03	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	787,806	236,871.47	109.82	0.30	5,504	23.23	6.99	0.96 (0.89, 1.03)	N/A
Famotidine New Users	787,230	203,488.41	94.41	0.26	5,027	24.71	6.39		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	657,723	190,109.39	105.57	0.29	8,794	46.26	13.37	0.92 (0.86, 0.99)	N/A
Famotidine New Users	657,596	166,359.05	92.40	0.25	8,440	50.73	12.83		

[1]All values in this section are weighted.

[2]ATE = Average Treatment Effect.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 9a. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATE, Trimmed[3]									
Proton Pump Inhibitor New Users	1,681,938	492,559.84	106.96	0.29	16,869	34.25	10.03	0.98 (0.94, 1.02)	N/A
Famotidine New Users	1,611,156	409,404.59	92.81	0.25	14,461	35.32	8.98		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 63.2%).

[2]All values in this section are weighted.

[3]ATE = Average Treatment Effect.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 9b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, 1% Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.00	9.96	0.91 (0.88, 0.95)	<0.001
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.02	0.29	*****	34.01	9.96	N/A	N/A
Famotidine New Users	*****	*****	92.89	0.25	*****	37.62	9.57		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	1,681,938	492,559.84	106.96	0.29	16,869	34.25	10.03	0.98 (0.94, 1.02)	N/A
Famotidine New Users	1,611,156	409,404.59	92.81	0.25	14,461	35.32	8.98		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, 1% Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.47	0.27	*****	32.02	8.63	0.97 (0.80, 1.18)	0.757
Famotidine New Users	*****	*****	83.51	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.51	0.27	*****	31.94	8.62	N/A	N/A
Famotidine New Users	*****	*****	83.52	0.23	*****	33.54	7.67		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	84,064	22,669.78	98.50	0.27	744	32.80	8.85	1.11 (0.91, 1.37)	N/A
Famotidine New Users	80,932	18,403.93	83.06	0.23	553	30.03	6.83		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, 1% Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.84	0.89 (0.78, 1.00)	0.057
Famotidine New Users	*****	*****	87.49	0.24	*****	48.01	11.50		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	102.91	0.28	*****	42.04	11.85	N/A	N/A
Famotidine New Users	*****	*****	87.48	0.24	*****	48.02	11.50		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	151,981	42,858.76	103.00	0.28	1,826	42.60	12.01	0.97 (0.85, 1.10)	N/A
Famotidine New Users	145,489	34,580.86	86.82	0.24	1,544	44.65	10.61		

Table 9b. Effect Estimates for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, 1% Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.04	6.93	0.90 (0.84, 0.97)	0.005
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	109.89	0.30	*****	23.03	6.93	N/A	N/A
Famotidine New Users	*****	*****	94.80	0.26	*****	25.92	6.73		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	787,895	236,895.59	109.82	0.30	5,505	23.24	6.99	0.98 (0.91, 1.05)	N/A
Famotidine New Users	761,034	197,659.56	94.86	0.26	4,777	24.17	6.28		
COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, 1% Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	0.96 (0.91, 1.01)	0.145
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.56	0.29	*****	46.41	13.41	N/A	N/A
Famotidine New Users	*****	*****	93.18	0.26	*****	48.77	12.44		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATE, Trimmed[2]									
Proton Pump Inhibitor New Users	657,762	190,120.25	105.57	0.29	8,795	46.26	13.37	0.99 (0.93, 1.04)	N/A
Famotidine New Users	624,784	158,990.20	92.95	0.25	7,534	47.39	12.06		

[1]All values in this section are weighted.

[2]ATE = Average Treatment Effect.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 10a. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,787	405,611.22	107.29	0.29	6,638	16.37	4.81	0.96 (0.90, 1.01)	N/A
Famotidine New Users	1,380,757	352,003.30	93.11	0.25	6,109	17.35	4.42		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 73.8%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 10b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,787	405,611.22	107.29	0.29	6,638	16.37	4.81	0.96 (0.90, 1.01)	N/A
Famotidine New Users	1,380,757	352,003.30	93.11	0.25	6,109	17.35	4.42		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.75	0.27	*****	14.20	3.84	1.05 (0.78, 1.43)	0.732
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.75	0.27	*****	14.21	3.84	N/A	N/A
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,190	18,435.17	98.75	0.27	262	14.21	3.84	1.16 (0.85, 1.59)	N/A
Famotidine New Users	68,239	15,663.71	83.84	0.23	196	12.51	2.87		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	103.24	0.28	*****	20.56	5.81	0.85 (0.72, 1.01)	0.068
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	103.23	0.28	*****	20.56	5.81	N/A	N/A
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		

Table 10b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	125,617	35,504.45	103.23	0.28	730	20.56	5.81	0.87 (0.73, 1.04)	N/A
Famotidine New Users	125,548	29,994.68	87.26	0.24	720	23.99	5.73		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	0.91 (0.83, 1.01)	0.084
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	N/A	N/A
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	654,077	197,129.73	110.08	0.30	2,260	11.46	3.46	0.96 (0.86, 1.06)	N/A
Famotidine New Users	654,091	170,274.45	95.08	0.26	2,070	12.16	3.16		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User Specified PS with IPTW ATT Adjustment, No Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	0.98 (0.90, 1.06)	0.537
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	N/A	N/A
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	532,816	154,517.03	105.92	0.29	3,386	21.91	6.35	0.98 (0.90, 1.06)	N/A
Famotidine New Users	532,867	136,018.13	93.23	0.26	3,087	22.70	5.79		

Table 10b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 11a. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,787	405,611.22	107.29	0.29	6,638	16.37	4.81	0.96 (0.90, 1.02)	N/A
Famotidine New Users	1,368,711	349,011.79	93.14	0.25	6,041	17.31	4.41		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is (0%) (95% CI 0.0%, 72.0%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 11b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,787	405,611.22	107.29	0.29	6,638	16.37	4.81	0.96 (0.90, 1.02)	N/A
Famotidine New Users	1,368,711	349,011.79	93.14	0.25	6,041	17.31	4.41		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.75	0.27	*****	14.20	3.84	1.05 (0.78, 1.43)	0.732
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.75	0.27	*****	14.21	3.84	N/A	N/A
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	68,190	18,435.17	98.75	0.27	262	14.21	3.84	1.15 (0.84, 1.58)	N/A
Famotidine New Users	67,573	15,514.39	83.86	0.23	195	12.58	2.89		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	103.24	0.28	*****	20.56	5.81	0.85 (0.72, 1.01)	0.068
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	103.23	0.28	*****	20.56	5.81	N/A	N/A
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		

Table 11b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	125,617	35,504.45	103.23	0.28	730	20.56	5.81	0.87 (0.73, 1.04)	N/A
Famotidine New Users	124,507	29,766.89	87.32	0.24	711	23.88	5.71		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	0.91 (0.83, 1.01)	0.084
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	N/A	N/A
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	654,077	197,129.73	110.08	0.30	2,260	11.46	3.46	0.96 (0.87, 1.07)	N/A
Famotidine New Users	648,181	168,744.07	95.09	0.26	2,046	12.13	3.16		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, 1% Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	0.98 (0.90, 1.06)	0.537
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	N/A	N/A
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis [1] ; Weight = ATT, Trimmed [2]									
Proton Pump Inhibitor New Users	532,816	154,517.03	105.92	0.29	3,386	21.91	6.35	0.98 (0.90, 1.06)	N/A
Famotidine New Users	528,301	134,910.94	93.27	0.26	3,052	22.63	5.78		

[1] All values in this section are weighted.

[2] ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 12a. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,732	405,595.94	107.29	0.29	6,638	16.37	4.81	0.93 (0.86, 1.00)	N/A
Famotidine New Users	1,381,719	349,594.70	92.41	0.25	6,246	17.87	4.52		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is 35.1% (95% CI 0.0%, 75.7%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 12b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,732	405,595.94	107.29	0.29	6,638	16.37	4.81	0.93 (0.86, 1.00)	N/A
Famotidine New Users	1,381,719	349,594.70	92.41	0.25	6,246	17.87	4.52		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.75	0.27	*****	14.20	3.84	1.05 (0.78, 1.43)	0.732
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.85	0.27	*****	13.97	3.78	N/A	N/A
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	67,974	18,396.22	98.85	0.27	257	13.97	3.78	1.02 (0.66, 1.58)	N/A
Famotidine New Users	68,241	15,459.42	82.74	0.23	216	13.96	3.16		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	103.24	0.28	*****	20.56	5.81	0.85 (0.72, 1.01)	0.068
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	103.24	0.28	*****	20.56	5.81	N/A	N/A
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									

Table 12b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Proton Pump Inhibitor New Users	125,622	35,507.85	103.24	0.28	730	20.56	5.81	0.87 (0.71, 1.07)	N/A
Famotidine New Users	125,628	29,586.28	86.02	0.24	710	23.99	5.65		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	0.91 (0.83, 1.01)	0.084
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	N/A	N/A
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	654,046	197,122.60	110.08	0.30	2,260	11.46	3.46	0.96 (0.86, 1.08)	N/A
Famotidine New Users	653,709	168,975.89	94.41	0.26	2,047	12.11	3.13		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	0.98 (0.90, 1.06)	0.538
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	N/A	N/A
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	532,811	154,513.56	105.92	0.29	3,386	21.91	6.35	0.95 (0.85, 1.05)	N/A
Famotidine New Users	533,761	135,126.73	92.47	0.25	3,162	23.40	5.92		

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 13a. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)[1]	Wald P-Value
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[2]; Weight = ATT, Trimmed[3]									
Proton Pump Inhibitor New Users	1,380,732	405,595.94	107.29	0.29	6,638	16.37	4.81	1.00 (0.94, 1.06)	N/A
Famotidine New Users	1,313,259	334,395.75	93.00	0.25	5,557	16.62	4.23		

[1]The I^2 metric for statistical heterogeneity and its corresponding 95% confidence interval for this effect estimate is 25.0% (95% CI 0.0%, 69.9%).

[2]All values in this section are weighted.

[3]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 13b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	0.93 (0.87, 0.98)	0.01
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	107.29	0.29	*****	16.37	4.81	N/A	N/A
Famotidine New Users	*****	*****	93.12	0.25	*****	17.89	4.56		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	1,380,732	405,595.94	107.29	0.29	6,638	16.37	4.81	1.00 (0.94, 1.06)	N/A
Famotidine New Users	1,313,259	334,395.75	93.00	0.25	5,557	16.62	4.23		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: 18-49 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	98.75	0.27	*****	14.20	3.84	1.05 (0.78, 1.43)	0.732
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	98.85	0.27	*****	13.97	3.78	N/A	N/A
Famotidine New Users	*****	*****	83.75	0.23	*****	13.71	3.14		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	67,974	18,396.22	98.85	0.27	257	13.97	3.78	1.16 (0.84, 1.62)	N/A
Famotidine New Users	65,065	14,822.40	83.21	0.23	183	12.31	2.81		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: 50-64 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	103.24	0.28	*****	20.56	5.81	0.85 (0.72, 1.01)	0.068
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	103.24	0.28	*****	20.56	5.81	N/A	N/A
Famotidine New Users	*****	*****	87.75	0.24	*****	24.48	5.88		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									

Table 13b. Effect Estimates for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Analysis Type and Age Group

Medical Product	Number of New Users	Person Years at Risk	Average Person Days at Risk	Average Person Years at Risk	Number of Events	Incidence Rate per 1,000 Person Years	Risk per 1,000 New Users	Hazard Ratio (95% Confidence Interval)	Wald P-Value
Proton Pump Inhibitor New Users	125,622	35,507.85	103.24	0.28	730	20.56	5.81	0.92 (0.76, 1.11)	N/A
Famotidine New Users	119,072	28,332.36	86.91	0.24	643	22.70	5.40		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: 65-74 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	0.91 (0.83, 1.01)	0.084
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	110.08	0.30	*****	11.46	3.46	N/A	N/A
Famotidine New Users	*****	*****	94.96	0.26	*****	12.71	3.30		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	654,046	197,122.60	110.08	0.30	2,260	11.46	3.46	1.00 (0.90, 1.11)	N/A
Famotidine New Users	628,836	163,541.09	94.99	0.26	1,909	11.68	3.04		
Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, 1% Truncation, Age Group: ≥ 75 years									
Site-Adjusted Analysis, Unweighted									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	0.98 (0.90, 1.06)	0.538
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis; Unweighted, Trimmed									
Proton Pump Inhibitor New Users	*****	*****	105.92	0.29	*****	21.91	6.35	N/A	N/A
Famotidine New Users	*****	*****	93.47	0.26	*****	22.69	5.81		
Inverse Probability of Treatment Weighted Analysis[1]; Weight = ATT, Trimmed[2]									
Proton Pump Inhibitor New Users	532,811	154,513.56	105.92	0.29	3,386	21.91	6.35	1.02 (0.93, 1.11)	N/A
Famotidine New Users	499,422	127,443.73	93.21	0.26	2,777	21.79	5.56		

[1]All values in this section are weighted.

[2]ATT = Average Treatment Effect in the Treated.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Table 14. Summary of Patient-Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation				COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation			
	Proton Pump Inhibitor New		Famotidine New Users		Proton Pump Inhibitor New		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded
Members meeting enrollment and demographic requirements								
Enrolled at any point during the query period	45,353,465	N/A	45,353,465	N/A	45,353,465	N/A	45,353,465	N/A
Had required coverage type (medical and/or drug coverage)	28,830,286	16,523,179	28,830,286	16,523,179	28,830,286	16,523,179	28,830,286	16,523,179
Enrolled during specified age range	*****	*****	*****	*****	*****	*****	*****	*****
Had requestable medical charts	*****	0	*****	0	*****	0	*****	0
Met demographic requirements (sex, race, and Hispanic origin)	28,828,861	*****	28,828,861	*****	28,828,861	*****	28,828,861	*****
Members with a valid index event								
Had any cohort-defining claim during the query period	8,796,763	20,032,098	2,370,900	26,457,961	8,796,763	20,032,098	2,370,900	26,457,961
Claim recorded during specified age range	8,796,714	49	2,370,851	49	8,796,714	49	2,370,851	49
Episode defining index claim recorded during the query period	4,999,096	3,797,618	1,950,807	420,044	4,999,096	3,797,618	1,950,807	420,044
Members with required pre-index history								
Had sufficient pre-index continuous enrollment	3,929,344	1,069,752	1,728,548	222,259	3,929,344	1,069,752	1,728,548	222,259
Met inclusion and exclusion criteria[1]	1,390,748	2,538,596	310,927	1,417,621	1,390,748	2,538,596	310,927	1,417,621
Evidence of COVID-19 diagnosis code	N/A	339,947	N/A	181,117	N/A	339,947	N/A	181,117
Evidence of COVID-19 positive lab result	N/A	0	N/A	0	N/A	0	N/A	0
Evidence of H2 Receptor Antagonists (H2RA)	N/A	421,729	N/A	N/A	N/A	421,729	N/A	N/A
Evidence of PPI or H2RA	N/A	N/A	N/A	838,733	N/A	N/A	N/A	838,733
No evidence of Gastroesophageal Reflux Disease	N/A	2,200,292	N/A	896,428	N/A	2,200,292	N/A	896,428
Met event incidence criteria	1,390,748	0	310,927	0	1,390,748	0	310,927	0
Had sufficient post-index continuous enrollment	1,390,748	0	310,927	0	1,390,748	0	310,927	0
Had index episode longer than blackout period	1,389,143	1,605	310,542	385	1,389,143	1,605	310,542	385

Table 14. Summary of Patient-Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation				COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation			
	Proton Pump Inhibitor New		Famotidine New Users		Proton Pump Inhibitor New		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded
Did not have an event during blackout period	1,388,940	203	310,485	57	1,388,940	203	310,485	57
Final cohort								
Number of members	1,388,940	N/A	310,485	N/A	1,388,940	N/A	310,485	N/A
Number of episodes	1,388,940	N/A	310,485	N/A	1,388,940	N/A	310,485	N/A
Members meeting comparative cohort eligibility requirements								
Excluded due to same-day initition of both exposure groups	1,388,940	0	310,485	0	1,388,940	0	310,485	0
Excluded due to prior initiation of other exposure group	*****	*****	*****	*****	*****	*****	*****	*****
Excluded due to propensity score trimming	*****	*****	*****	*****	*****	*****	*****	*****
Excluded due to lack of treatment heterogeneity in stratum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Included in comparative analysis	1,380,629	0	301,012	0	1,380,595	0	301,012	0
Additional information								
Number of events in comparative analysis	*****	N/A	*****	N/A	*****	N/A	*****	N/A
Number of patients with a truncated inverse probability of treatment weight	0	N/A	16,831	N/A	0	N/A	16,991	N/A

Table 14. Summary of Patient-Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment				COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights			
	Proton Pump Inhibitor New		Famotidine New Users		Proton Pump Inhibitor New		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded
Members meeting enrollment and demographic requirements								
Enrolled at any point during the query period	45,353,465	N/A	45,353,465	N/A	45,353,465	N/A	45,353,465	N/A
Had required coverage type (medical and/or drug coverage)	28,830,286	16,523,179	28,830,286	16,523,179	28,830,286	16,523,179	28,830,286	16,523,179
Enrolled during specified age range	*****	*****	*****	*****	*****	*****	*****	*****
Had requestable medical charts	*****	0	*****	0	*****	0	*****	0
Met demographic requirements (sex, race, and Hispanic origin)	28,828,861	*****	28,828,861	*****	28,828,861	*****	28,828,861	*****
Members with a valid index event								
Had any cohort-defining claim during the query period	8,796,763	20,032,098	2,370,900	26,457,961	8,796,763	20,032,098	2,370,900	26,457,961
Claim recorded during specified age range	8,796,714	49	2,370,851	49	8,796,714	49	2,370,851	49
Episode defining index claim recorded during the query period	4,999,096	3,797,618	1,950,807	420,044	4,999,096	3,797,618	1,950,807	420,044
Members with required pre-index history								
Had sufficient pre-index continuous enrollment	3,929,344	1,069,752	1,728,548	222,259	3,929,344	1,069,752	1,728,548	222,259
Met inclusion and exclusion criteria[1]	1,390,748	2,538,596	310,927	1,417,621	1,390,748	2,538,596	310,927	1,417,621
Evidence of COVID-19 diagnosis code	N/A	339,947	N/A	181,117	N/A	339,947	N/A	181,117
Evidence of COVID-19 positive lab result	N/A	0	N/A	0	N/A	0	N/A	0
Evidence of H2 Receptor Antagonists (H2RA)	N/A	421,729	N/A	N/A	N/A	421,729	N/A	N/A
Evidence of PPI or H2RA	N/A	N/A	N/A	838,733	N/A	N/A	N/A	838,733
No evidence of Gastroesophageal Reflux Disease	N/A	2,200,292	N/A	896,428	N/A	2,200,292	N/A	896,428
Met event incidence criteria	1,390,748	0	310,927	0	1,390,748	0	310,927	0
Had sufficient post-index continuous enrollment	1,390,748	0	310,927	0	1,390,748	0	310,927	0

Table 14. Summary of Patient-Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment				COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights			
	Proton Pump Inhibitor New		Famotidine New Users		Proton Pump Inhibitor New		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded
Had index episode longer than blackout period	1,389,143	1,605	310,542	385	1,389,143	1,605	310,542	385
Did not have an event during blackout period	1,388,940	203	310,485	57	1,388,940	203	310,485	57
Final cohort								
Number of members	1,388,940	N/A	310,485	N/A	1,388,940	N/A	310,485	N/A
Number of episodes	1,388,940	N/A	310,485	N/A	1,388,940	N/A	310,485	N/A
Members meeting comparative cohort eligibility requirements								
Excluded due to same-day initition of both exposure groups	1,388,940	0	310,485	0	1,388,940	0	310,485	0
Excluded due to prior initiation of other exposure group	*****	*****	*****	*****	*****	*****	*****	*****
Excluded due to propensity score trimming	*****	*****	*****	*****	N/A	N/A	N/A	N/A
Excluded due to lack of treatment heterogeneity in stratum	1,380,595	0	301,012	0	N/A	N/A	N/A	N/A
Included in comparative analysis	1,380,595	0	301,012	0	*****	0	*****	0
Additional information								
Number of events in comparative analysis	*****	N/A	*****	N/A	*****	N/A	*****	N/A
Number of patients with a truncated inverse probability of treatment weight	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 14. Summary of Patient-Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation				Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation			
	Proton Pump Inhibitor New		Famotidine New Users		Proton Pump Inhibitor New		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded
Members meeting enrollment and demographic requirements								
Enrolled at any point during the query period	45,353,465	N/A	45,353,465	N/A	45,353,465	N/A	45,353,465	N/A
Had required coverage type (medical and/or drug coverage)	28,830,286	16,523,179	28,830,286	16,523,179	28,830,286	16,523,179	28,830,286	16,523,179
Enrolled during specified age range	*****	*****	*****	*****	*****	*****	*****	*****
Had requestable medical charts	*****	0	*****	0	*****	0	*****	0
Met demographic requirements (sex, race, and Hispanic origin)	28,828,861	*****	28,828,861	*****	28,828,861	*****	28,828,861	*****
Members with a valid index event								
Had any cohort-defining claim during the query period	8,796,763	20,032,098	2,370,900	26,457,961	8,796,763	20,032,098	2,370,900	26,457,961
Claim recorded during specified age range	8,796,714	49	2,370,851	49	8,796,714	49	2,370,851	49
Episode defining index claim recorded during the query period	4,999,096	3,797,618	1,950,807	420,044	4,999,096	3,797,618	1,950,807	420,044
Members with required pre-index history								
Had sufficient pre-index continuous enrollment	3,929,344	1,069,752	1,728,548	222,259	3,929,344	1,069,752	1,728,548	222,259
Met inclusion and exclusion criteria[1]	1,390,748	2,538,596	310,927	1,417,621	1,390,748	2,538,596	310,927	1,417,621
Evidence of COVID-19 diagnosis code	N/A	339,947	N/A	181,117	N/A	339,947	N/A	181,117
Evidence of COVID-19 positive lab result	N/A	0	N/A	0	N/A	0	N/A	0
Evidence of H2 Receptor Antagonists (H2RA)	N/A	421,729	N/A	N/A	N/A	421,729	N/A	N/A
Evidence of PPI or H2RA	N/A	N/A	N/A	838,733	N/A	N/A	N/A	838,733
No evidence of Gastroesophageal Reflux Disease	N/A	2,200,292	N/A	896,428	N/A	2,200,292	N/A	896,428
Met event incidence criteria	1,390,748	0	310,927	0	1,390,748	0	310,927	0

Table 14. Summary of Patient-Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation				Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation			
	Proton Pump Inhibitor New		Famotidine New Users		Proton Pump Inhibitor New		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded	Remaining	Excluded
Had sufficient post-index continuous enrollment	1,390,748	0	310,927	0	1,390,748	0	310,927	0
Had index episode longer than blackout period	1,389,143	1,605	310,542	385	1,389,143	1,605	310,542	385
Did not have an event during blackout period	1,388,940	203	310,485	57	1,389,100	43	310,525	17
Final cohort								
Number of members	1,388,940	N/A	310,485	N/A	1,389,100	N/A	310,525	N/A
Number of episodes	1,388,940	N/A	310,485	N/A	1,389,100	N/A	310,525	N/A
Members meeting comparative cohort eligibility requirements								
Excluded due to same-day initition of both exposure groups	1,388,940	0	310,485	0	1,389,100	0	310,525	0
Excluded due to prior initiation of other exposure group	*****	*****	*****	*****	*****	*****	*****	*****
Excluded due to propensity score trimming	*****	*****	*****	*****	*****	*****	*****	*****
Excluded due to lack of treatment heterogeneity in stratum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Included in comparative analysis	1,380,595	0	301,012	0	1,380,787	0	301,049	0
Additional information								
Number of events in comparative analysis	*****	N/A	*****	N/A	*****	N/A	*****	N/A
Number of patients with a truncated inverse probability of treatment weight	16,821	N/A	16,812	N/A	0	N/A	16,833	N/A

Table 14. Summary of Patient Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation			
	Proton Pump Inhibitor New Users		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded
Members meeting enrollment and demographic requirements				
Enrolled at any point during the query period	45,353,465	N/A	45,353,465	N/A
Had required coverage type (medical and/or drug coverage)	28,830,286	16,523,179	28,830,286	16,523,179
Enrolled during specified age range	*****	*****	*****	*****
Had requestable medical charts	*****	0	*****	0
Met demographic requirements (sex, race, and Hispanic origin)	28,828,861	*****	28,828,861	*****
Members with a valid index event				
Had any cohort-defining claim during the query period	8,796,763	20,032,098	2,370,900	26,457,961
Claim recorded during specified age range	8,796,714	49	2,370,851	49
Episode defining index claim recorded during the query period	4,999,096	3,797,618	1,950,807	420,044
Members with required pre-index history				
Had sufficient pre-index continuous enrollment	3,929,344	1,069,752	1,728,548	222,259
Met inclusion and exclusion criteria[1]	1,390,748	2,538,596	310,927	1,417,621
Evidence of COVID-19 diagnosis code	N/A	339,947	N/A	181,117
Evidence of COVID-19 positive lab result	N/A	0	N/A	0
Evidence of H2 Receptor Antagonists (H2RA)	N/A	421,729	N/A	N/A
Evidence of PPI or H2RA	N/A	N/A	N/A	838,733
No evidence of Gastroesophageal Reflux Disease	N/A	2,200,292	N/A	896,428
Met event incidence criteria	1,390,748	0	310,927	0
Had sufficient post-index continuous enrollment	1,390,748	0	310,927	0
Had index episode longer than blackout period	1,389,143	1,605	310,542	385
Did not have an event during blackout period	1,389,100	43	310,525	17
Final cohort				
Number of members	1,389,100	N/A	310,525	N/A
Number of episodes	1,389,100	N/A	310,525	N/A
Members meeting comparative cohort eligibility requirements				
Excluded due to same-day initition of both exposure groups	1,389,100	0	310,525	0
Excluded due to prior initiation of other exposure group	*****	*****	*****	*****
Excluded due to propensity score trimming	*****	*****	*****	*****
Excluded due to lack of treatment heterogeneity in stratum	N/A	N/A	N/A	N/A

Table 14. Summary of Patient Level Cohort Attrition in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

	Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation			
	Proton Pump Inhibitor New Users		Famotidine New Users	
	Remaining	Excluded	Remaining	Excluded
Included in comparative analysis	1,380,732	0	301,050	0
Additional information				
Number of events in comparative analysis	*****	N/A	*****	N/A
Number of patients with a truncated inverse probability of treatment weight	0	N/A	17,000	N/A

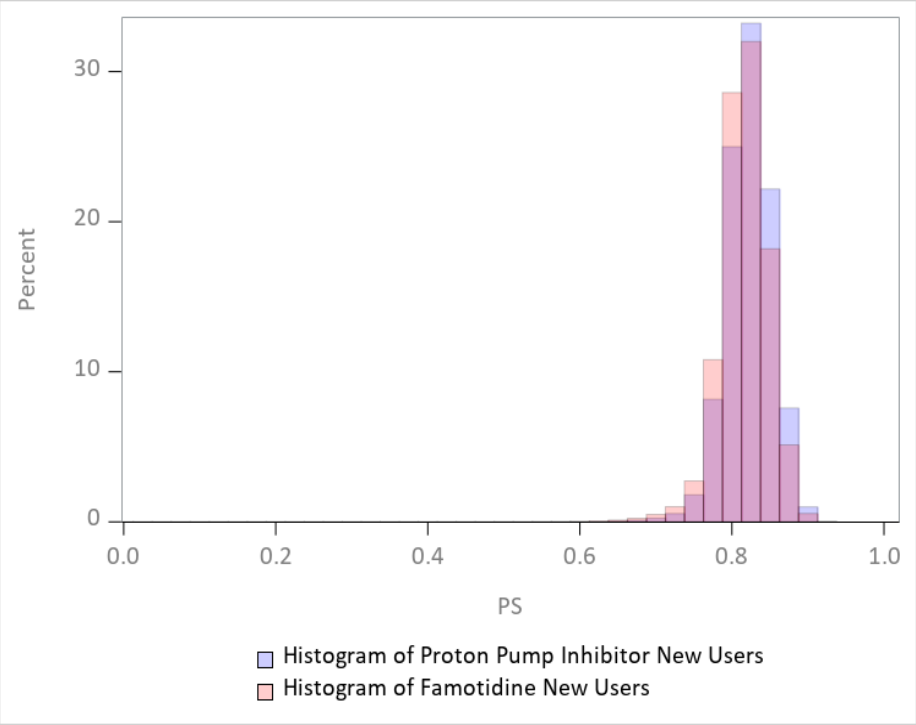
[1]Patients can meet multiple inclusion and/or exclusion criteria; therefore, the total number of patients excluded overall may not equal the sum of all patients in each criterion.

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

N/A: Not Applicable

Figure 1a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

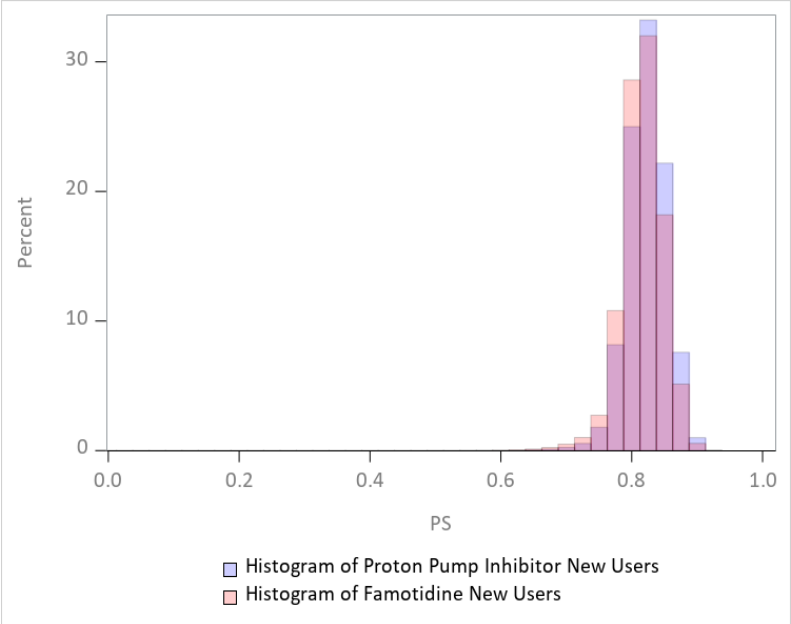


Figure 1a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

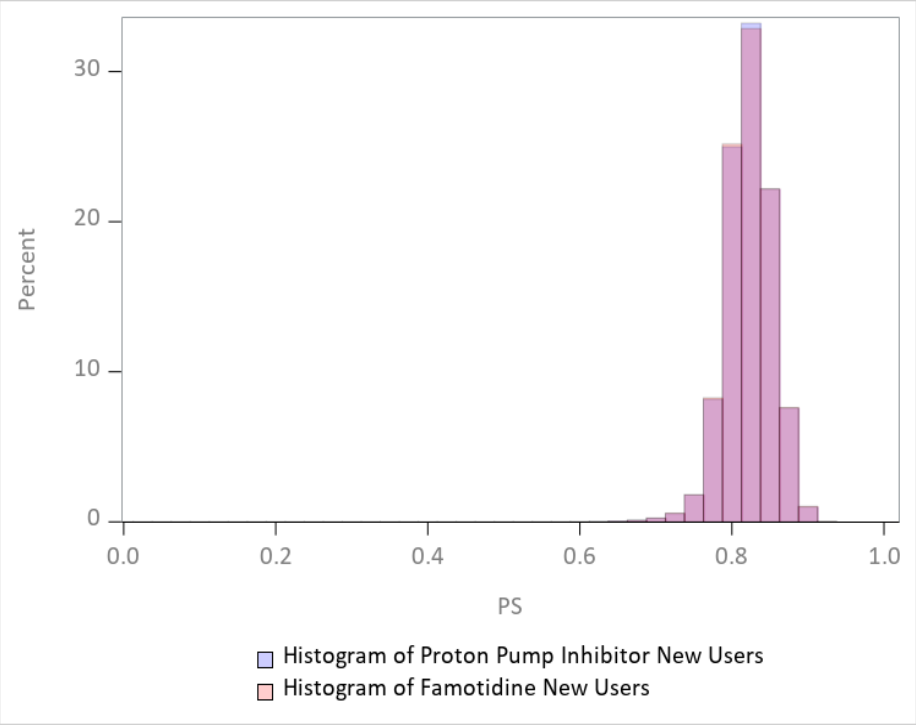
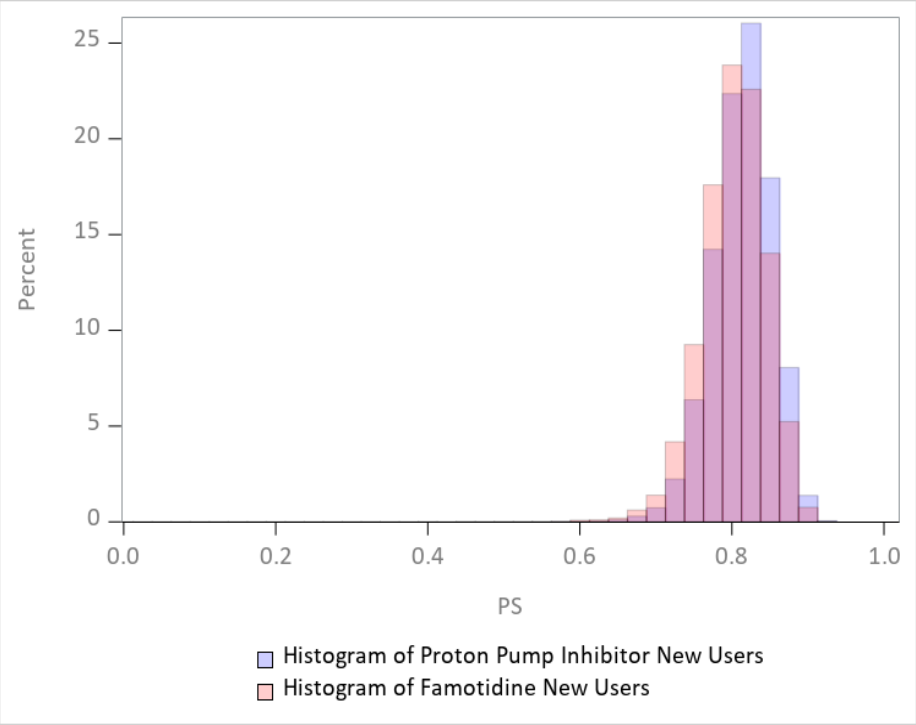


Figure 1b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

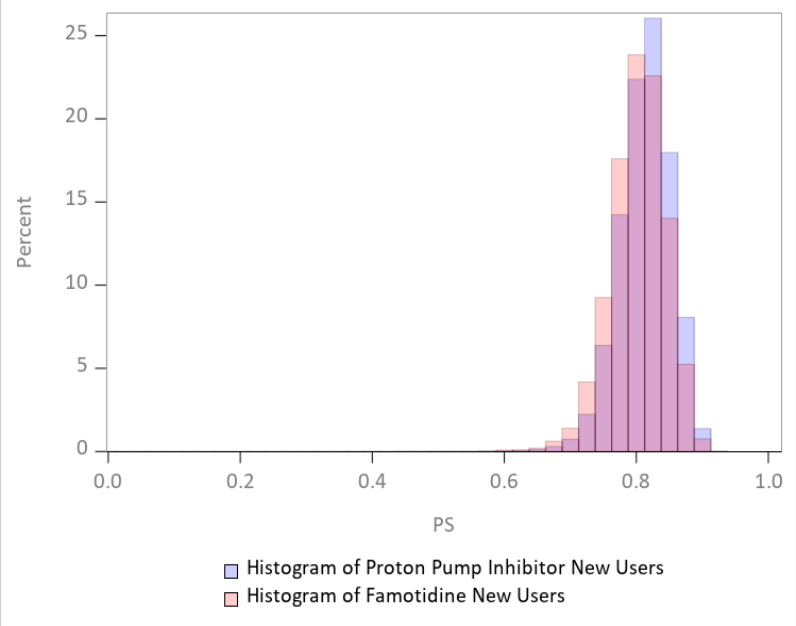


Figure 1b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

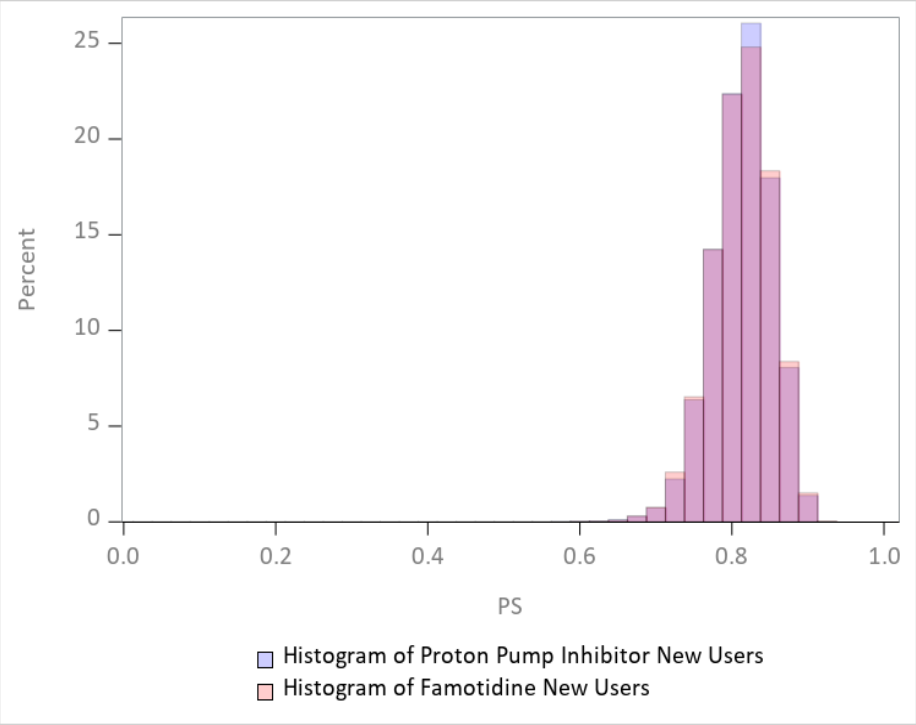
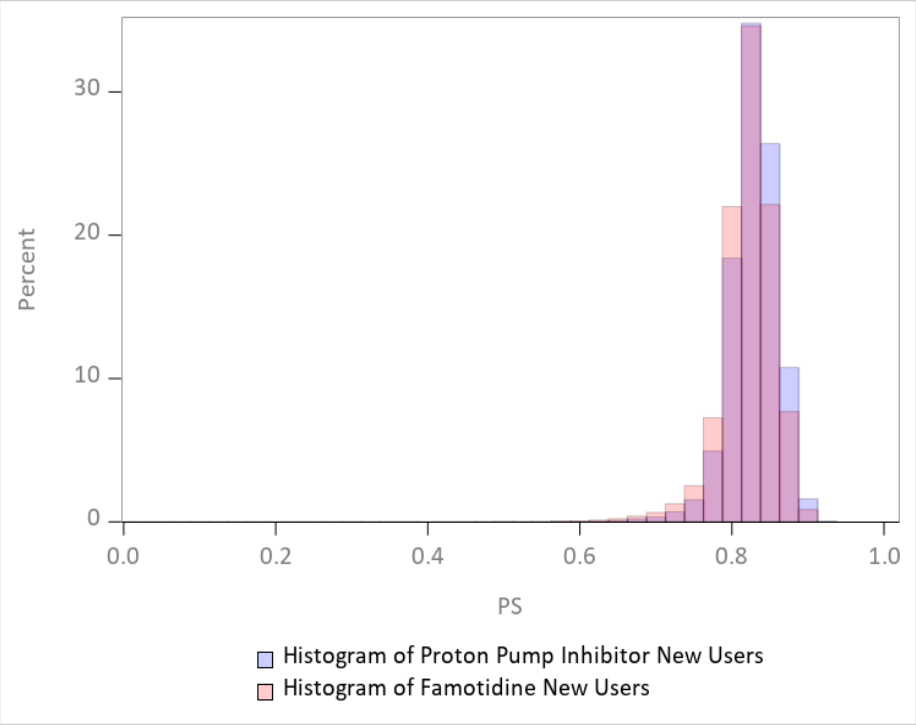


Figure 1c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

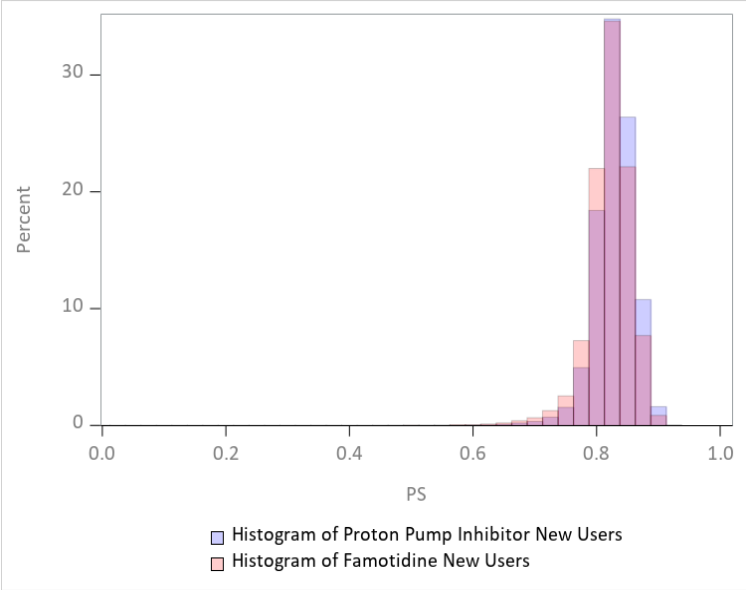


Figure 1c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

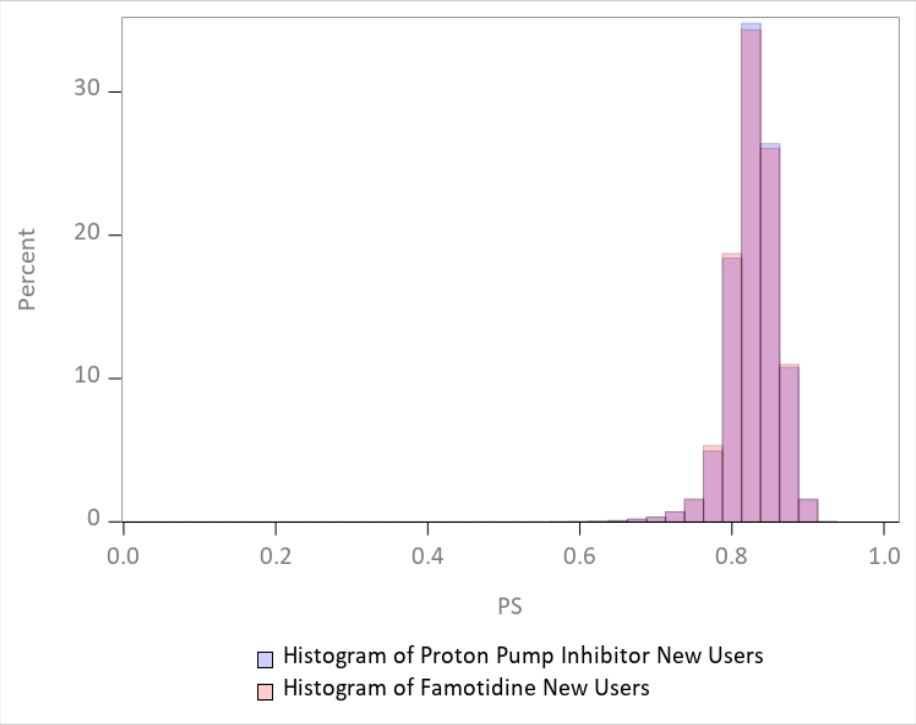
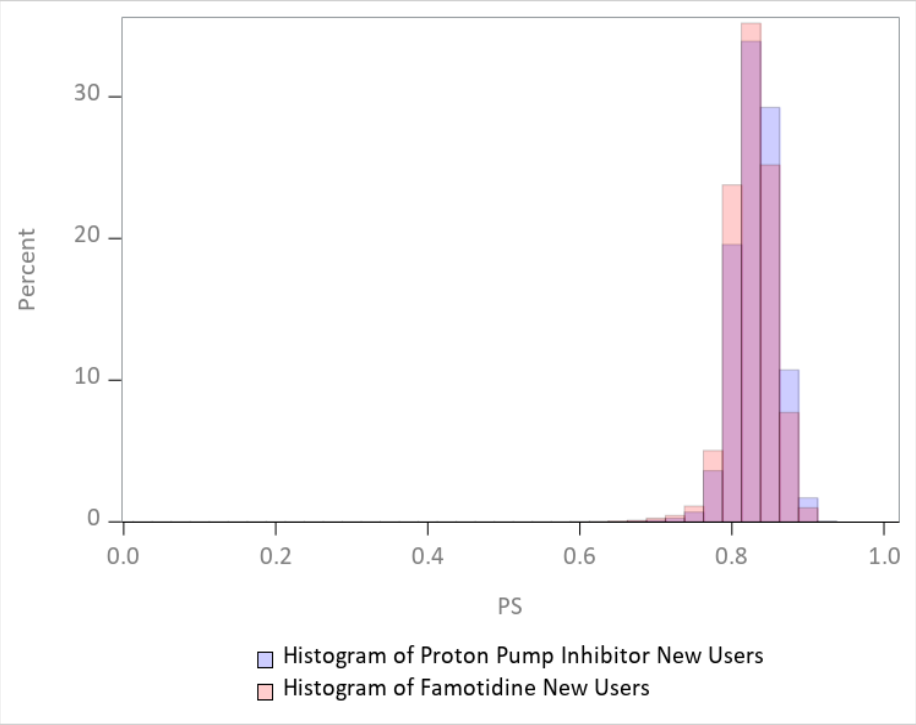


Figure 1d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

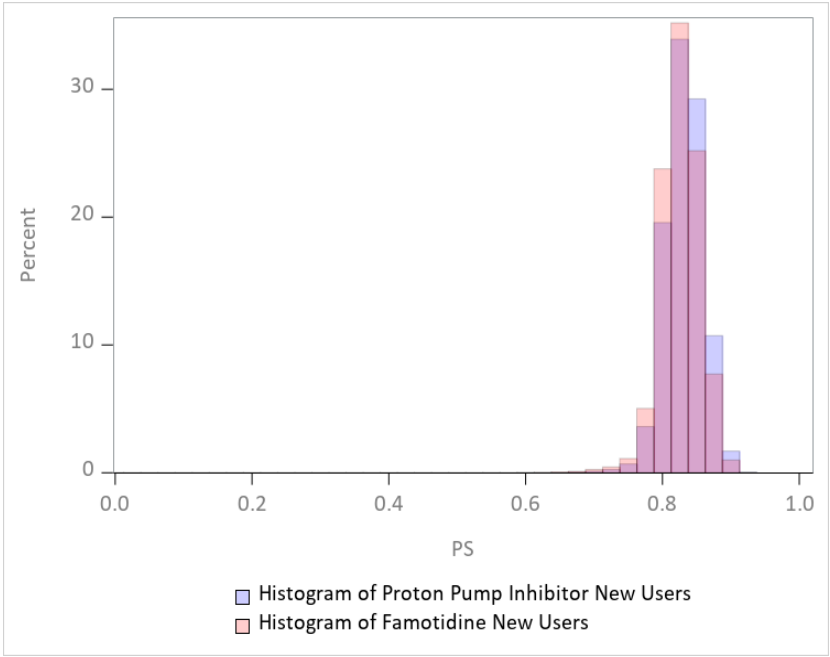


Figure 1d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

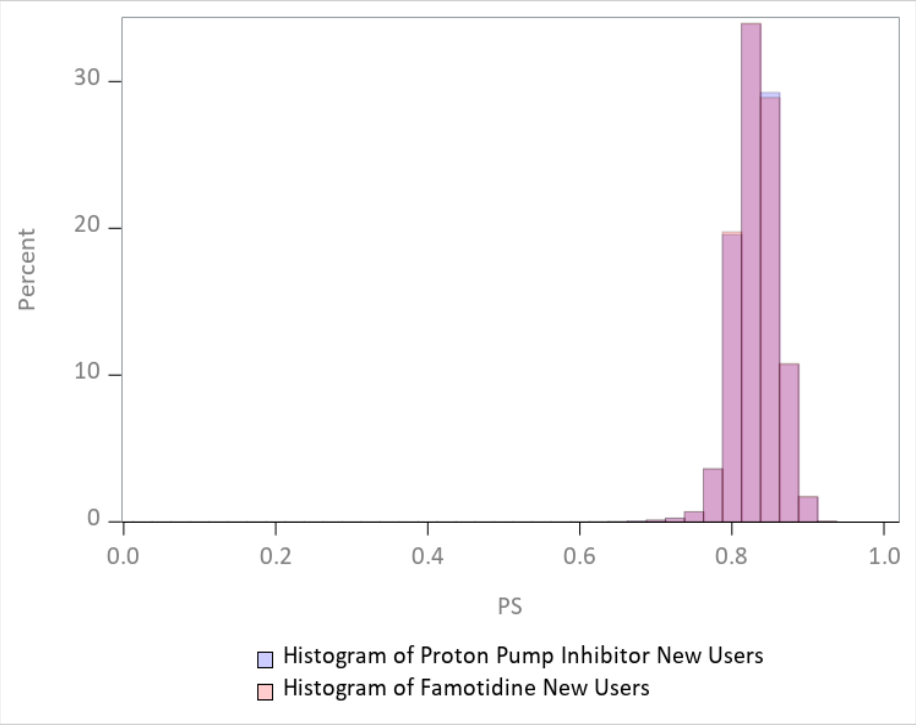
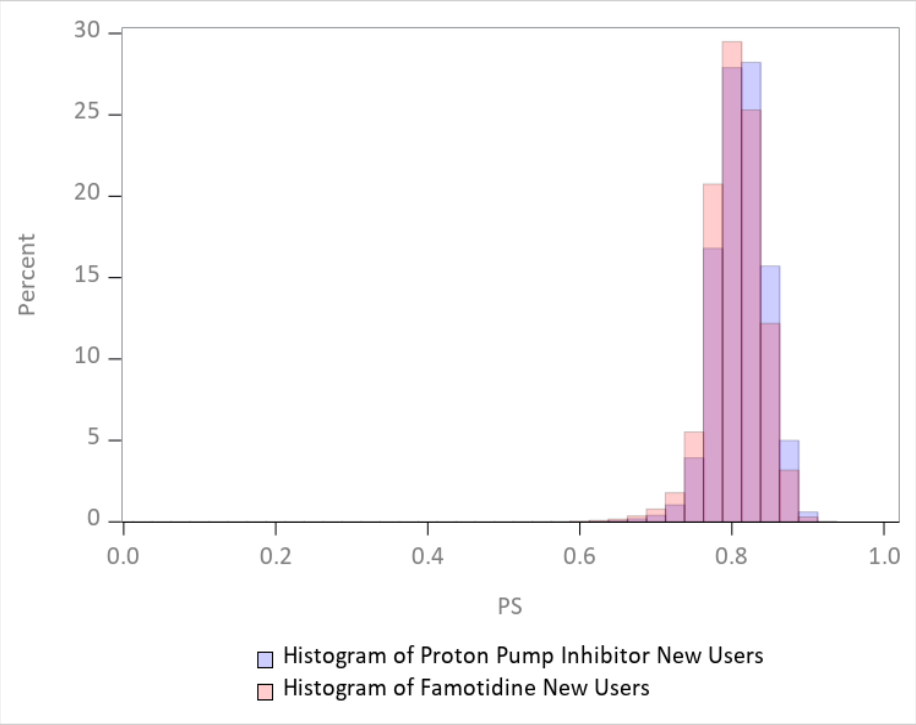


Figure 1e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

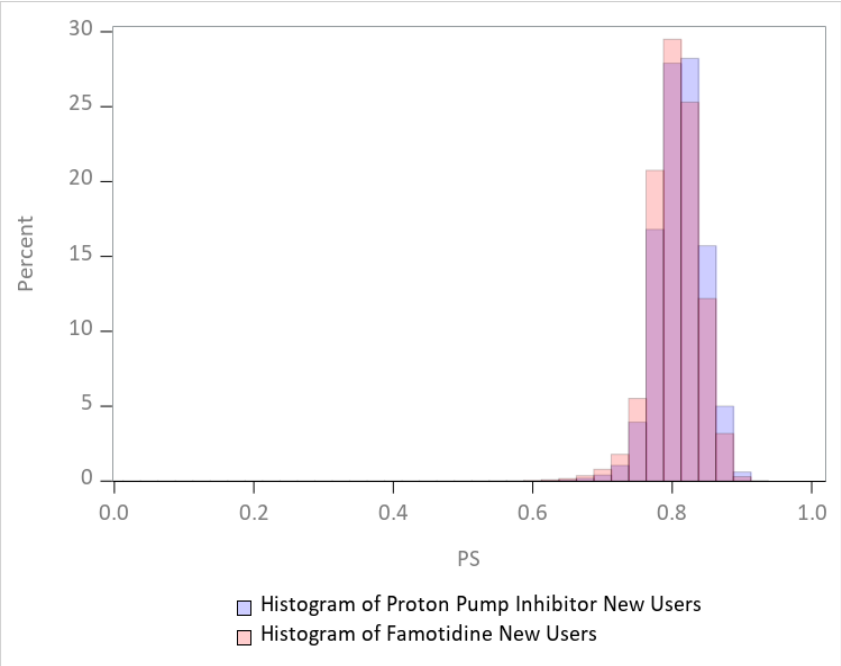


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

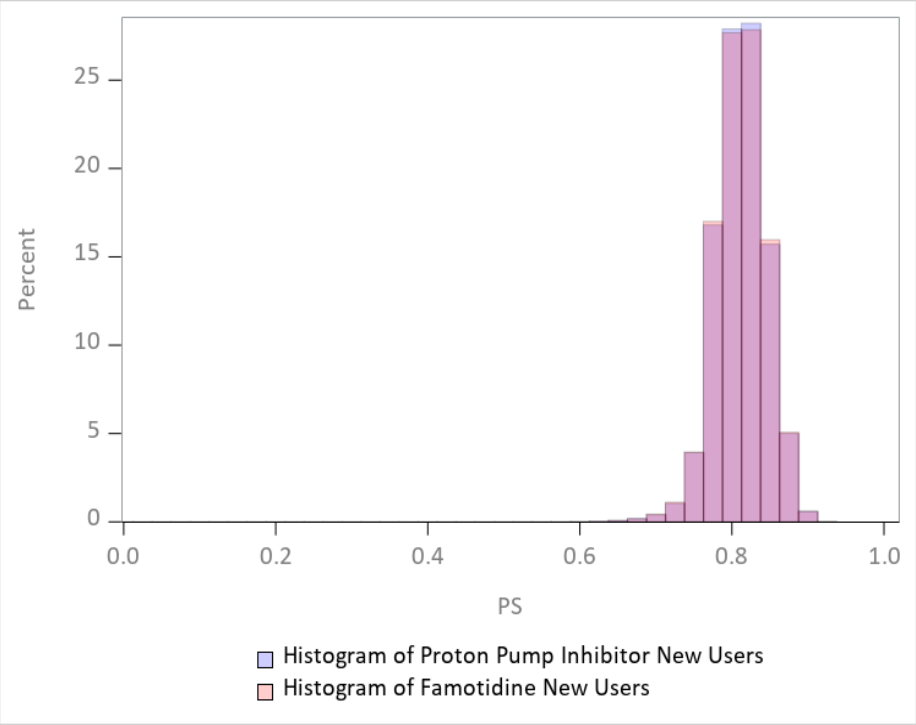
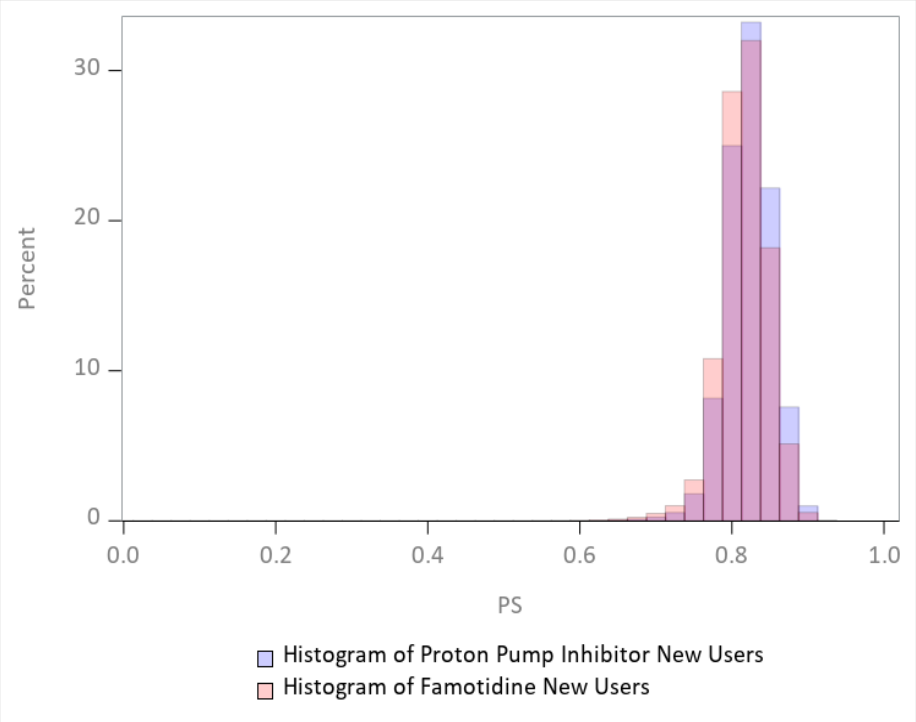


Figure 2a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

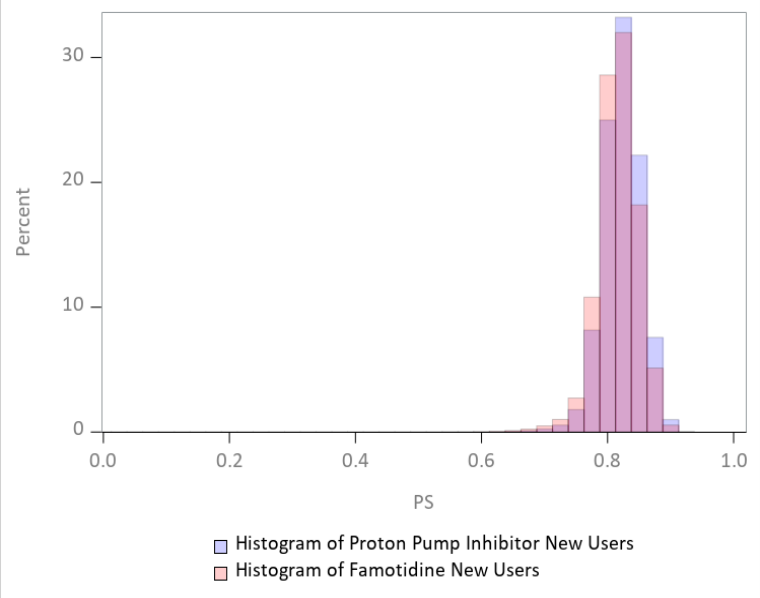


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

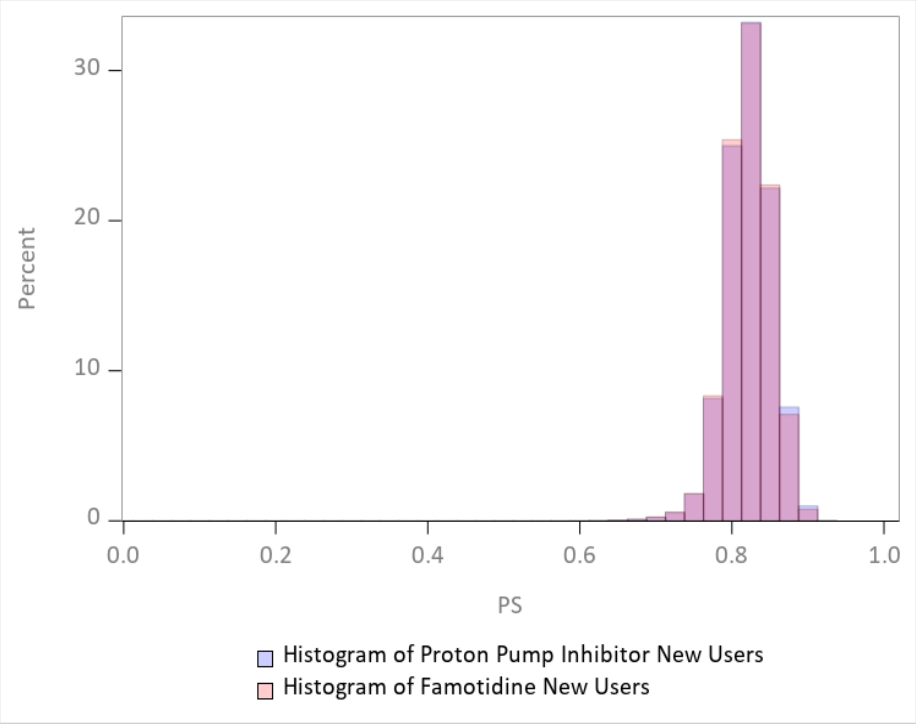
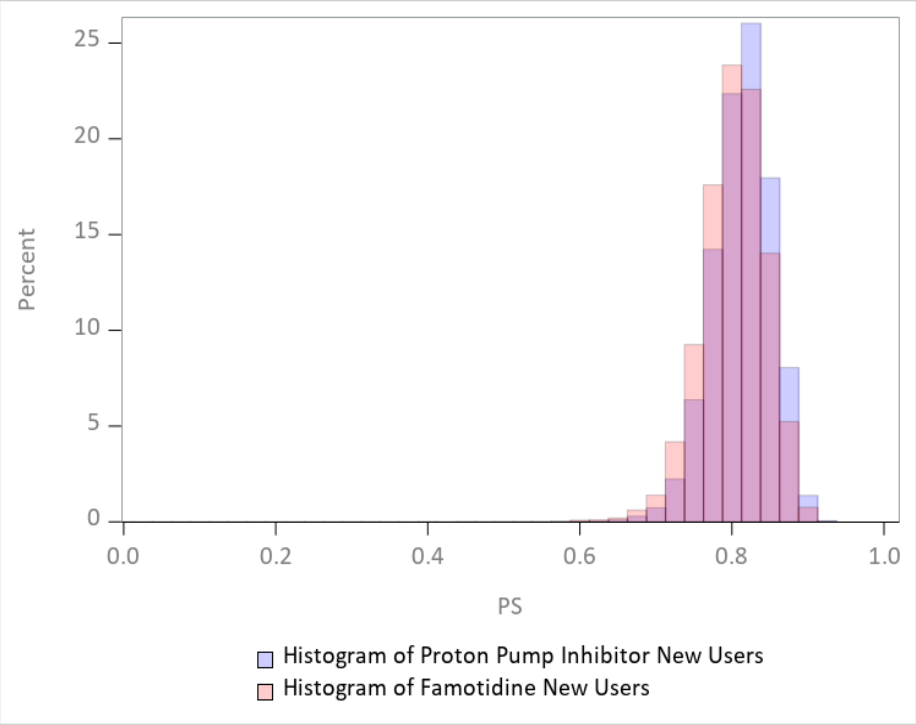


Figure 2b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

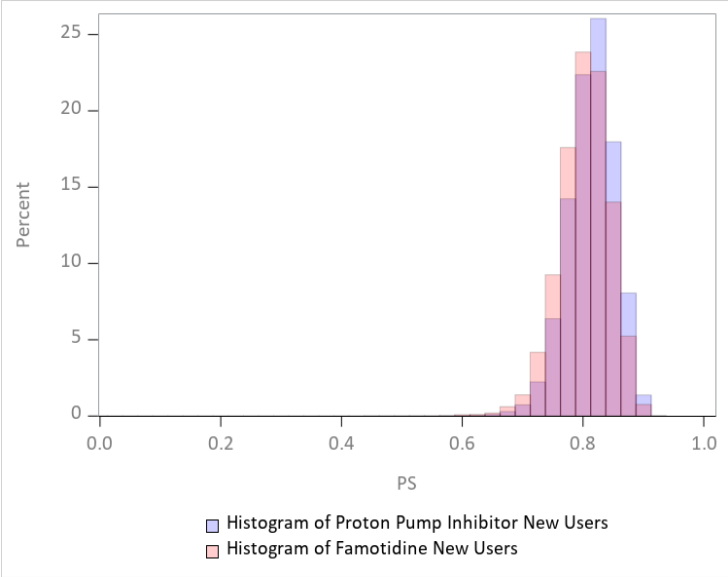


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

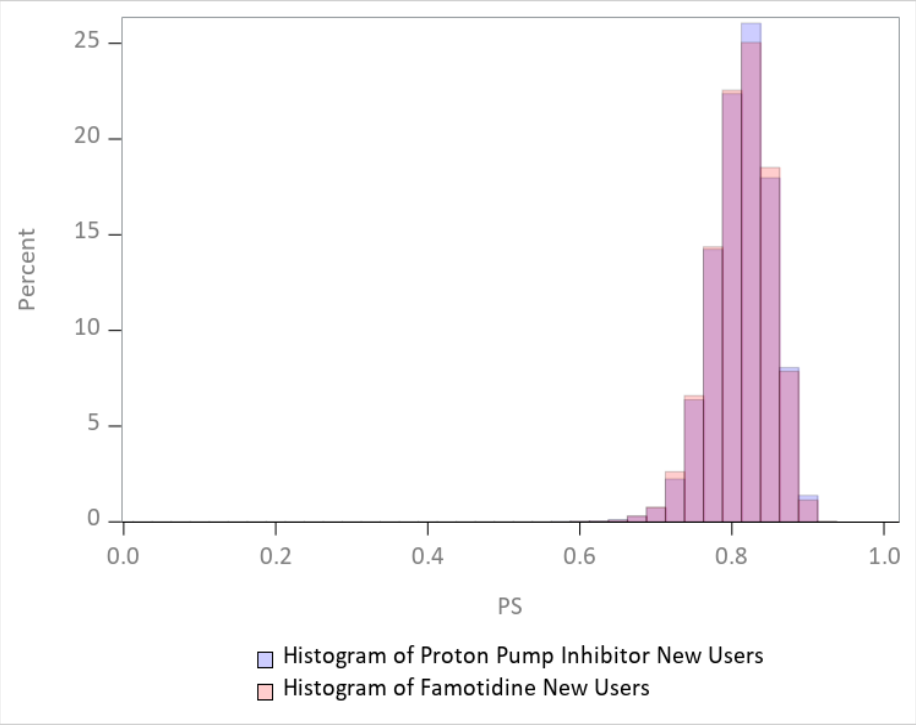
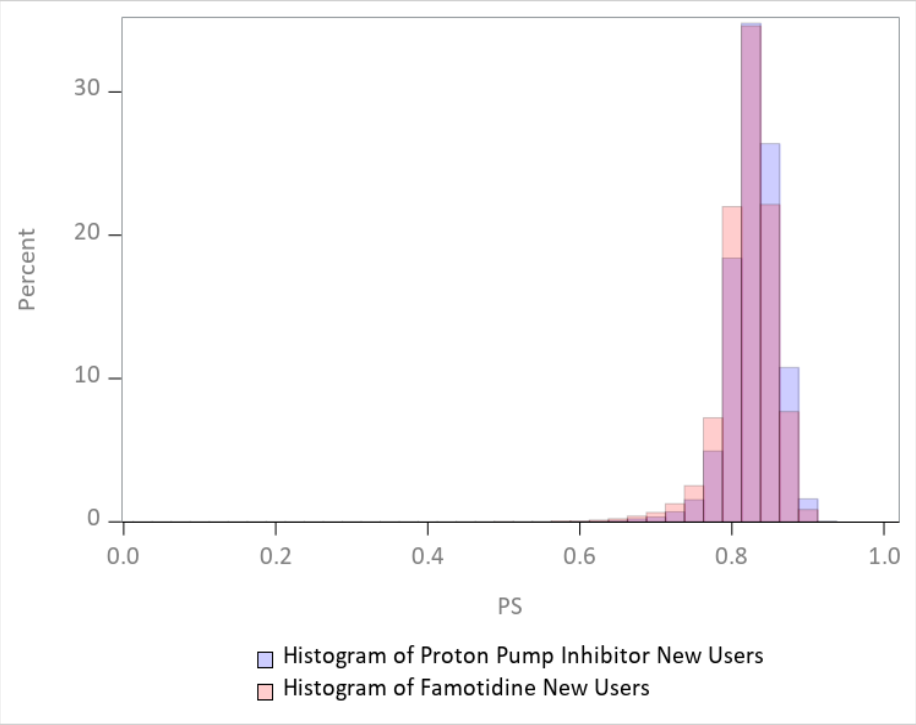


Figure 2c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

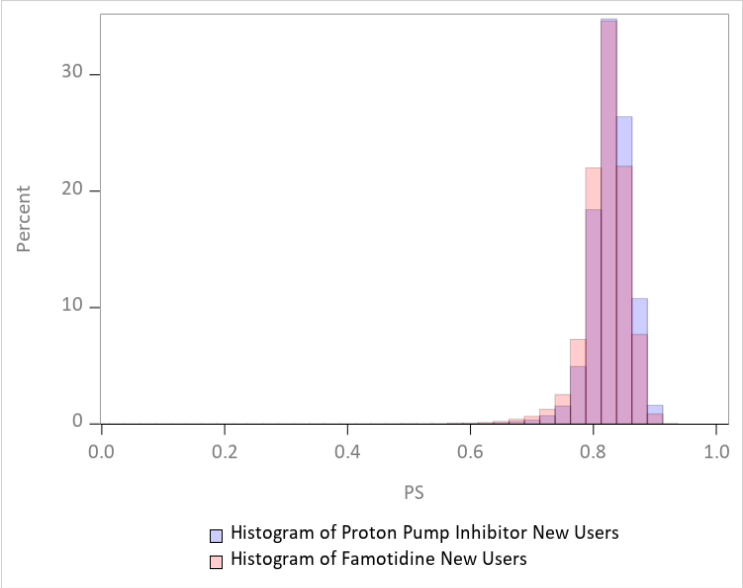


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

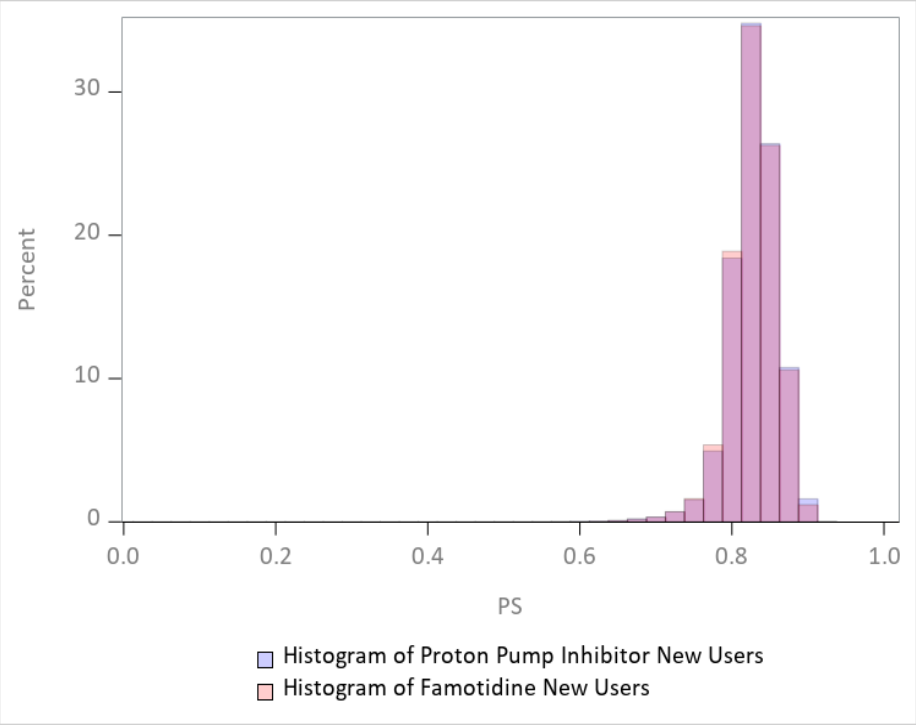
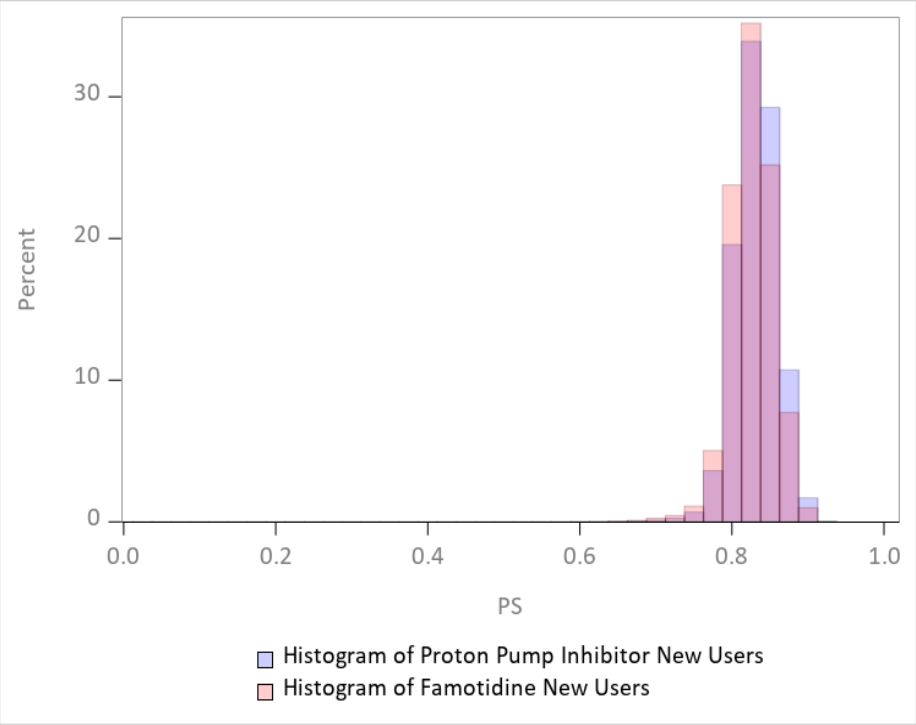


Figure 2d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

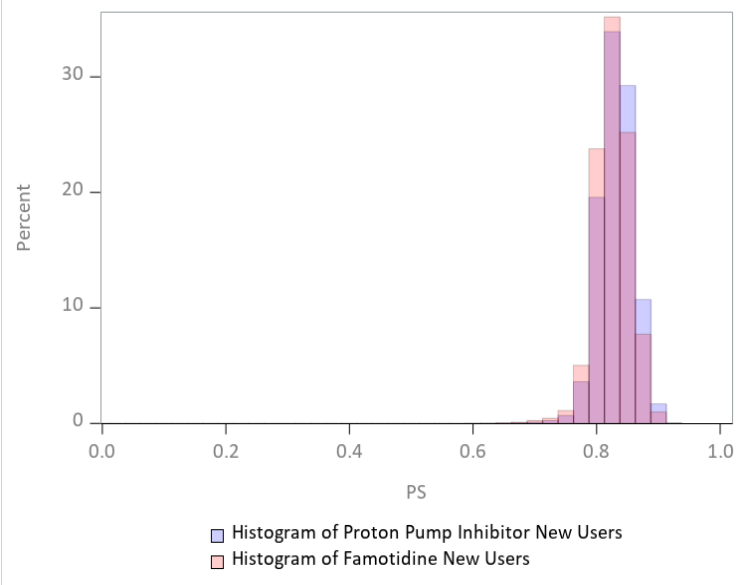


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

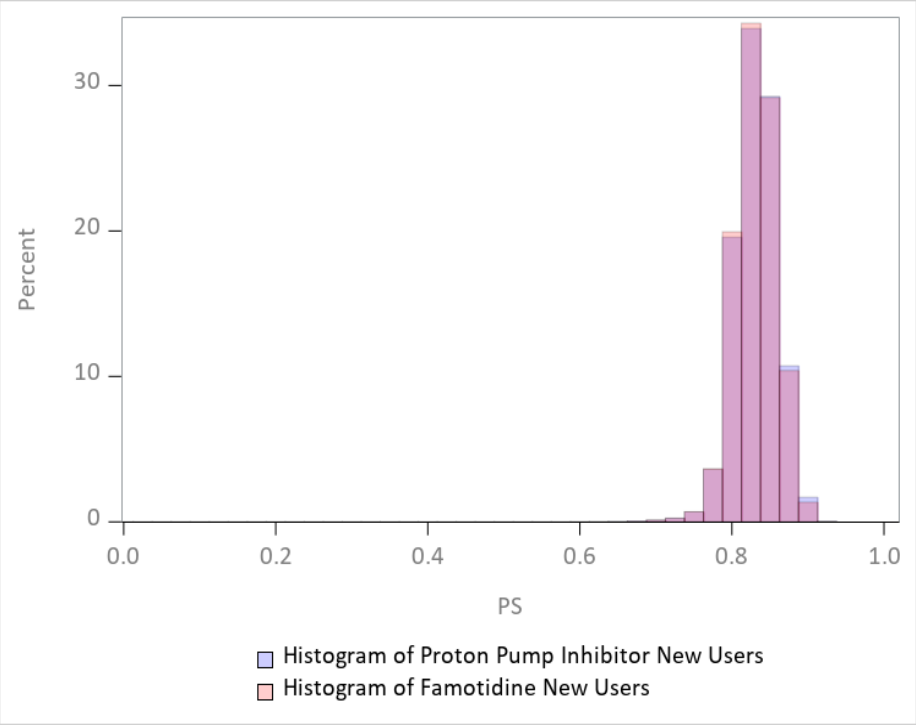
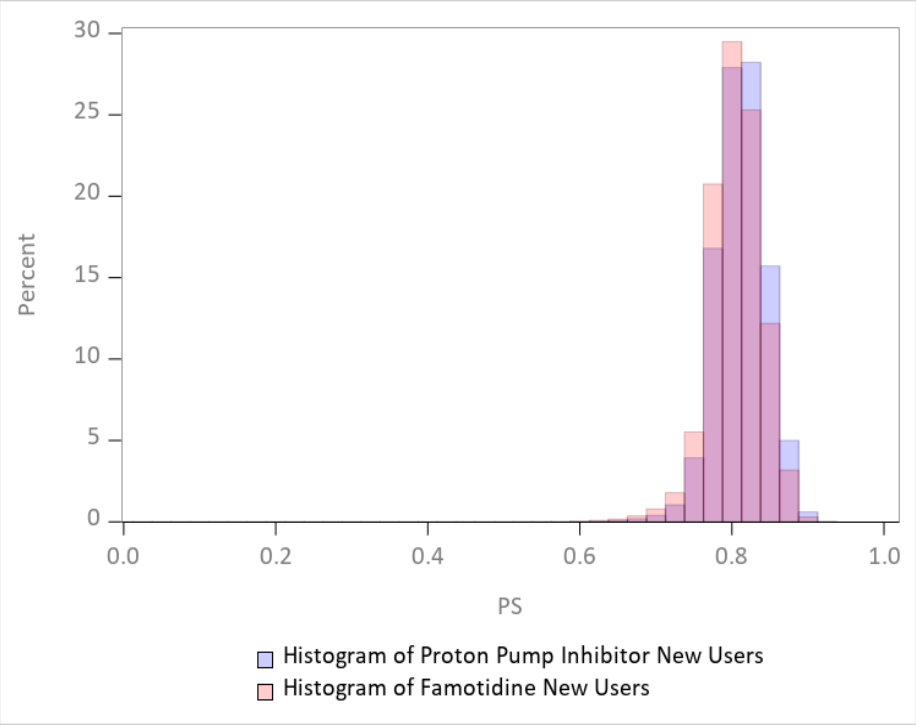


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

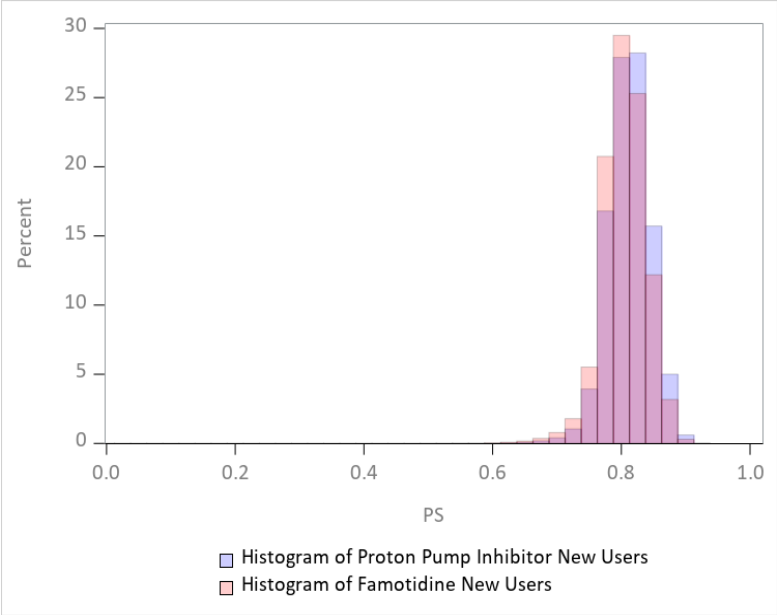


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

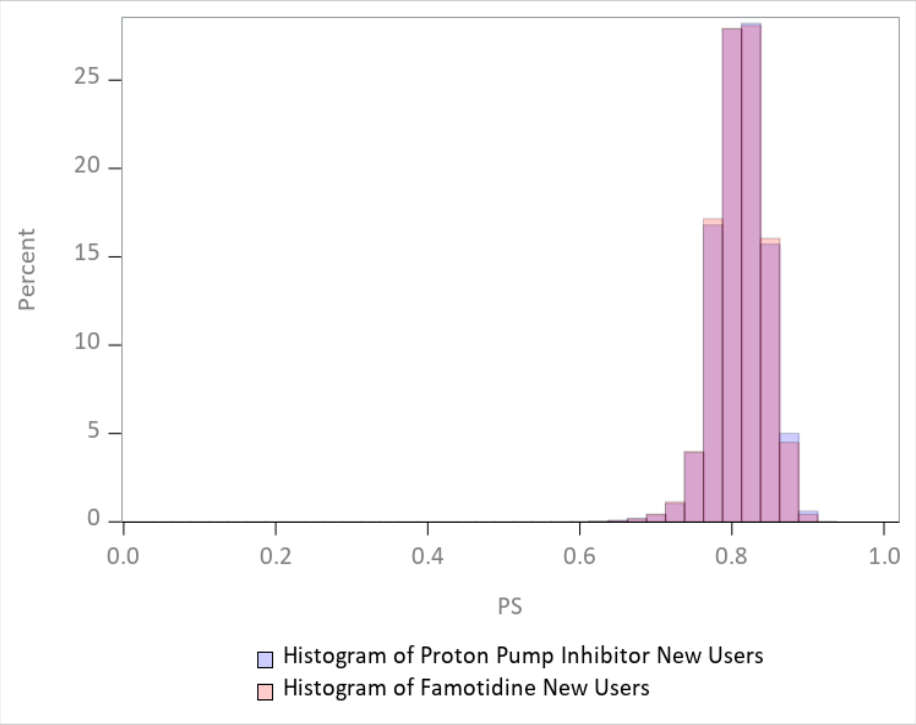
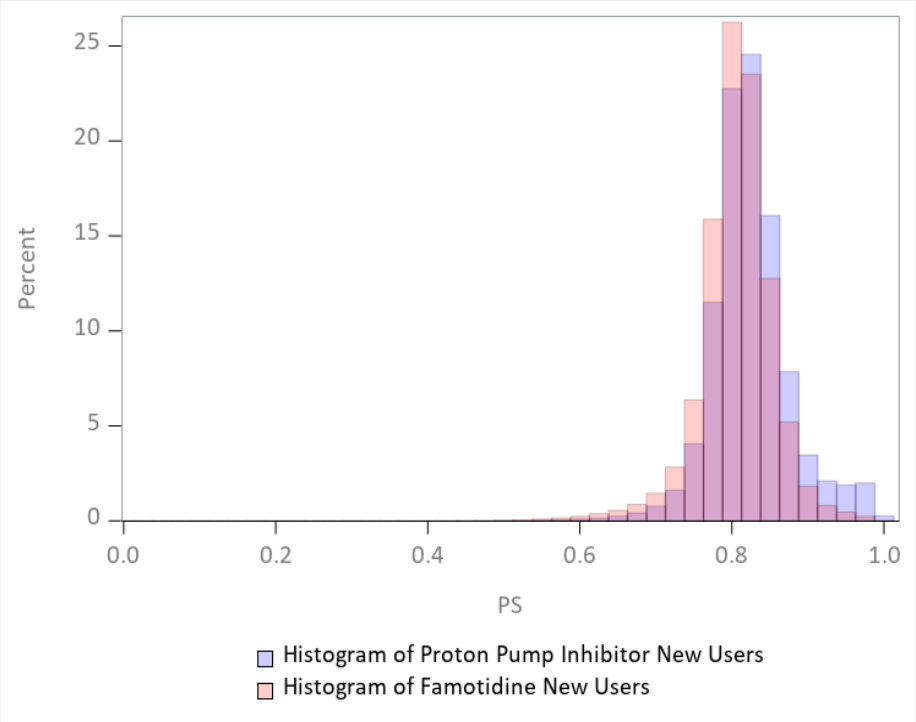


Figure 3a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

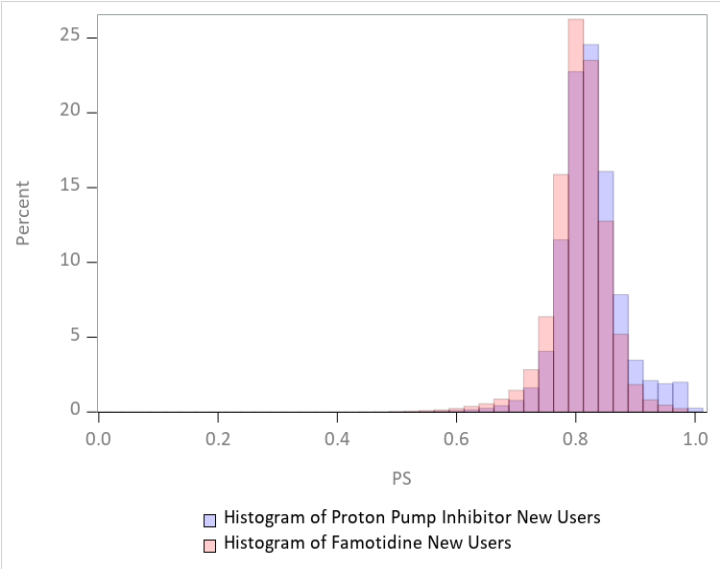


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

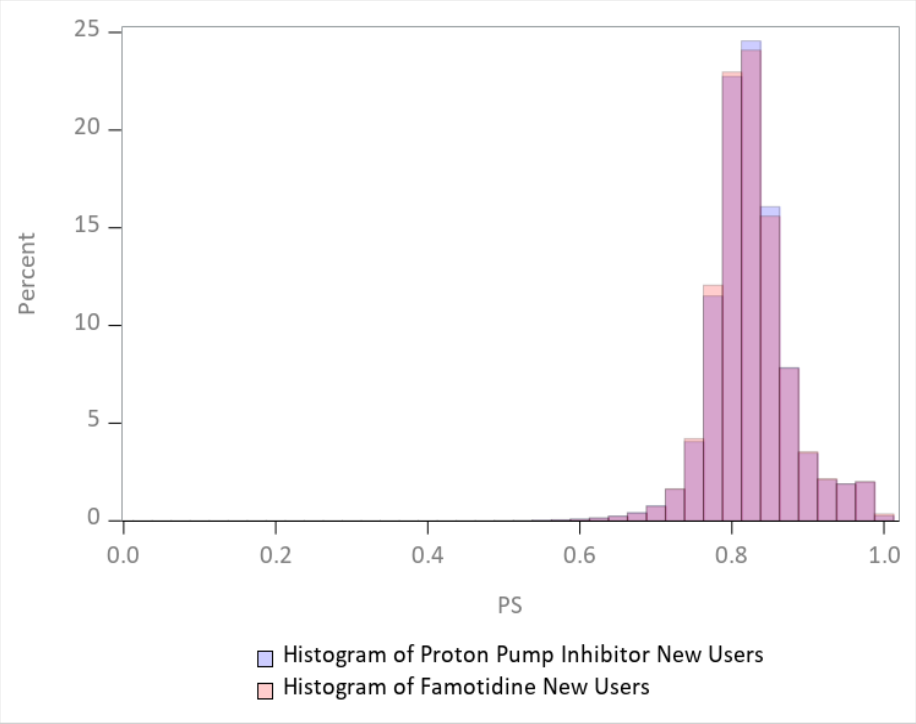
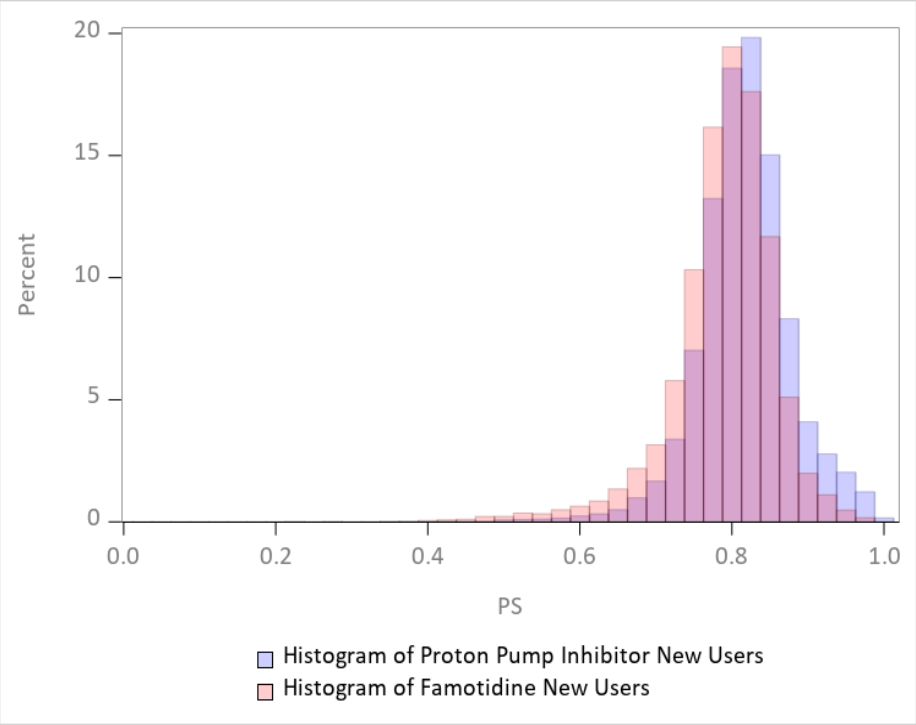


Figure 3b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

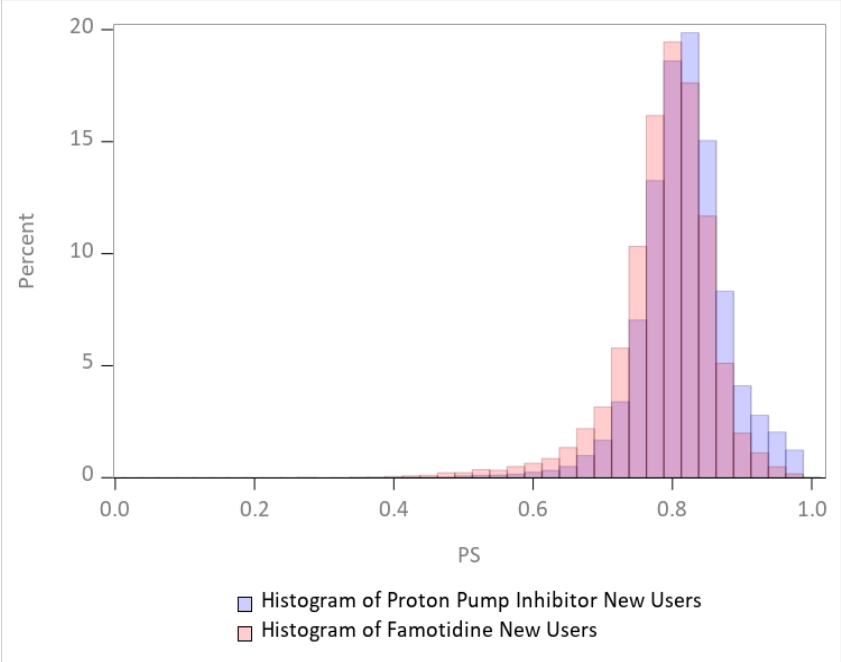


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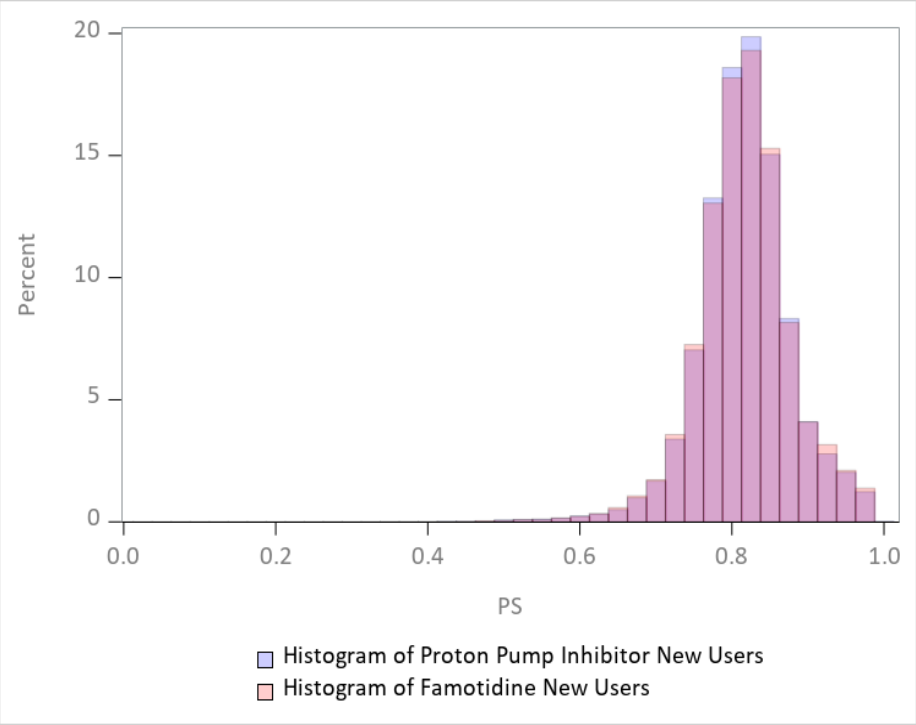
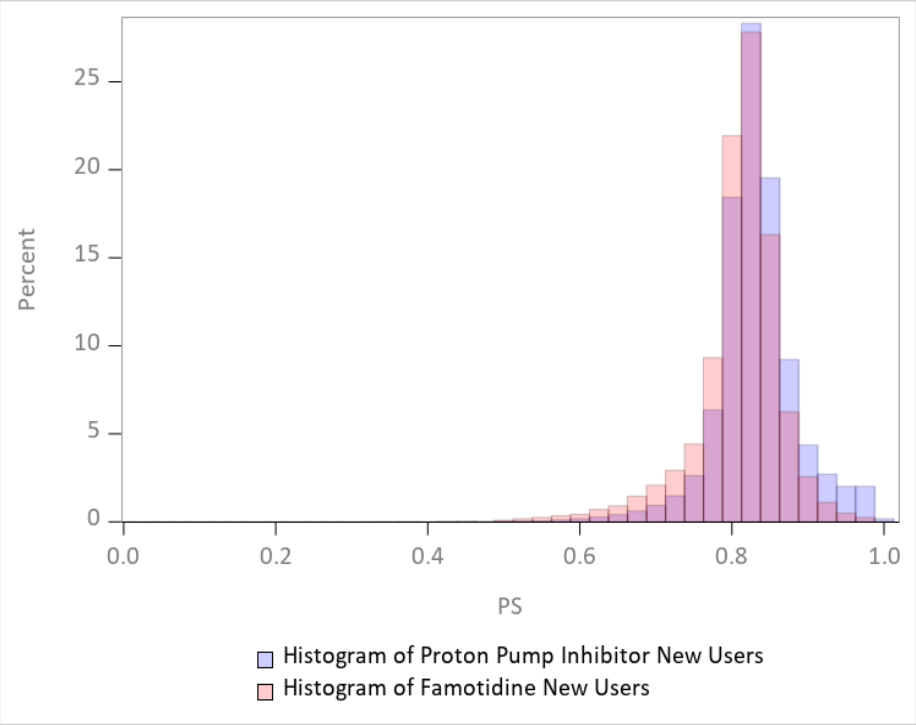


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

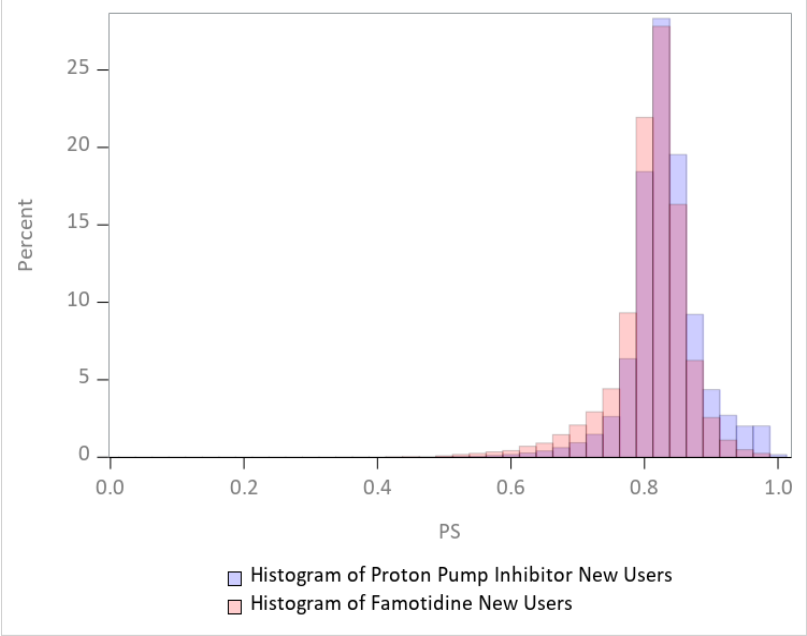


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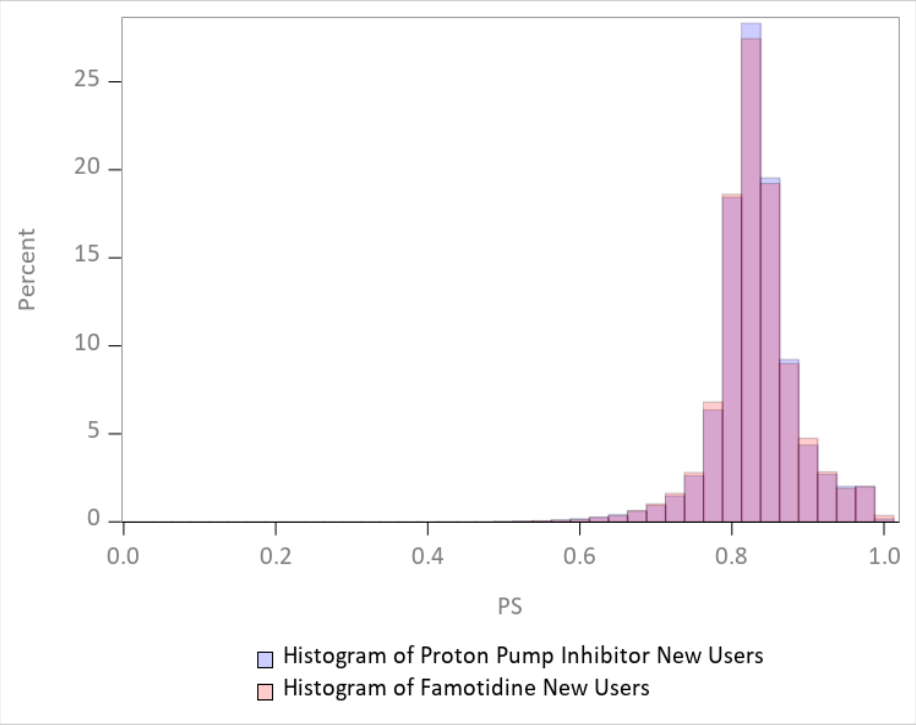
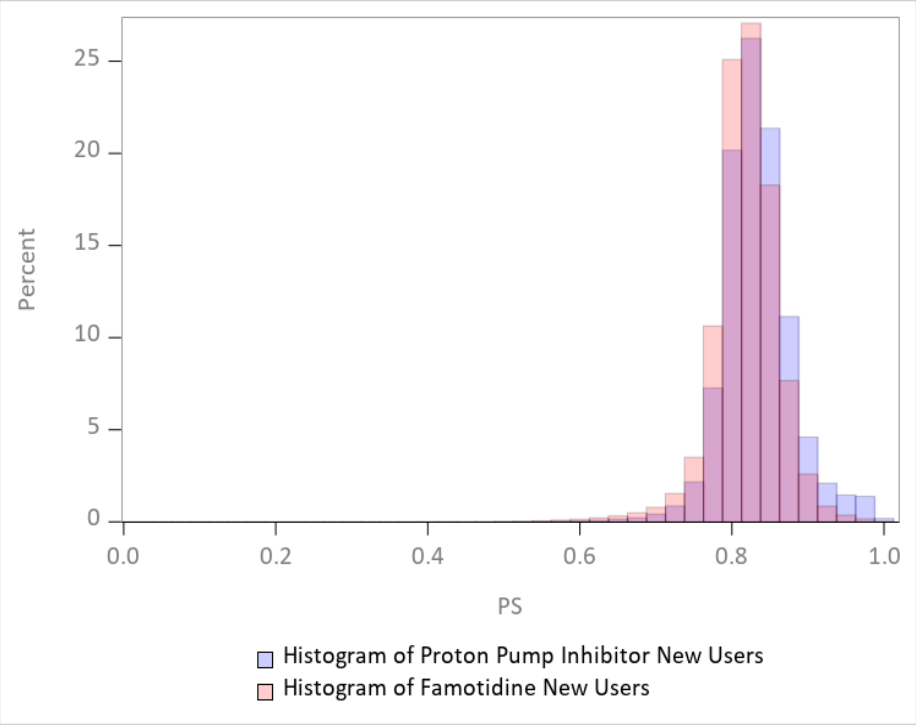


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

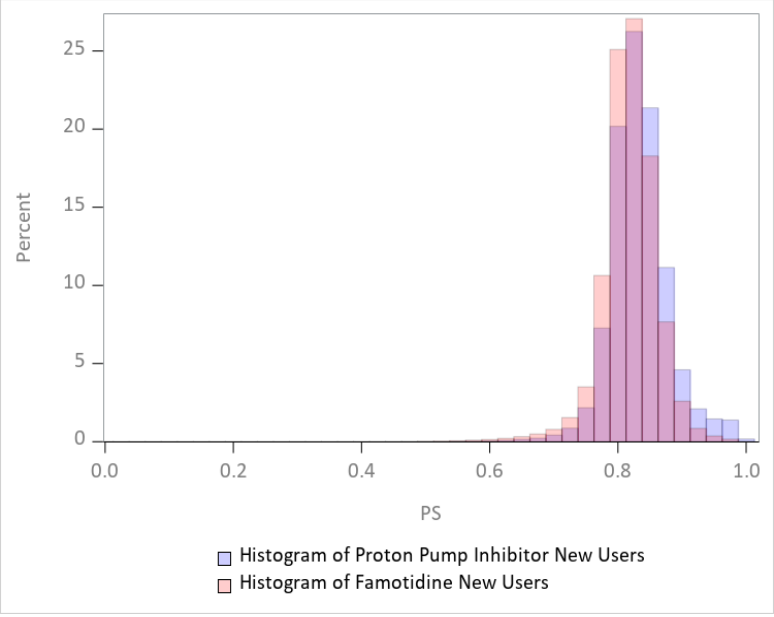


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

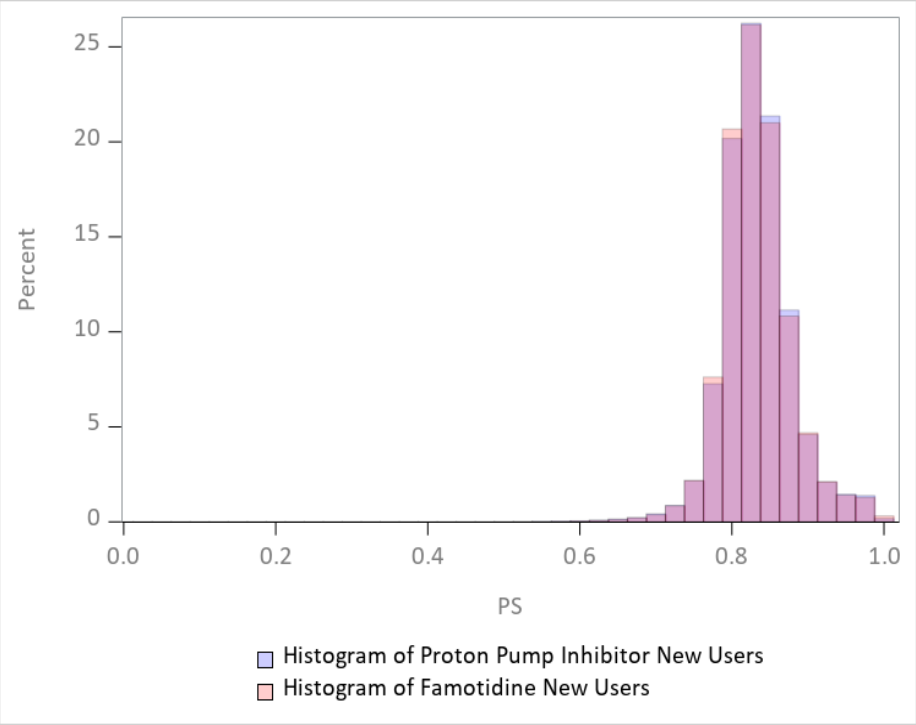
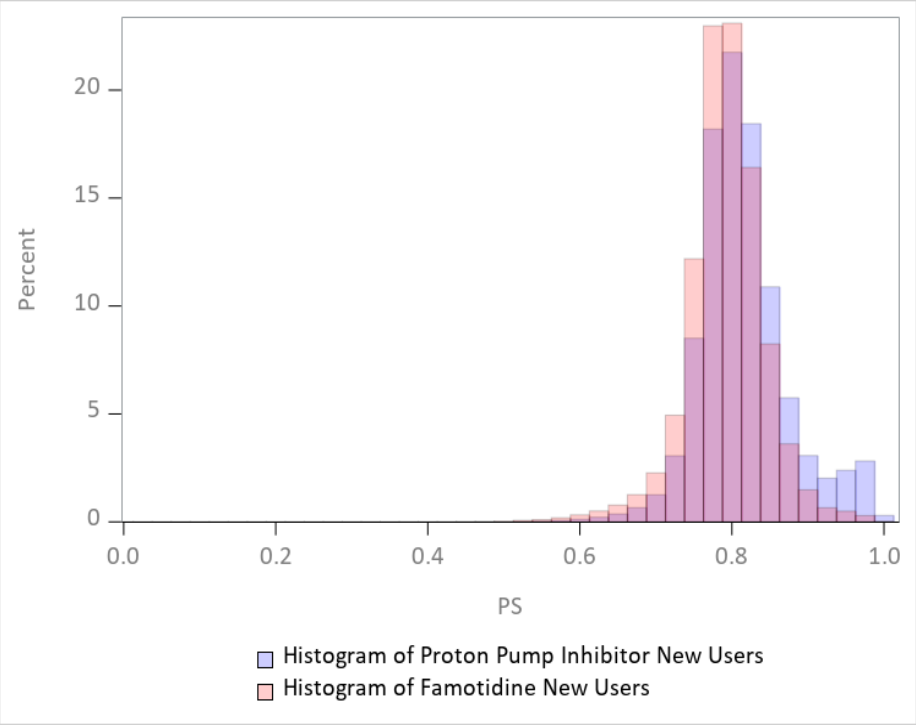


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

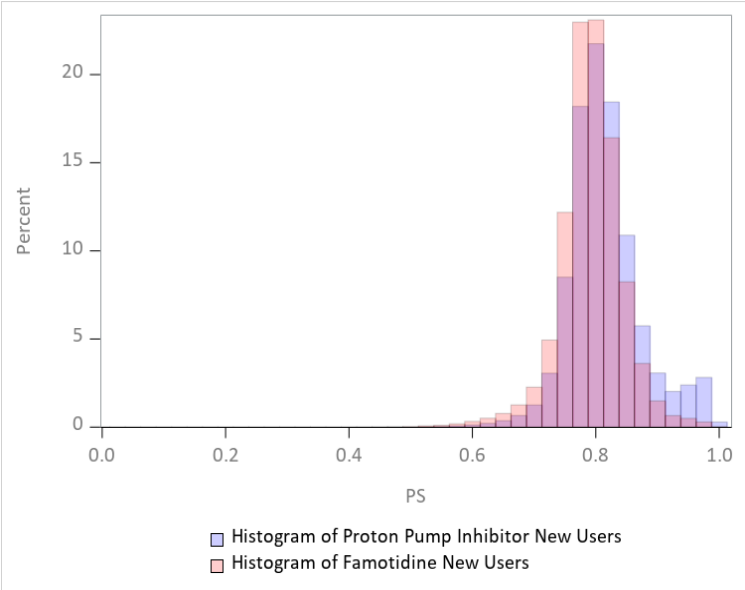


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

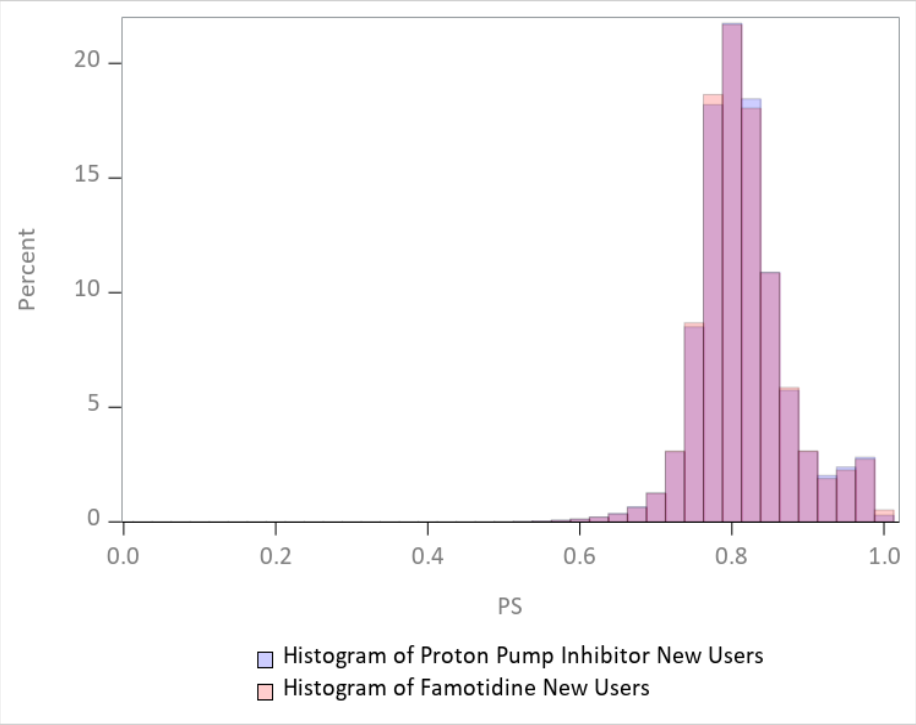
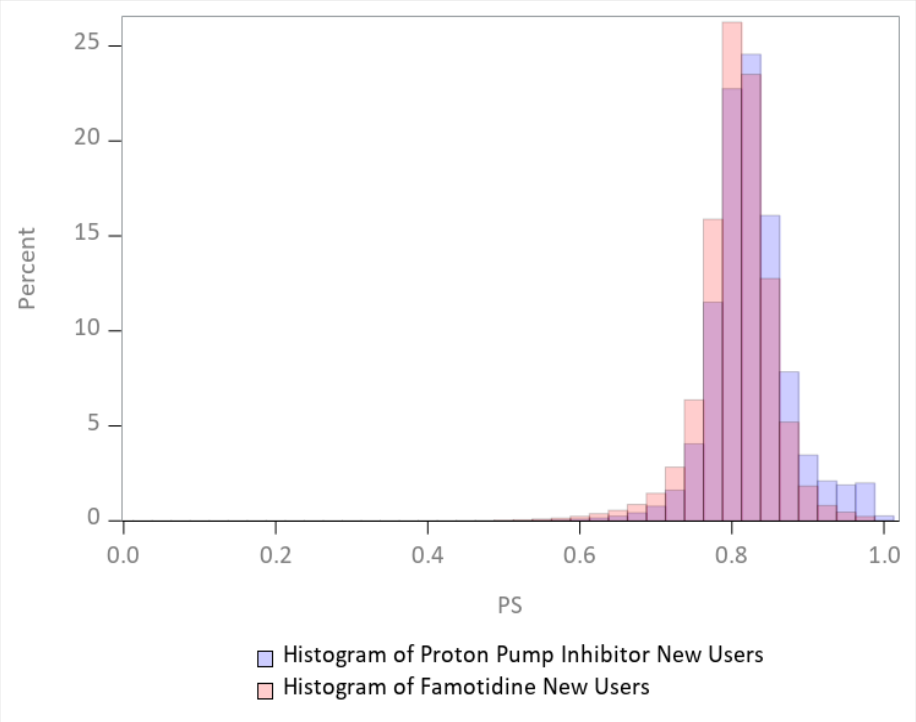


Figure 4a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

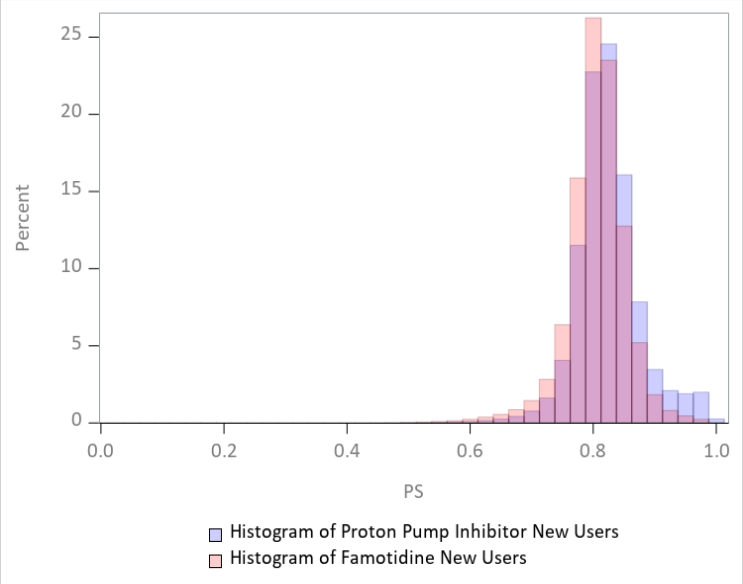


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

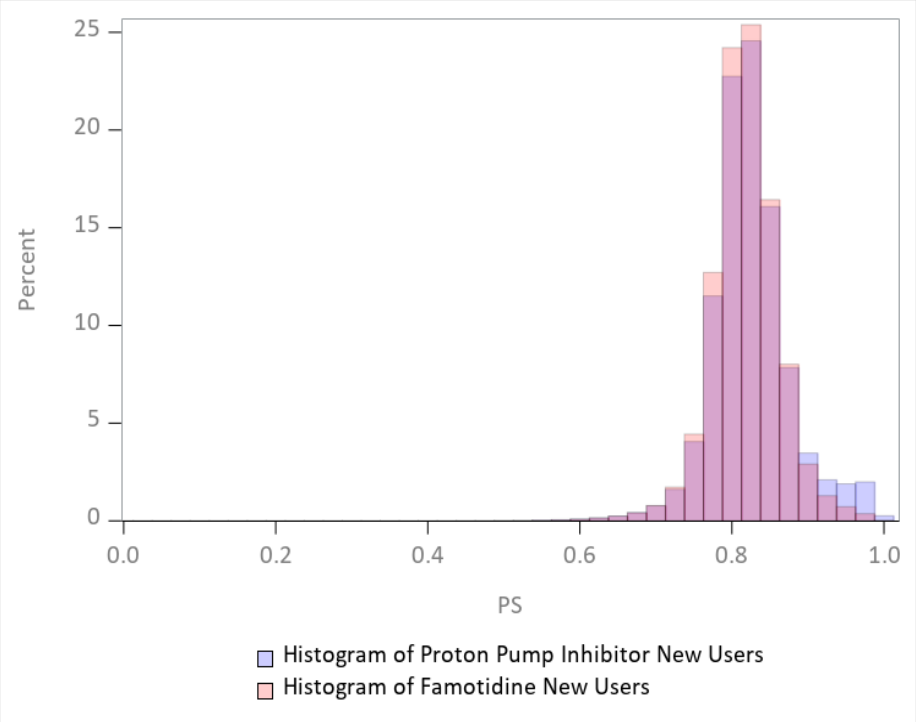
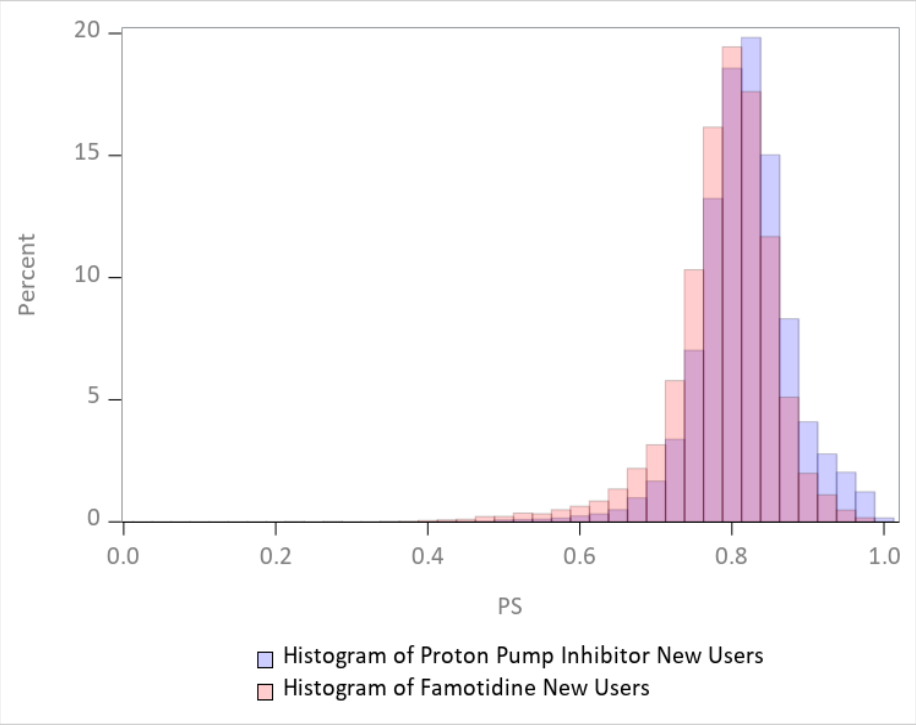


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

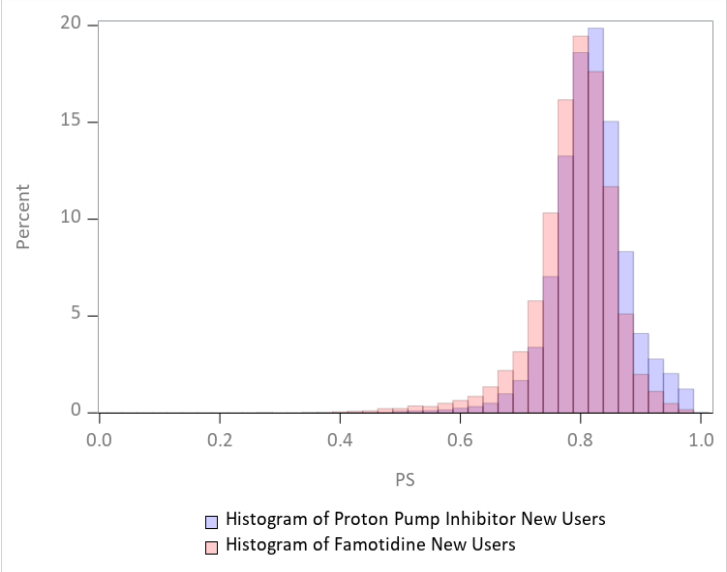


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

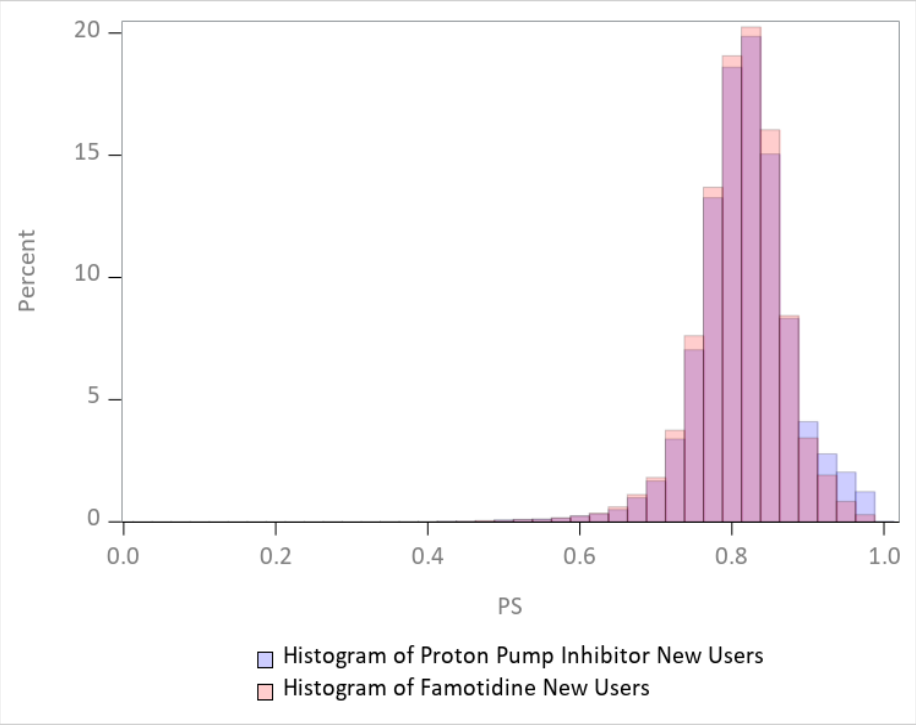
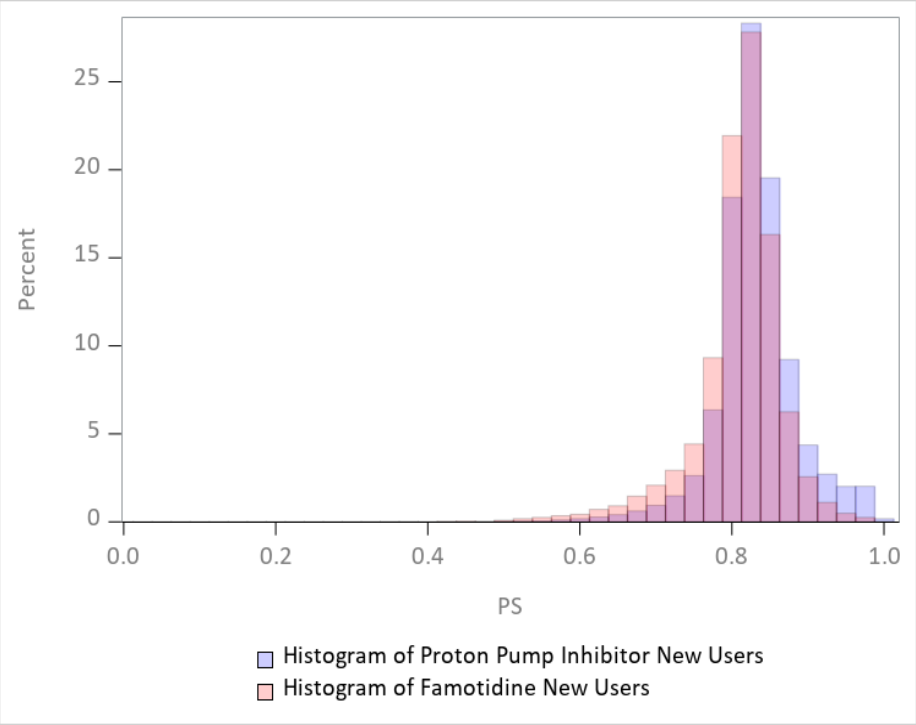


Figure 4c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

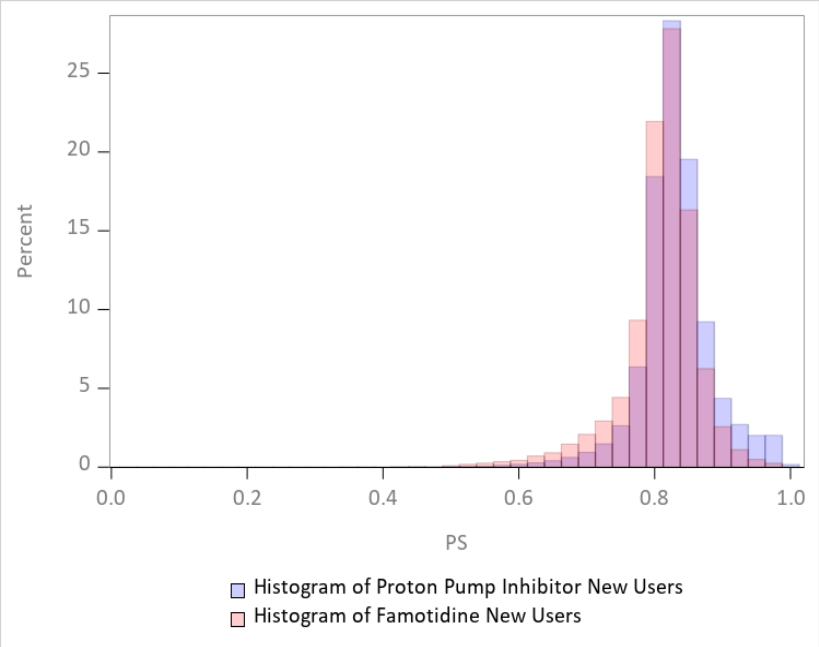


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

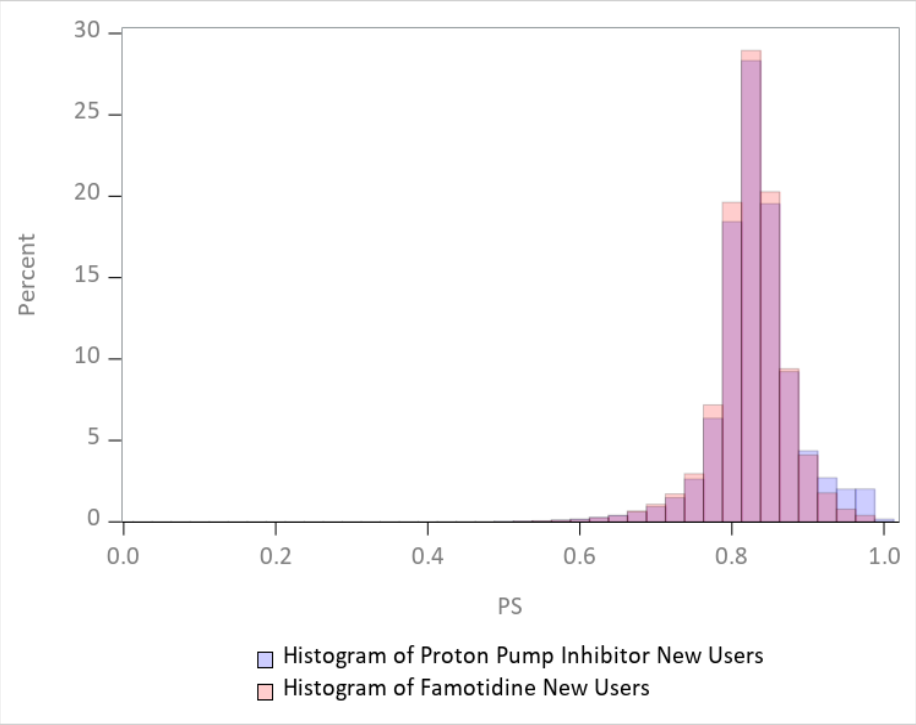
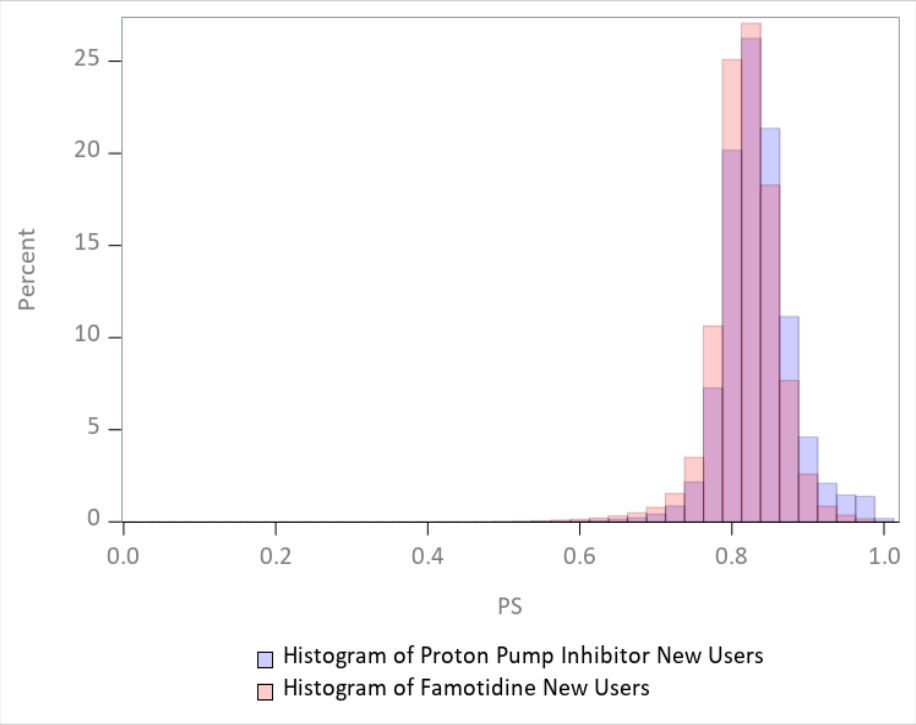


Figure 4d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

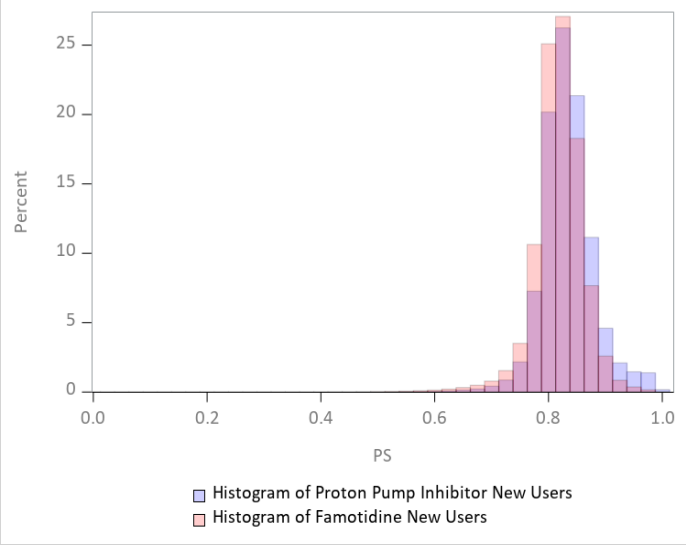


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

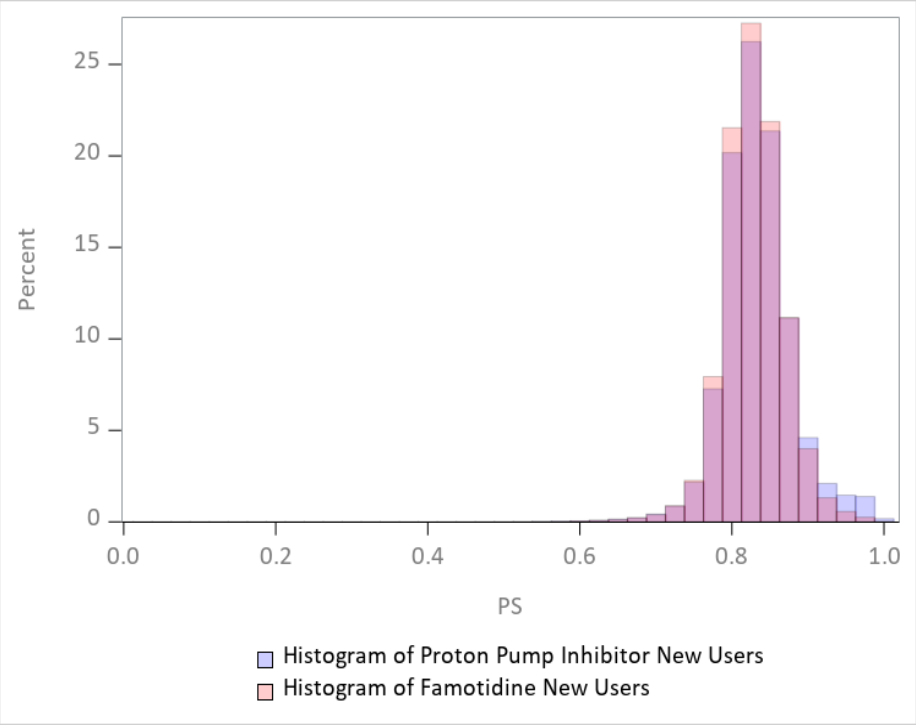
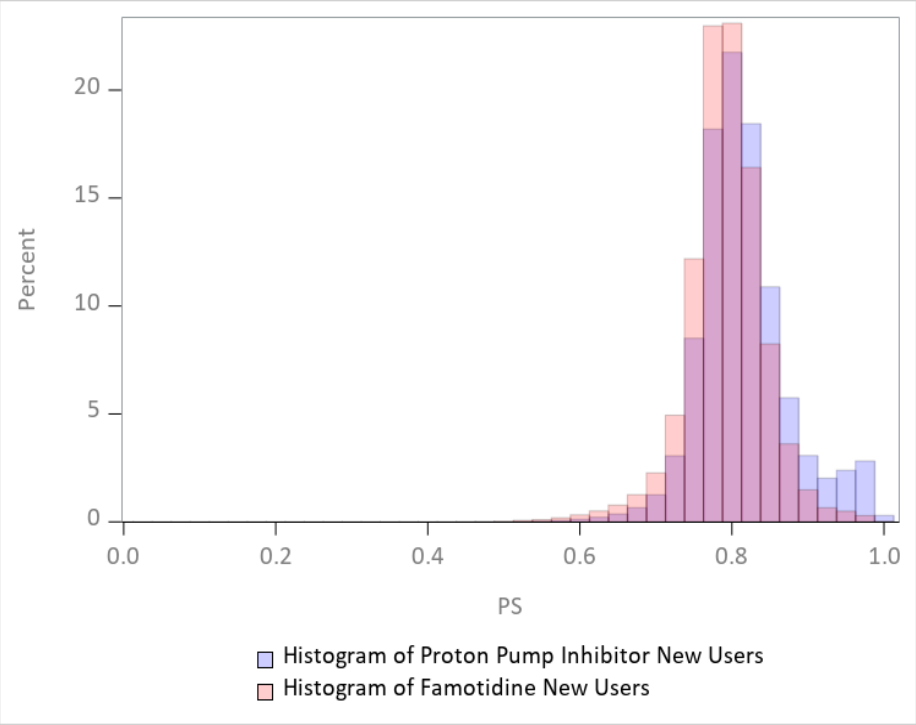


Figure 4e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

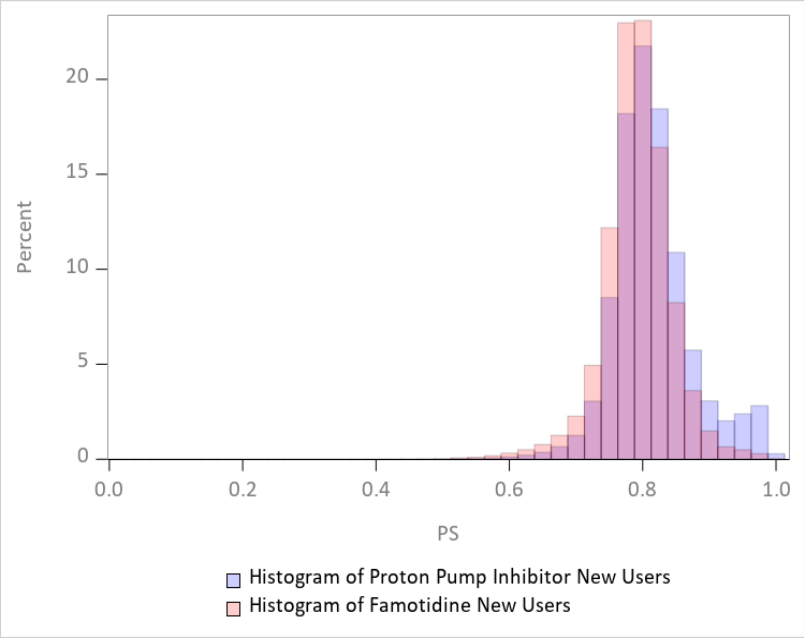


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

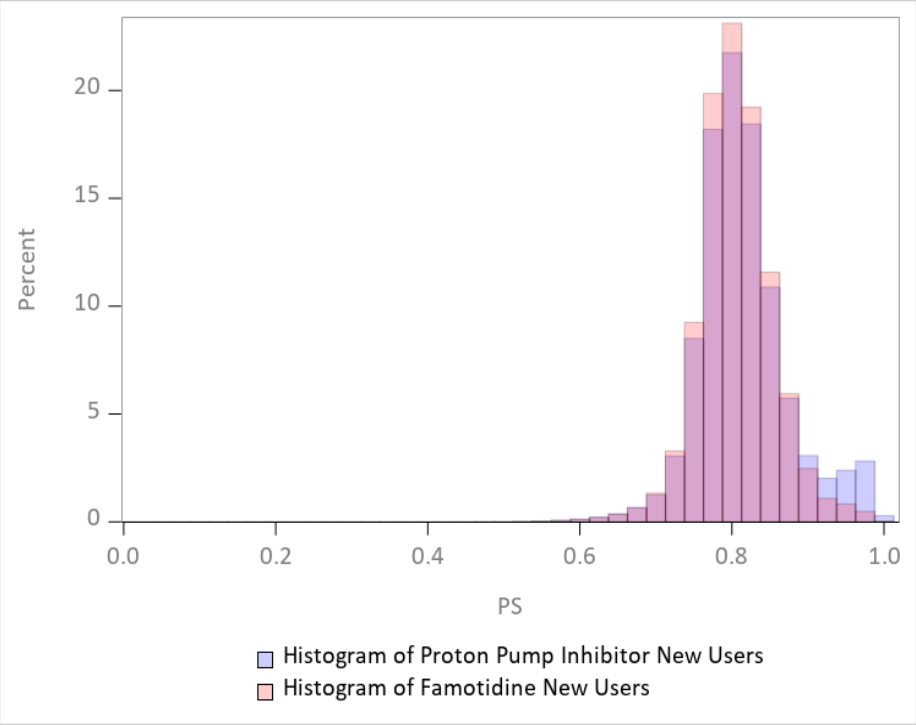
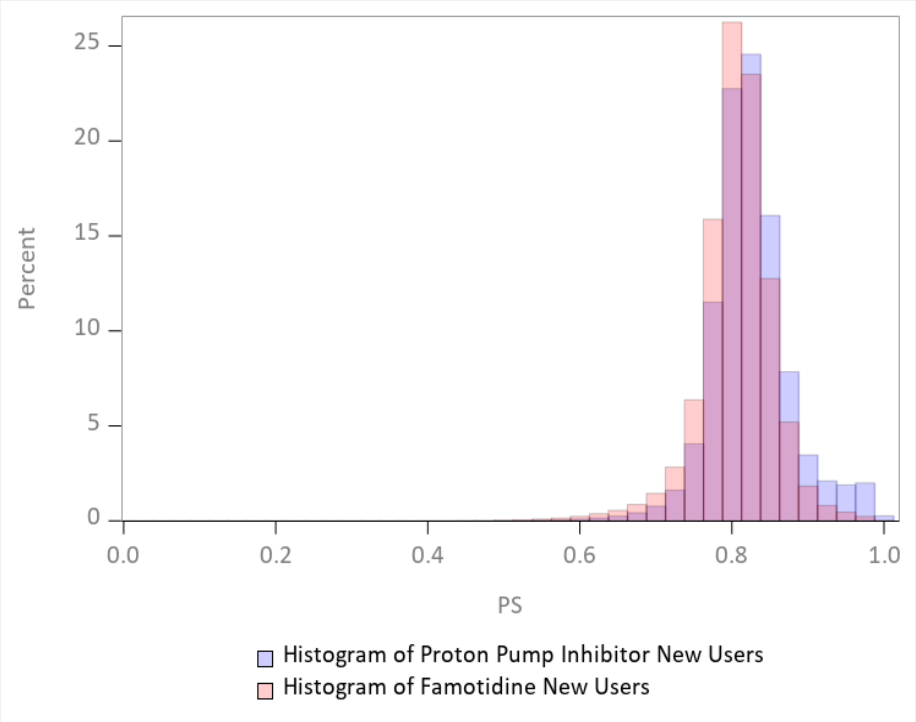


Figure 5a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

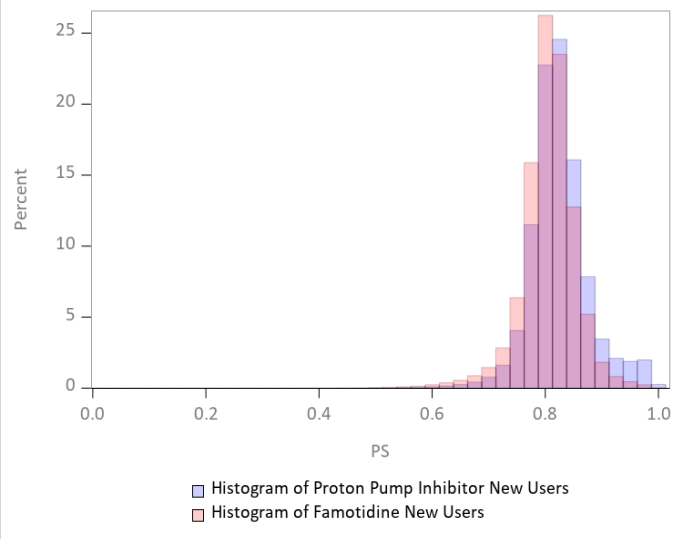


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Weighted Propensity Score Distribution After Trimming, Stratum Weighted, Average Treatment Effect in the Treated (ATT)

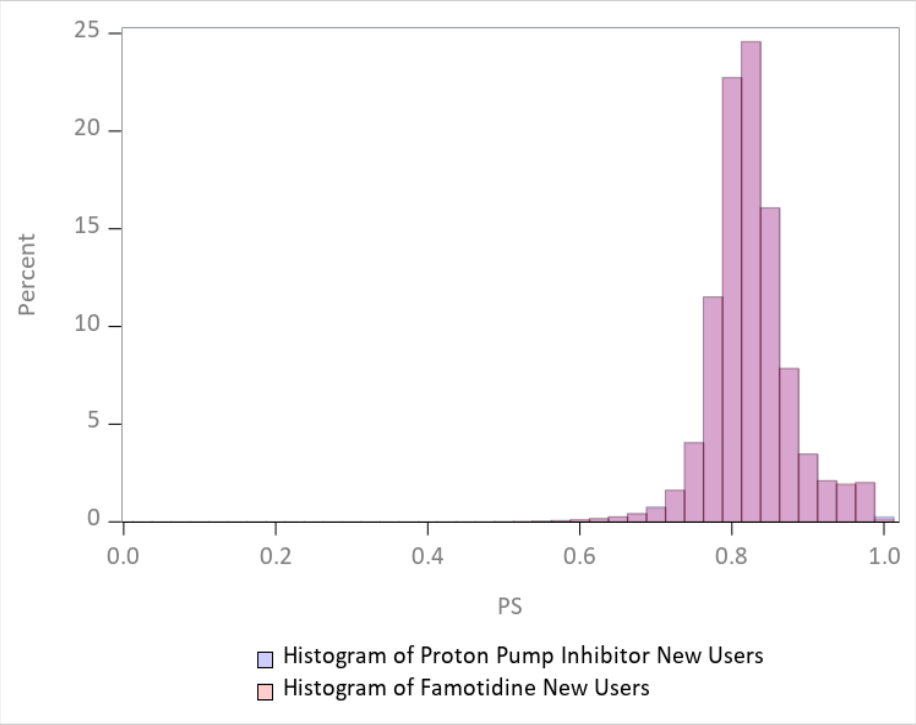
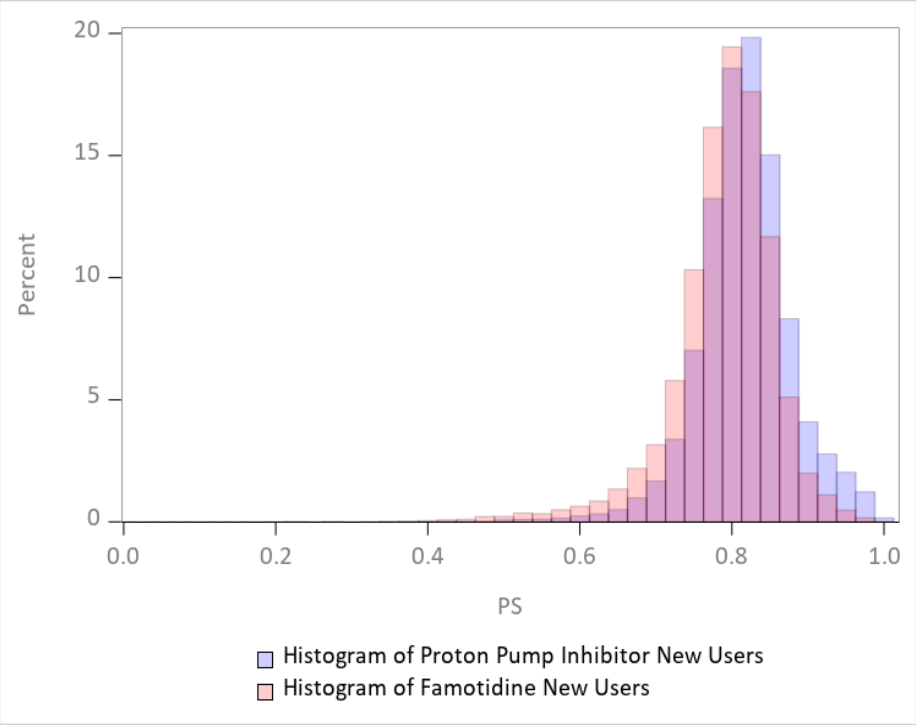


Figure 5b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

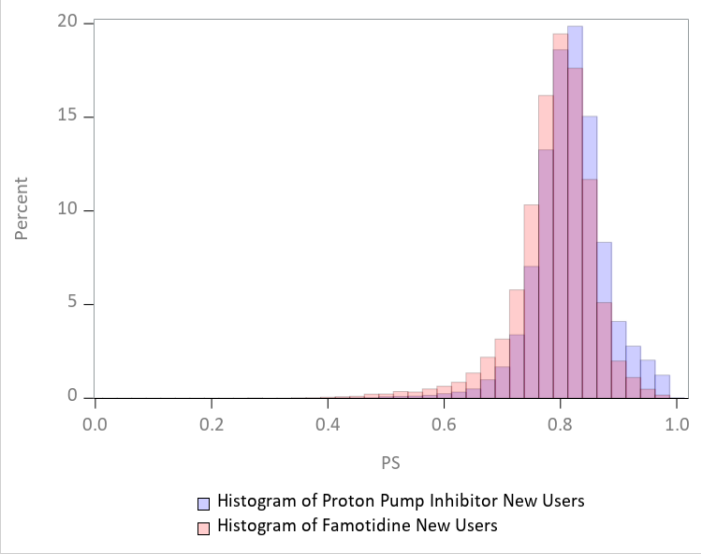


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Weighted Propensity Score Distribution After Trimming, Stratum Weighted, Average Treatment Effect in the Treated (ATT)

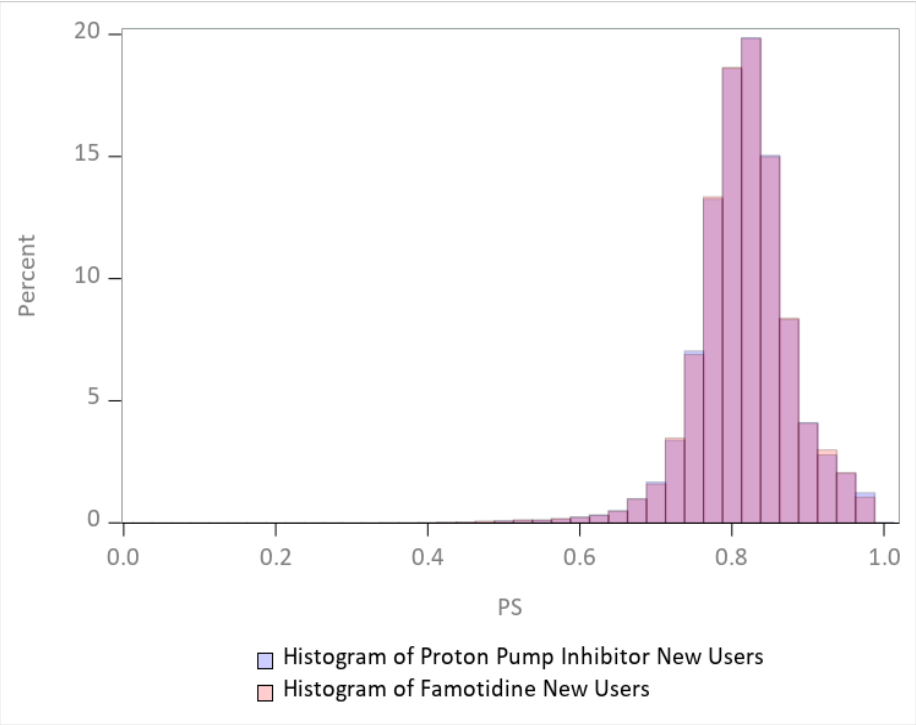
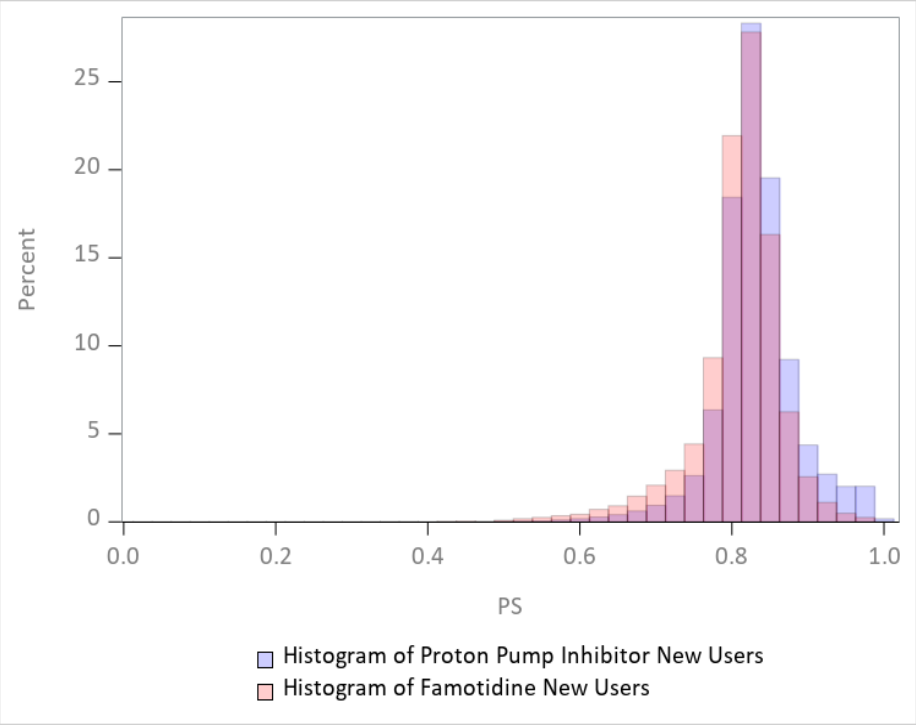


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

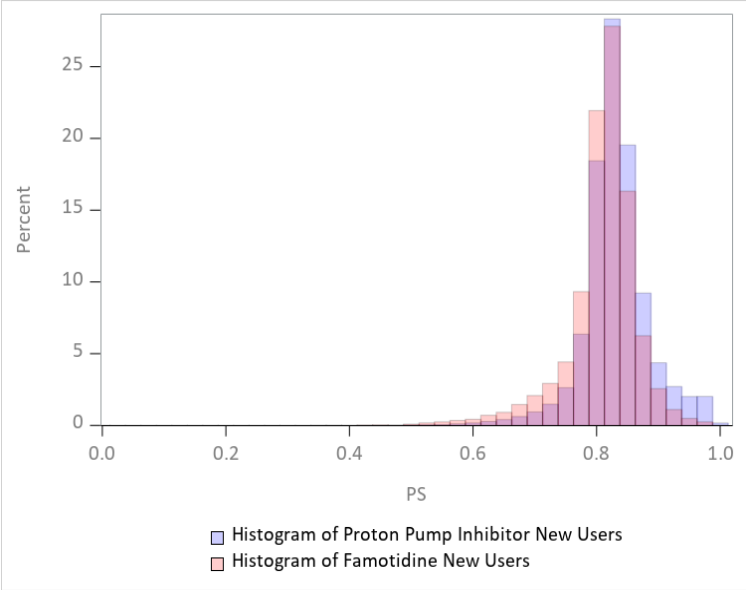


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Weighted Propensity Score Distribution After Trimming, Stratum Weighted, Average Treatment Effect in the Treated (ATT)

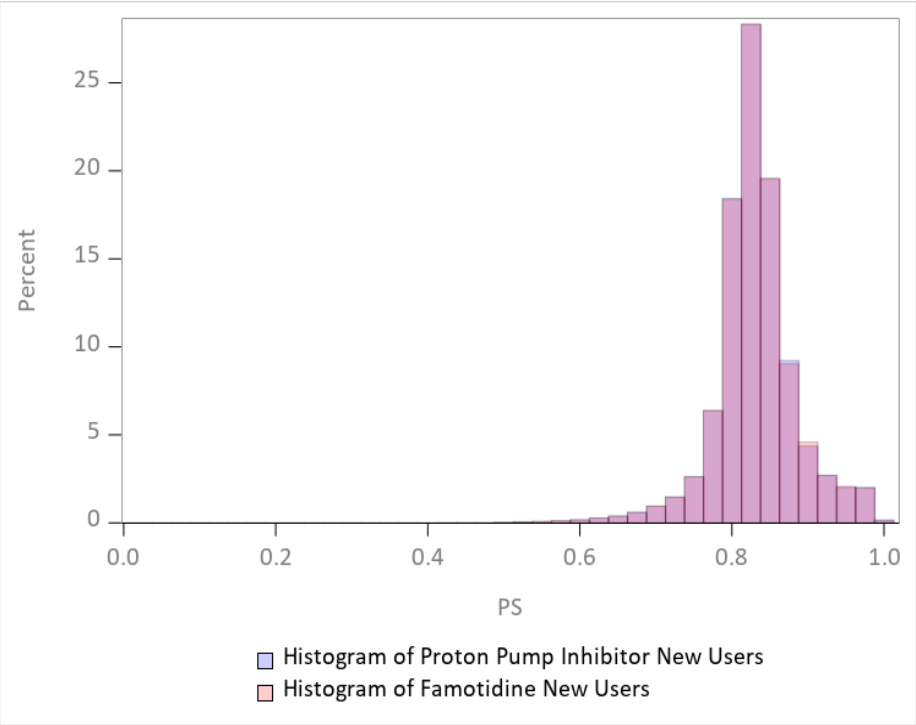
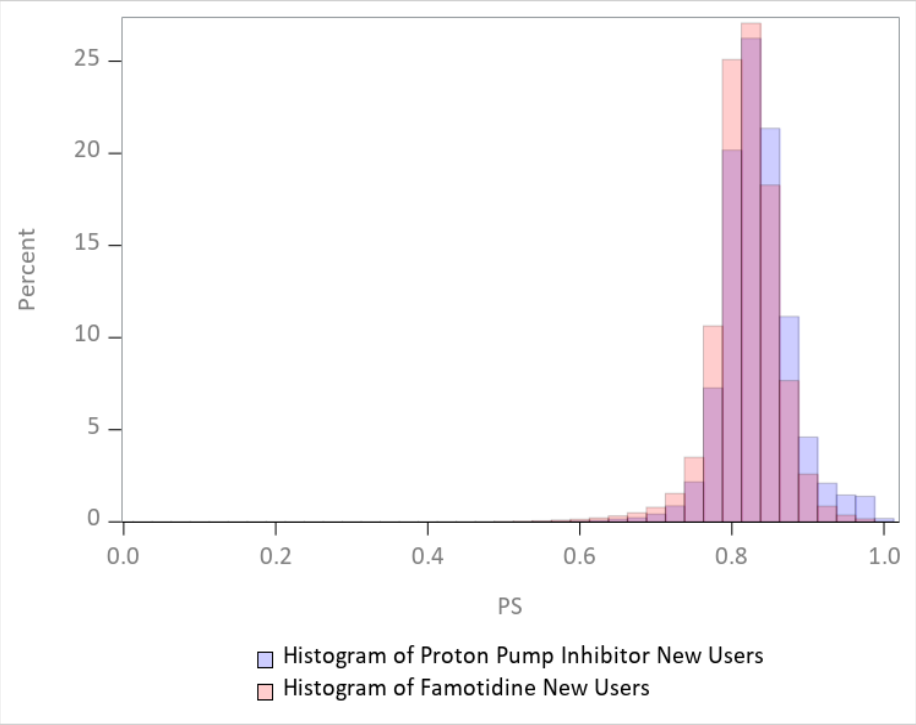


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

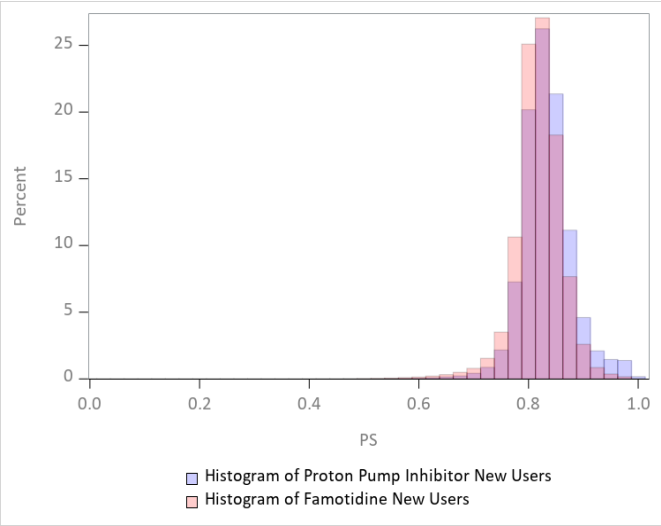


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Weighted Propensity Score Distribution After Trimming, Stratum Weighted, Average Treatment Effect in the Treated (ATT)

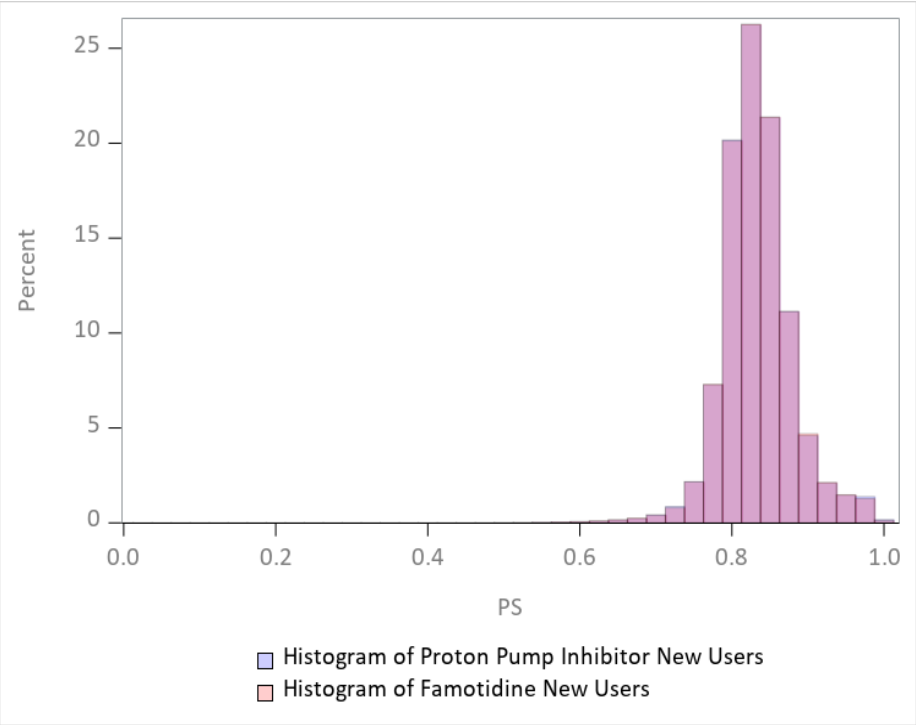
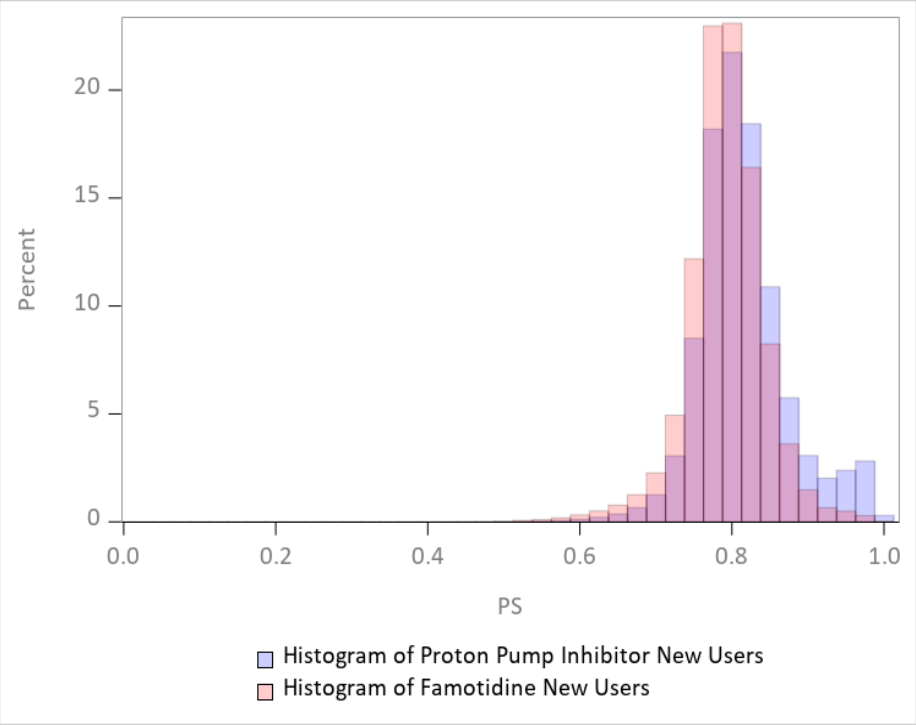


Figure 5e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

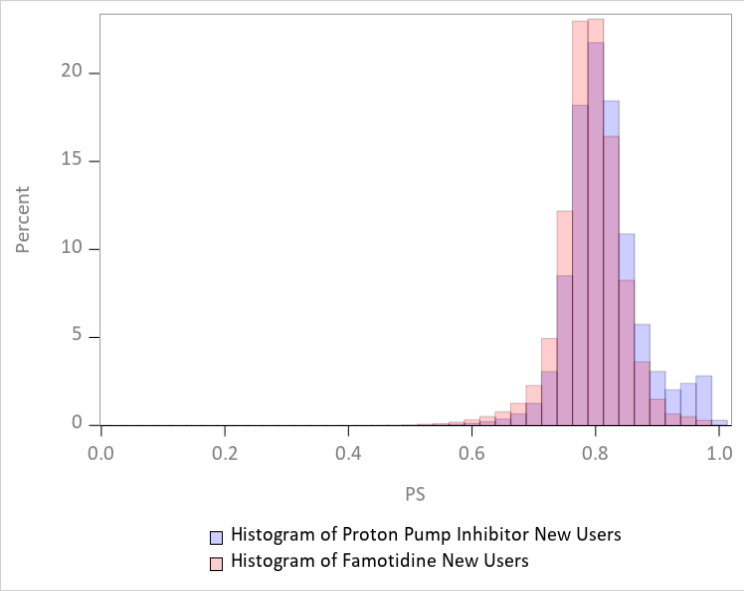


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Weighted Propensity Score Distribution After Trimming, Stratum Weighted, Average Treatment Effect in the Treated (ATT)

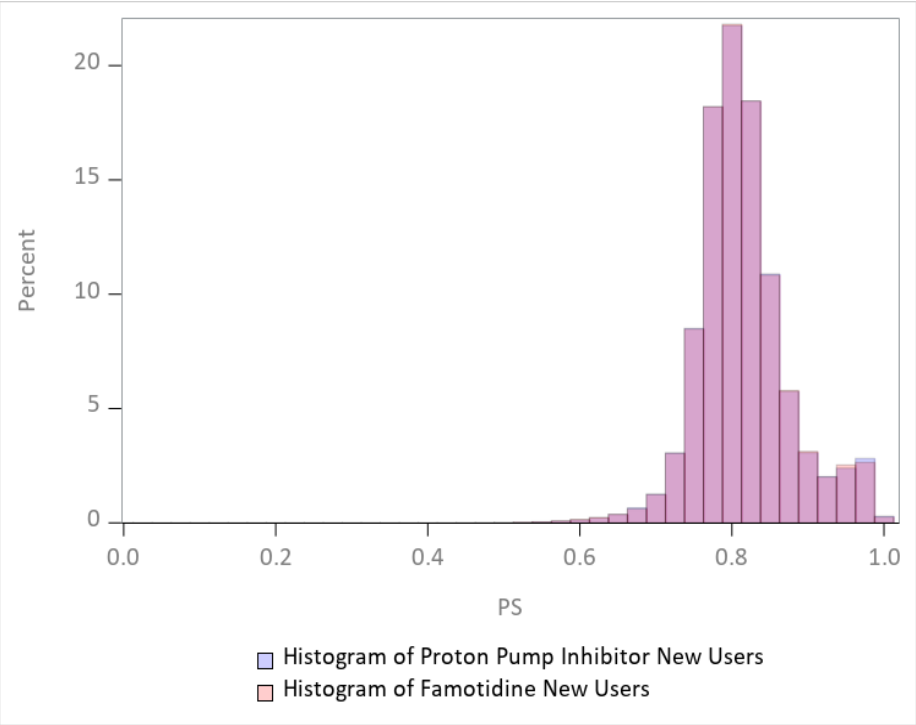
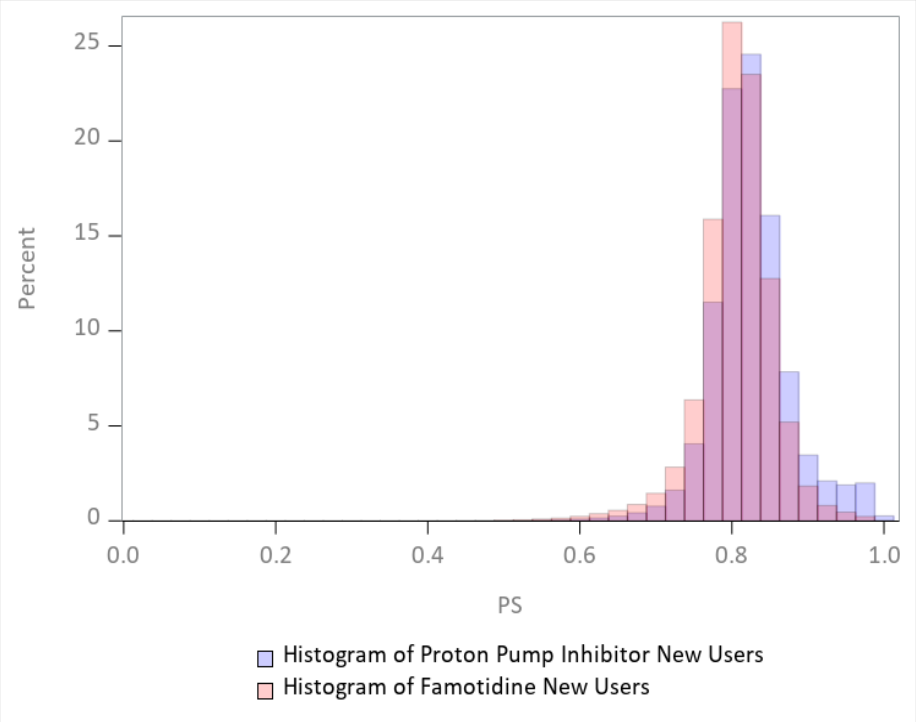


Figure 6a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Site-Adjusted Propensity Score Distribution



Weighted Propensity Score Distribution, Overlap Weighted

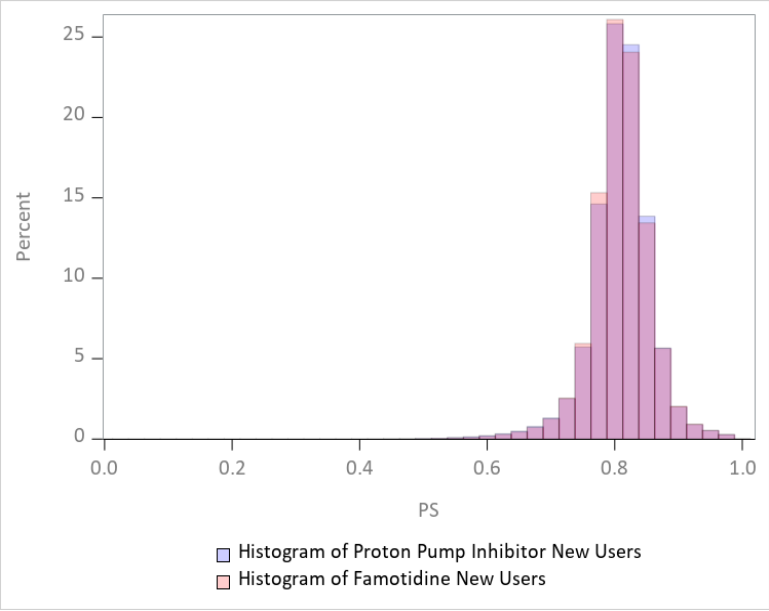
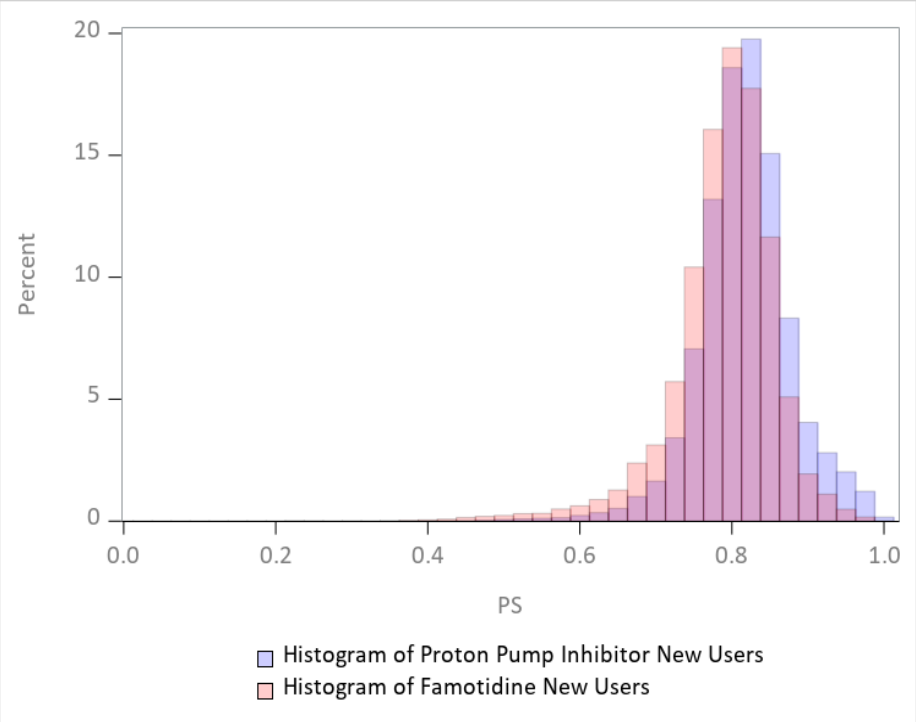


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Site-Adjusted Propensity Score Distribution



Weighted Propensity Score Distribution, Overlap Weighted

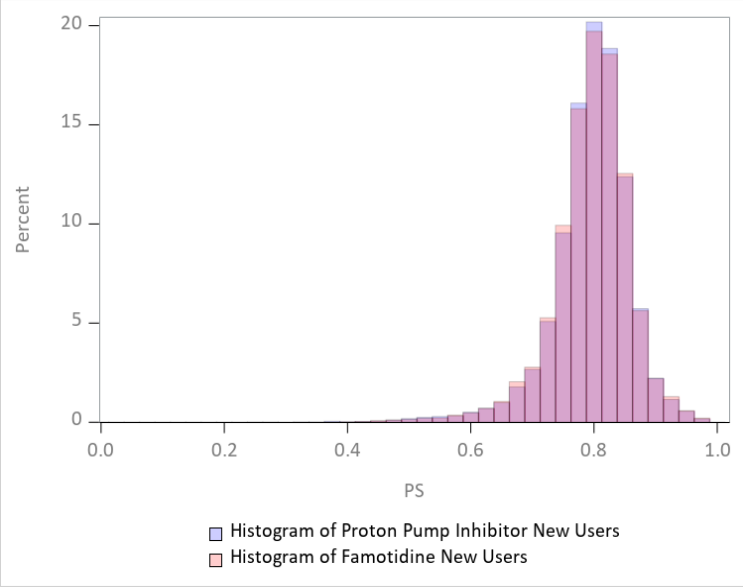
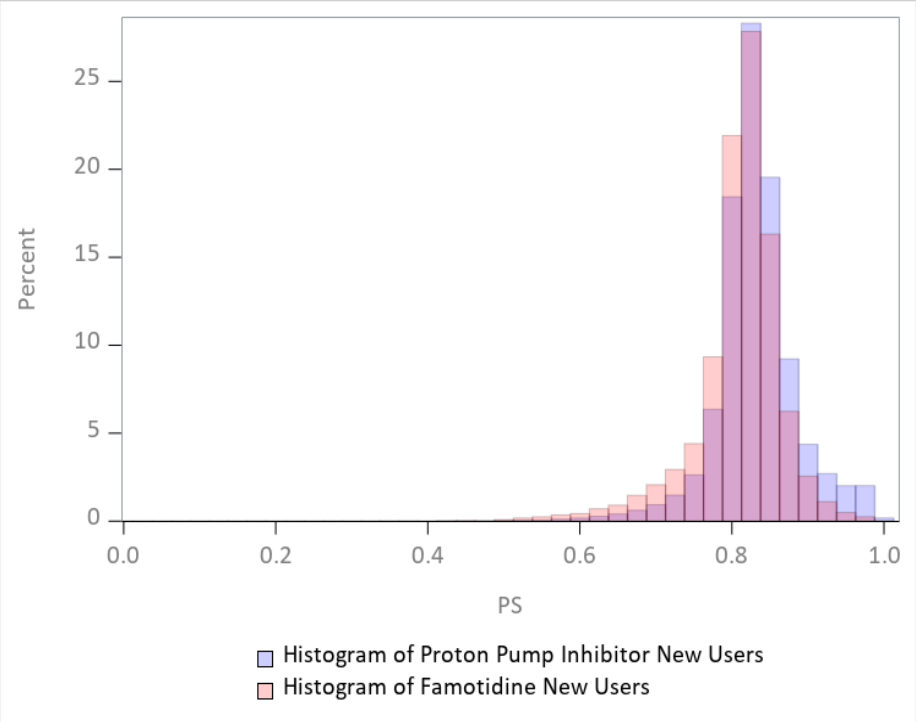


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Site-Adjusted Propensity Score Distribution



Weighted Propensity Score Distribution, Overlap Weighted

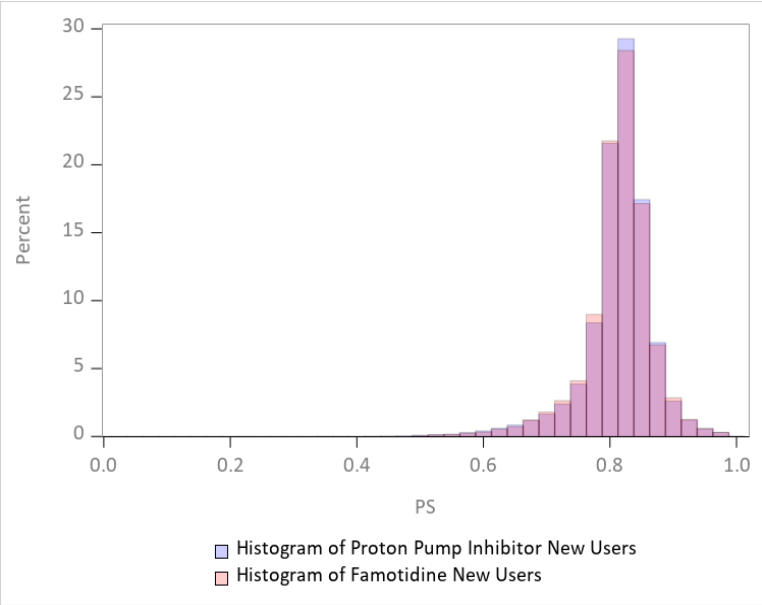
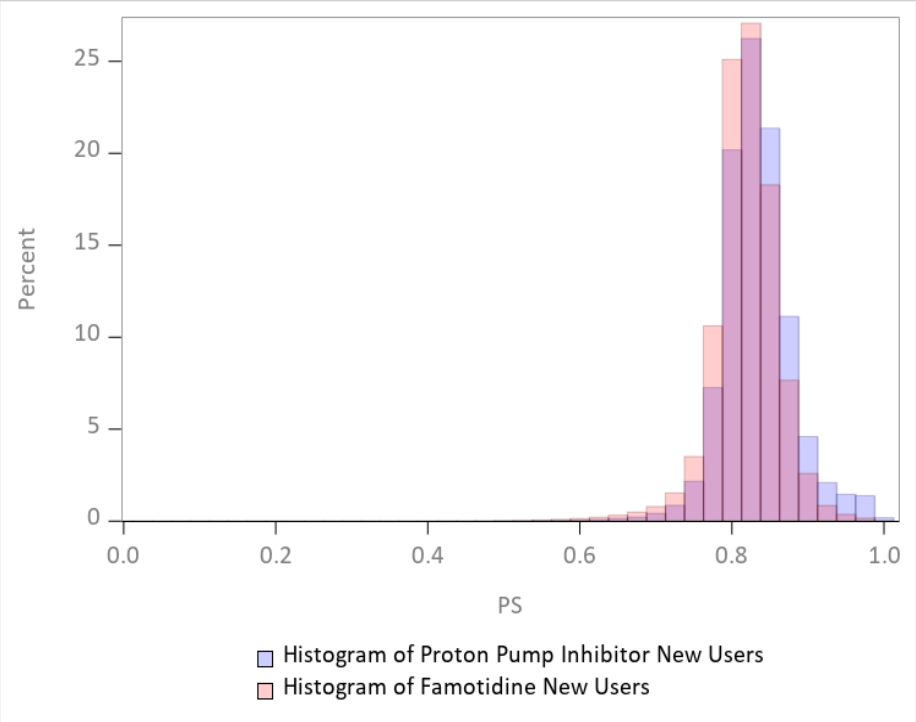


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Site-Adjusted Propensity Score Distribution



Weighted Propensity Score Distribution, Overlap Weighted

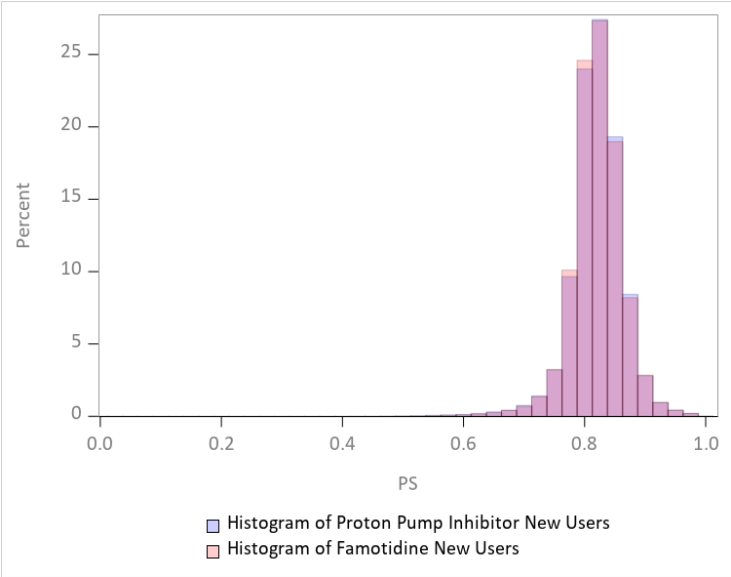
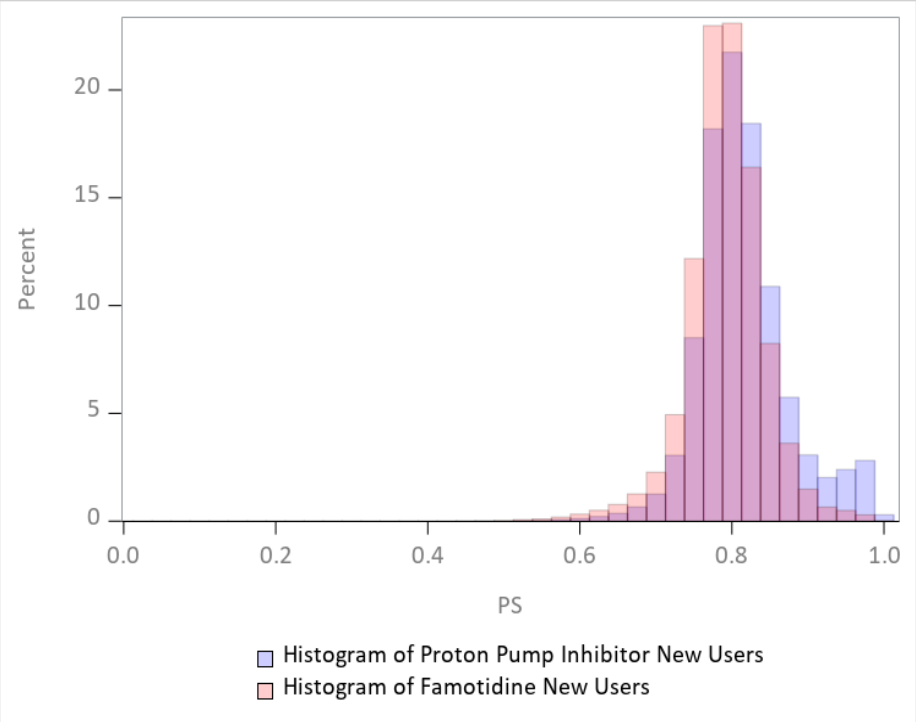


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Site-Adjusted Propensity Score Distribution



Weighted Propensity Score Distribution, Overlap Weighted

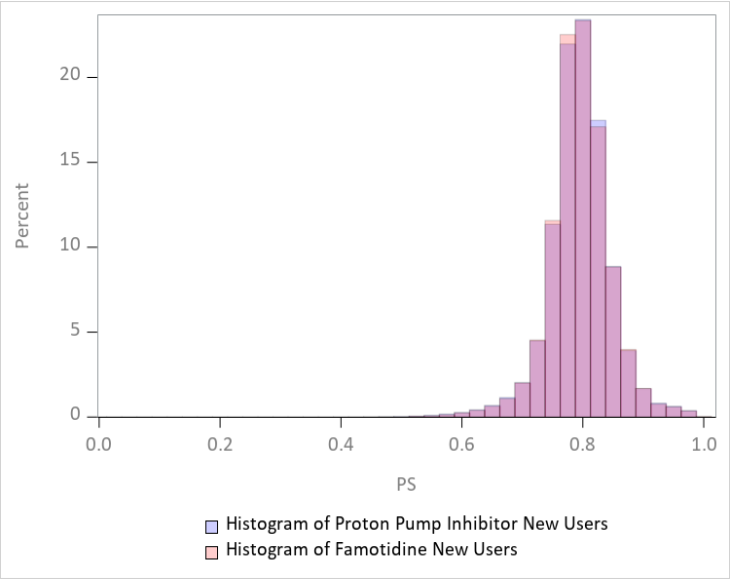
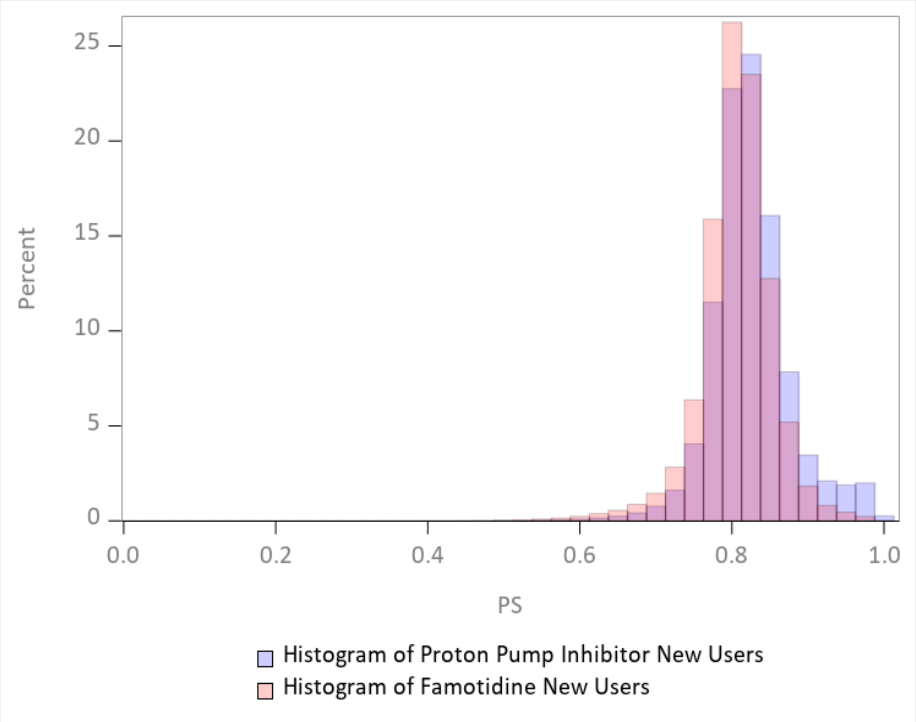


Figure 7a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

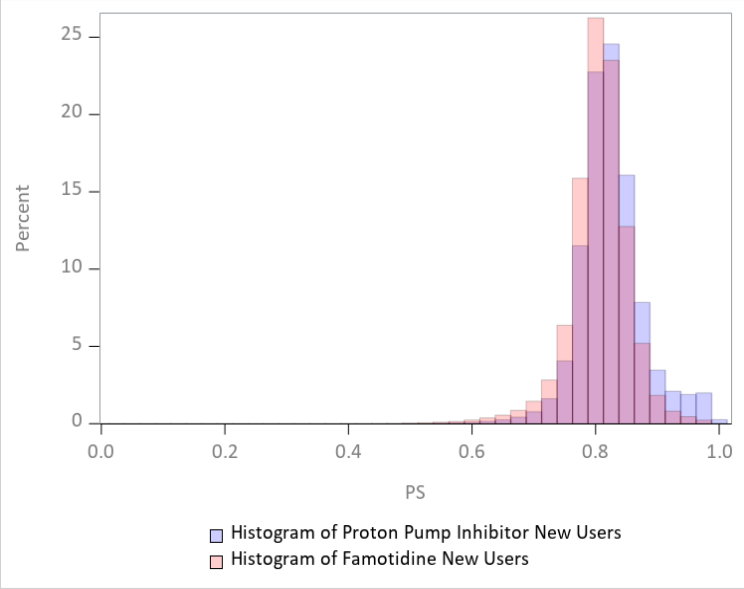


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

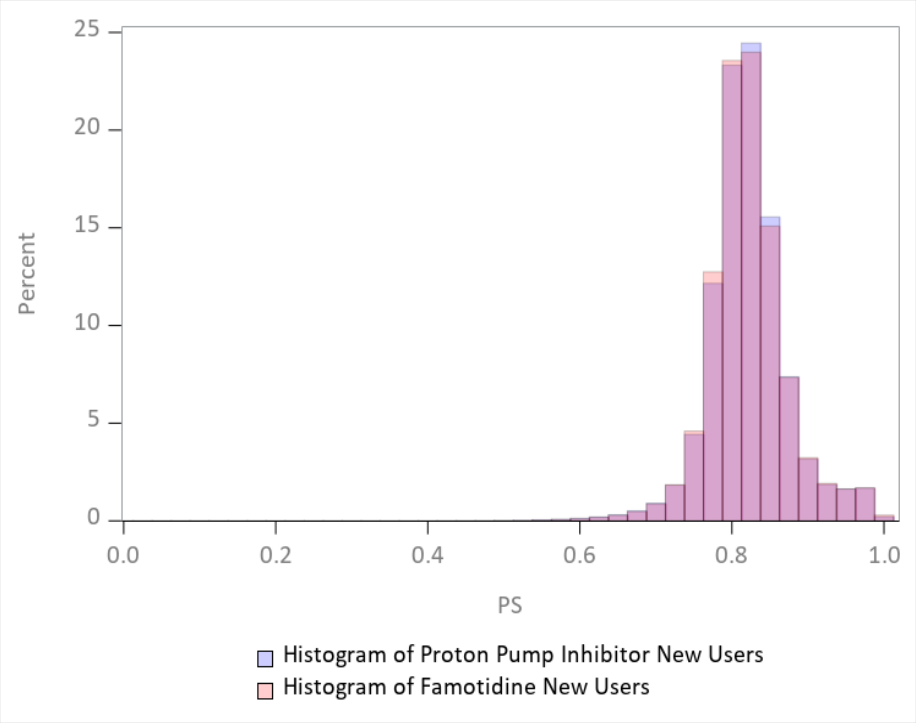
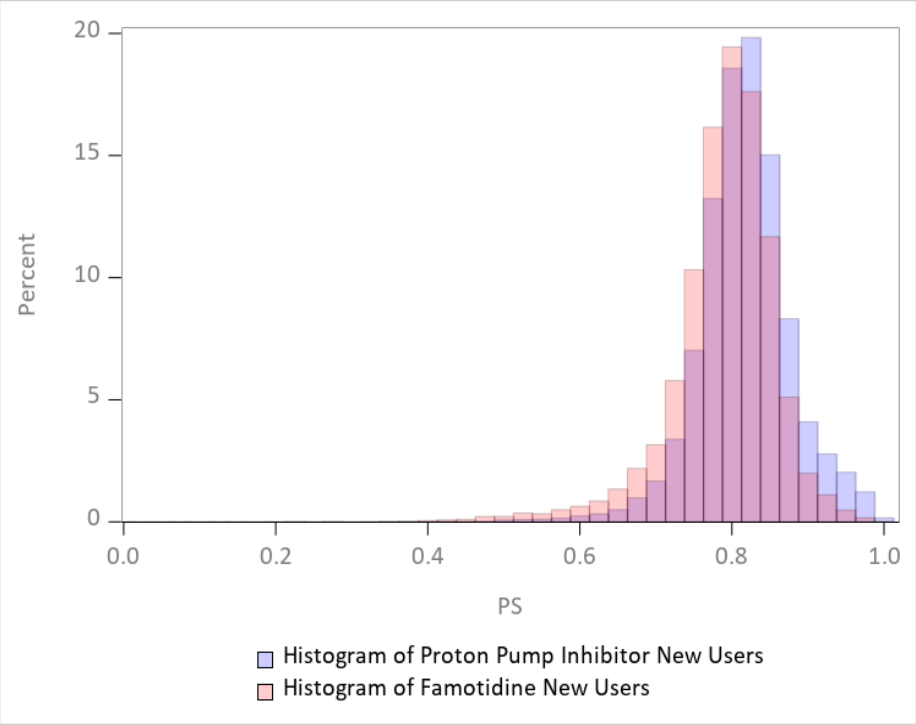


Figure 7b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

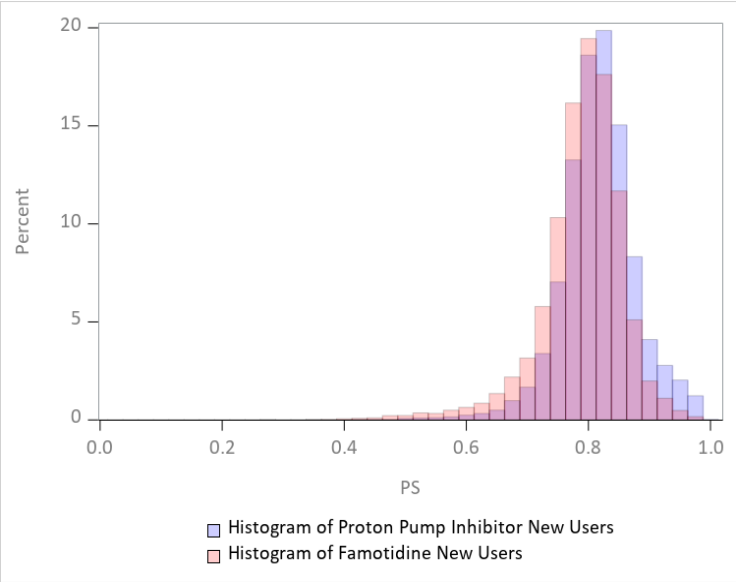


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

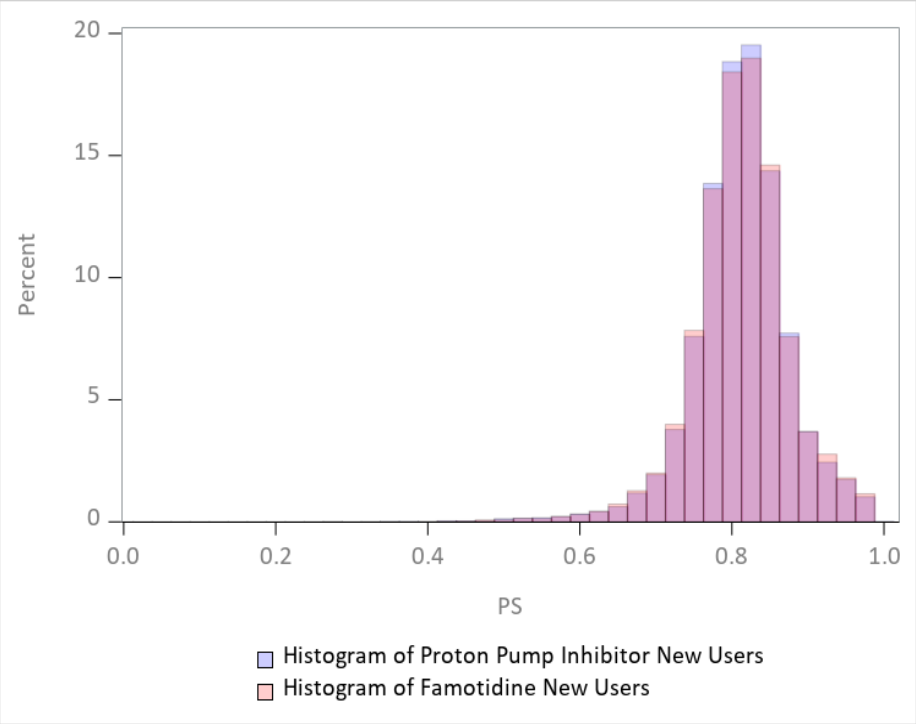
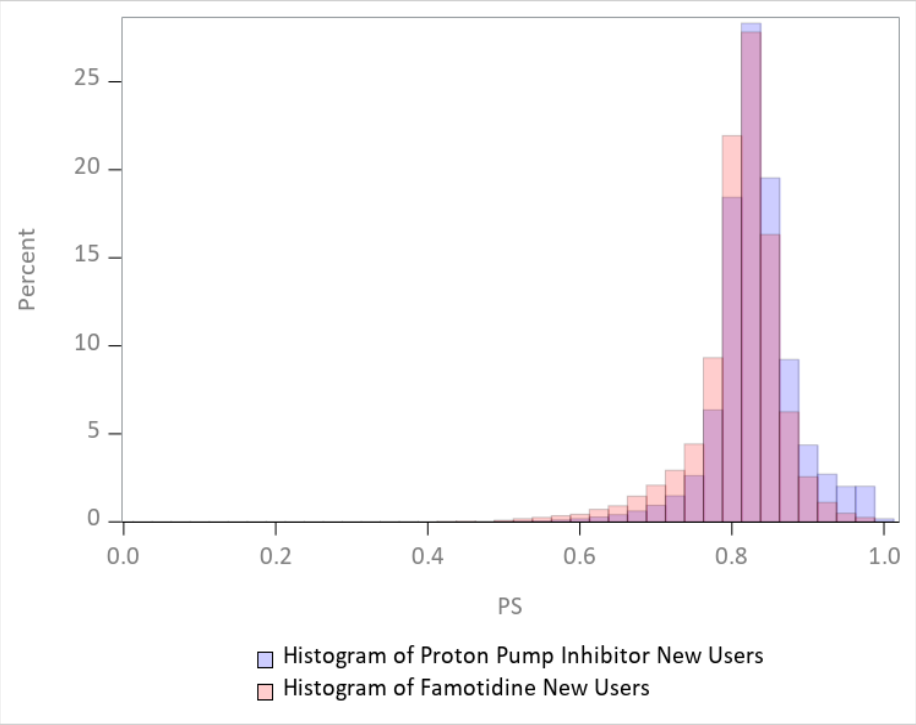


Figure 7c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

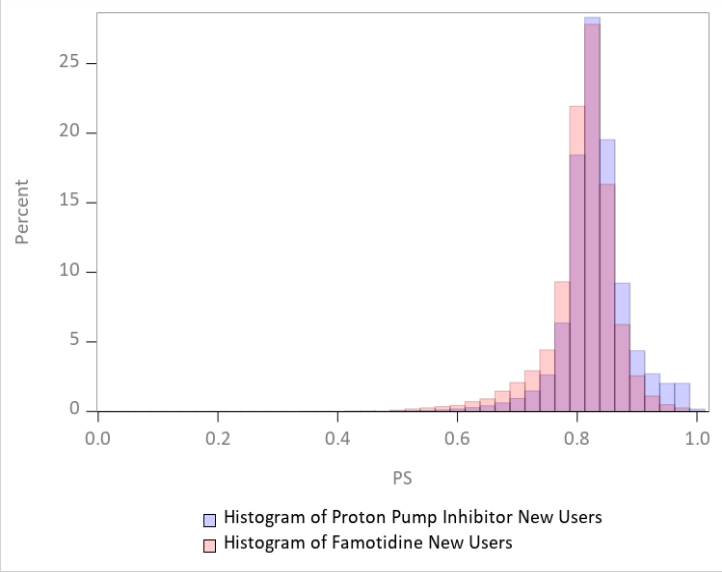


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

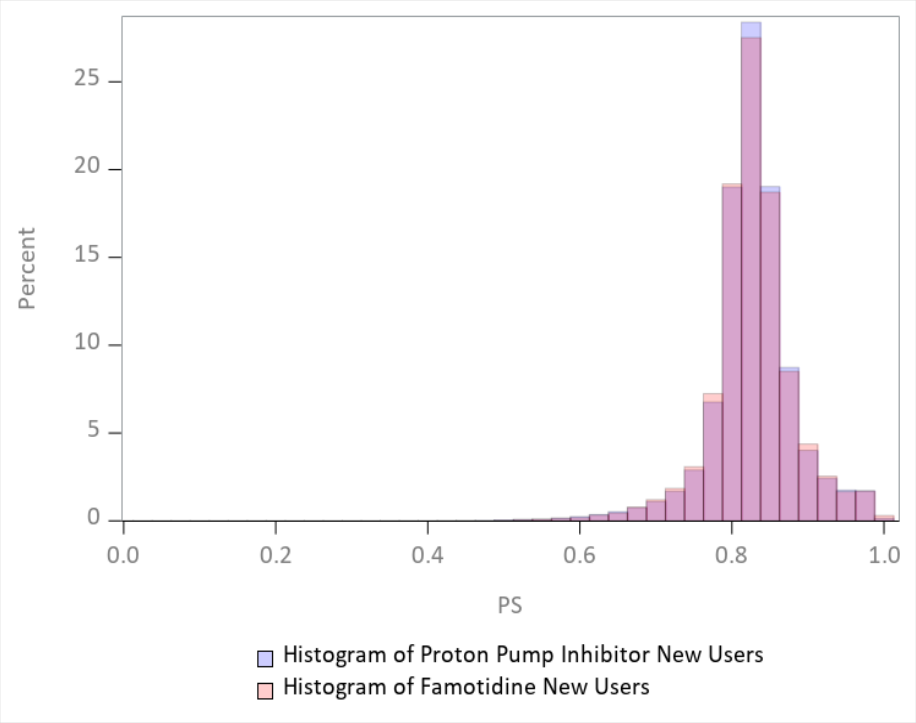
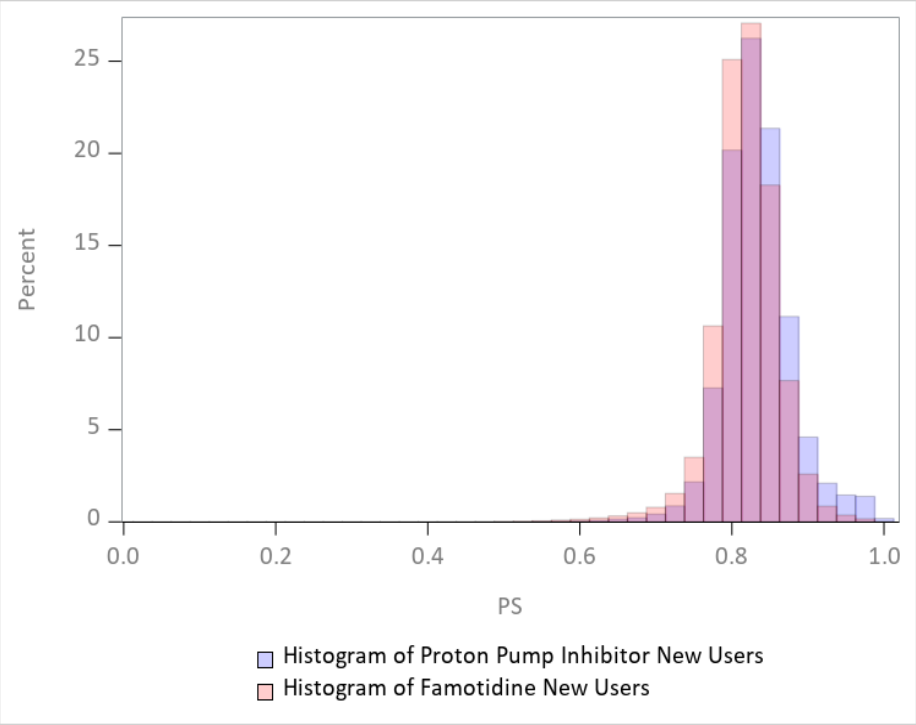


Figure 7d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

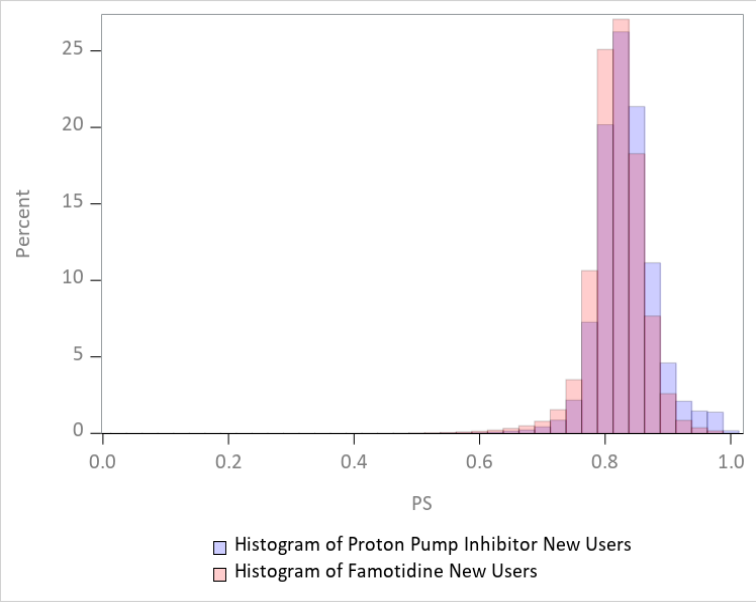


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

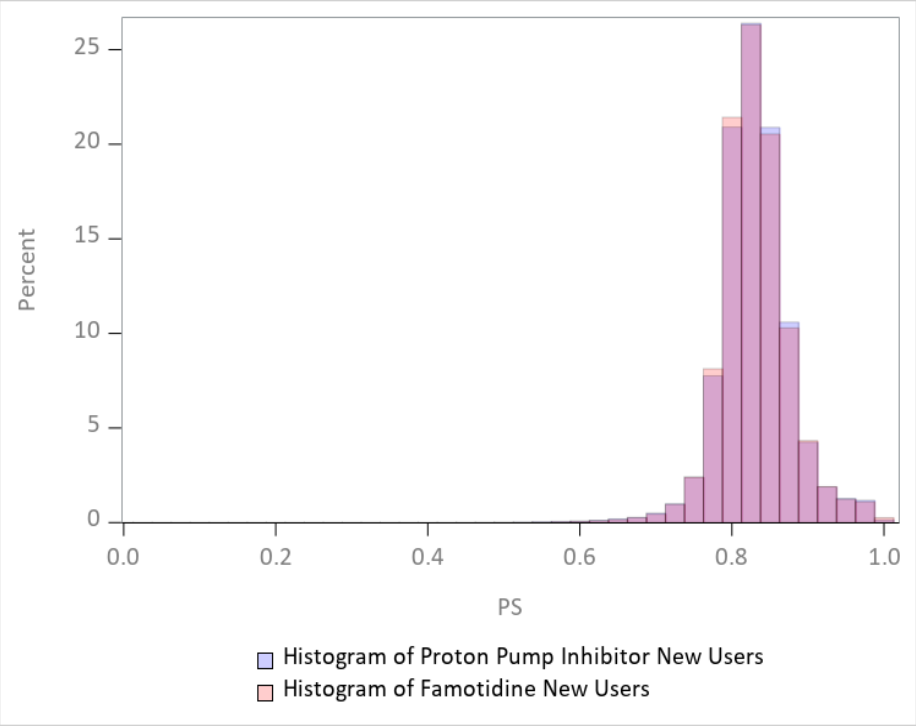
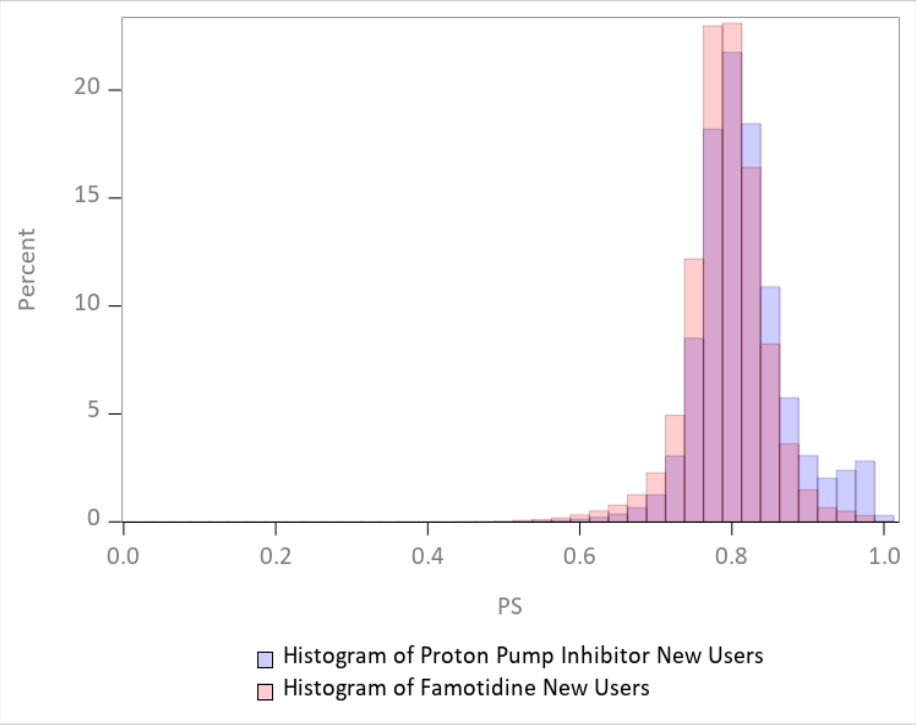


Figure 7e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

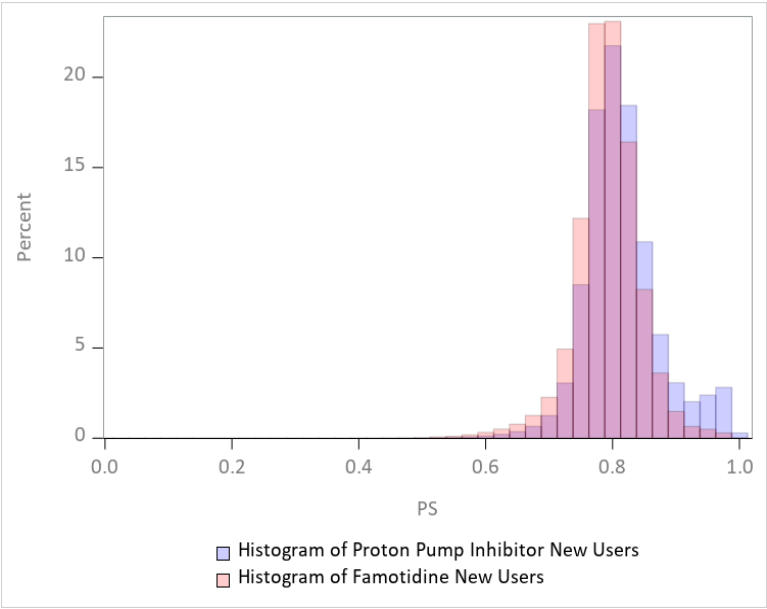


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

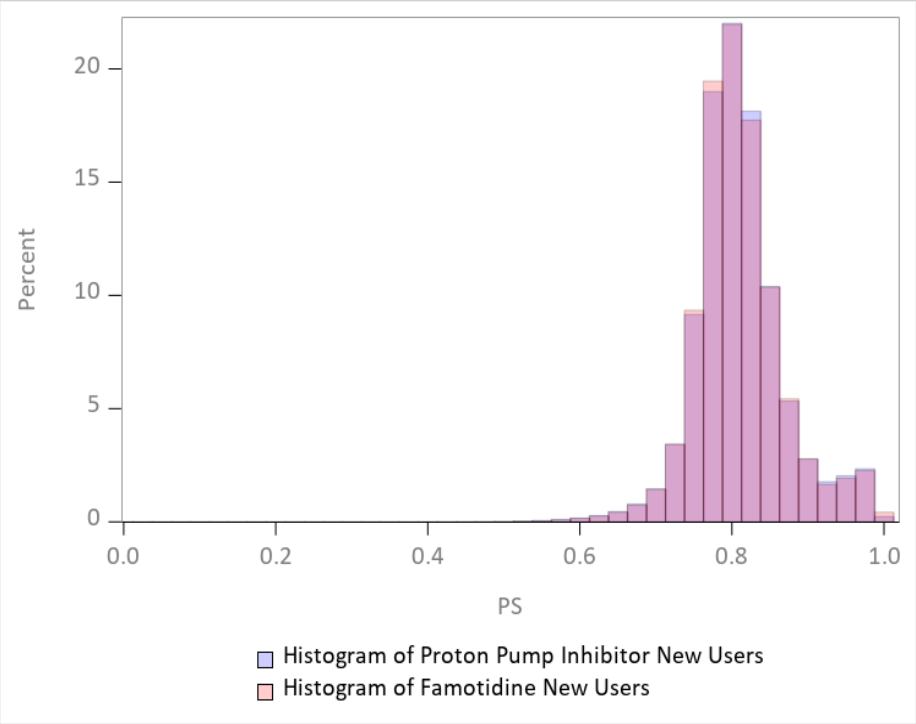
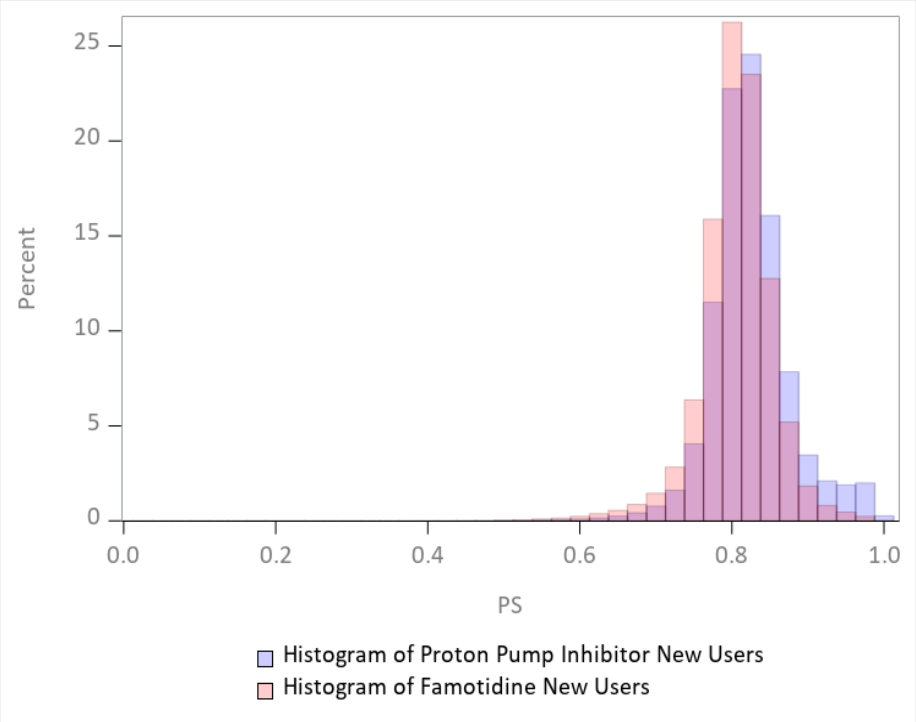


Figure 8a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

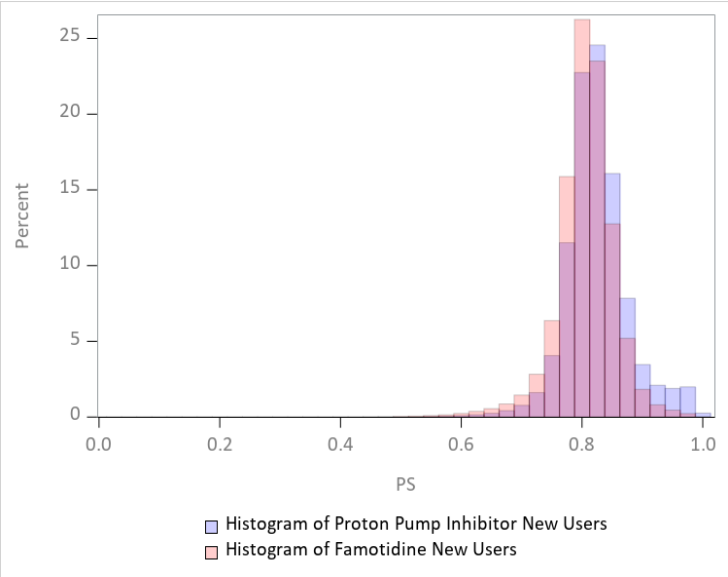


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

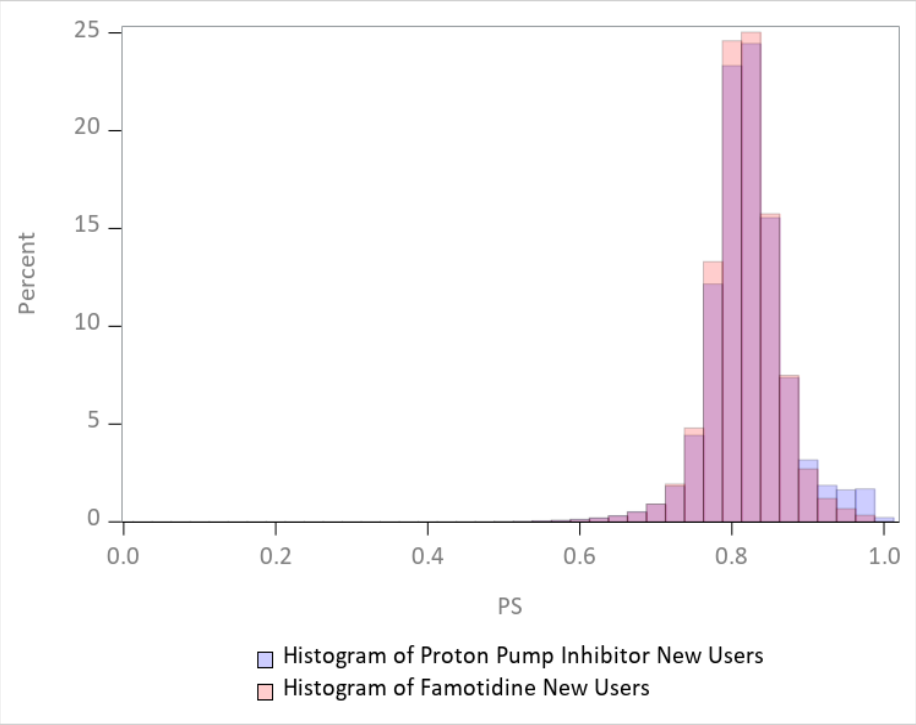
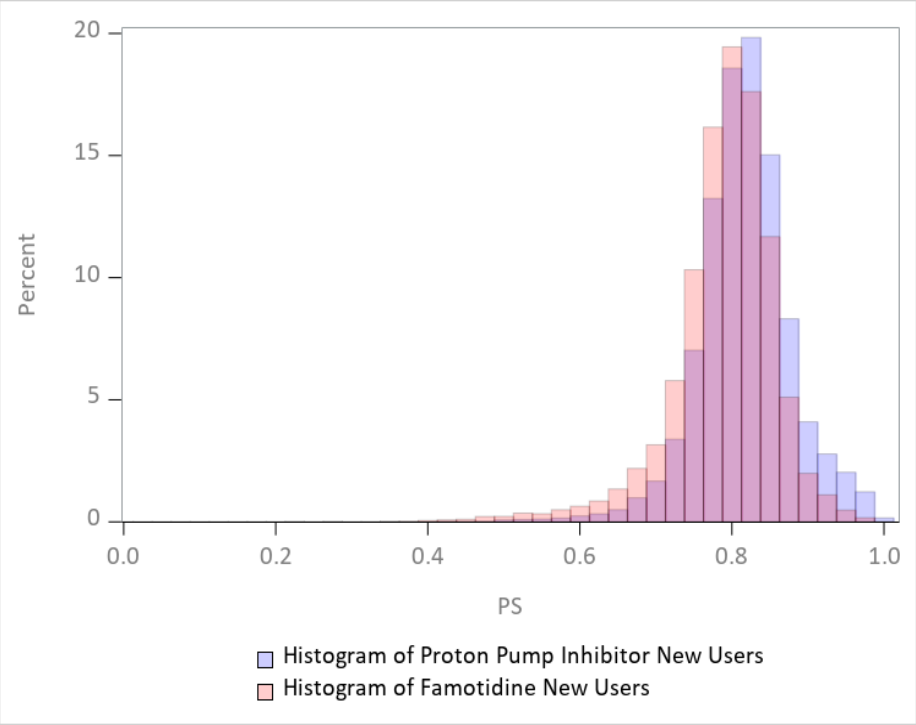


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

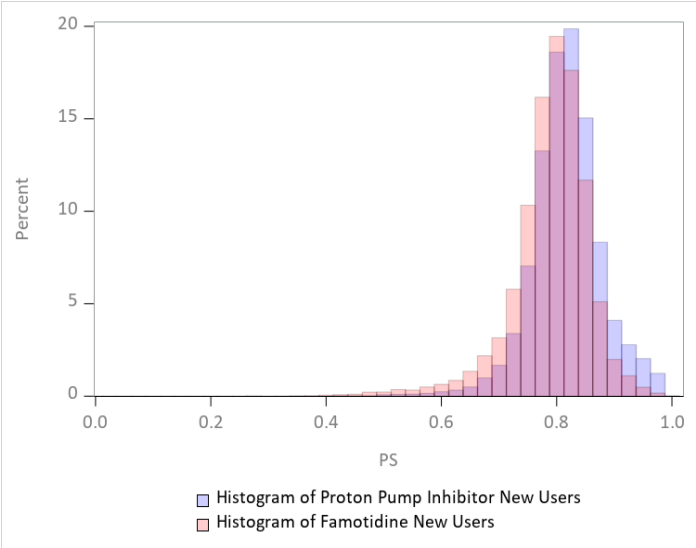


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

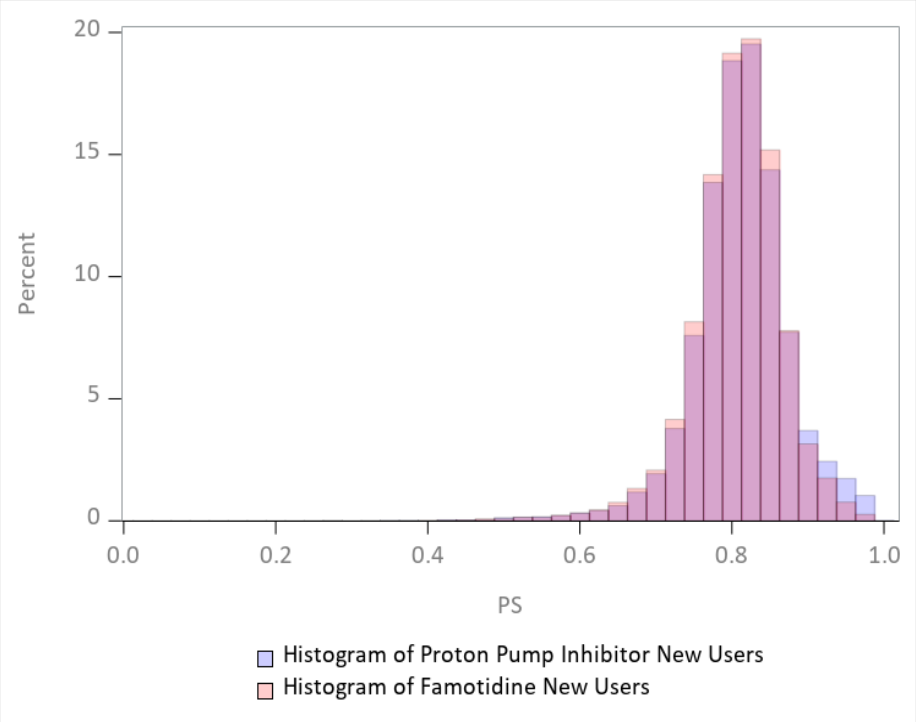
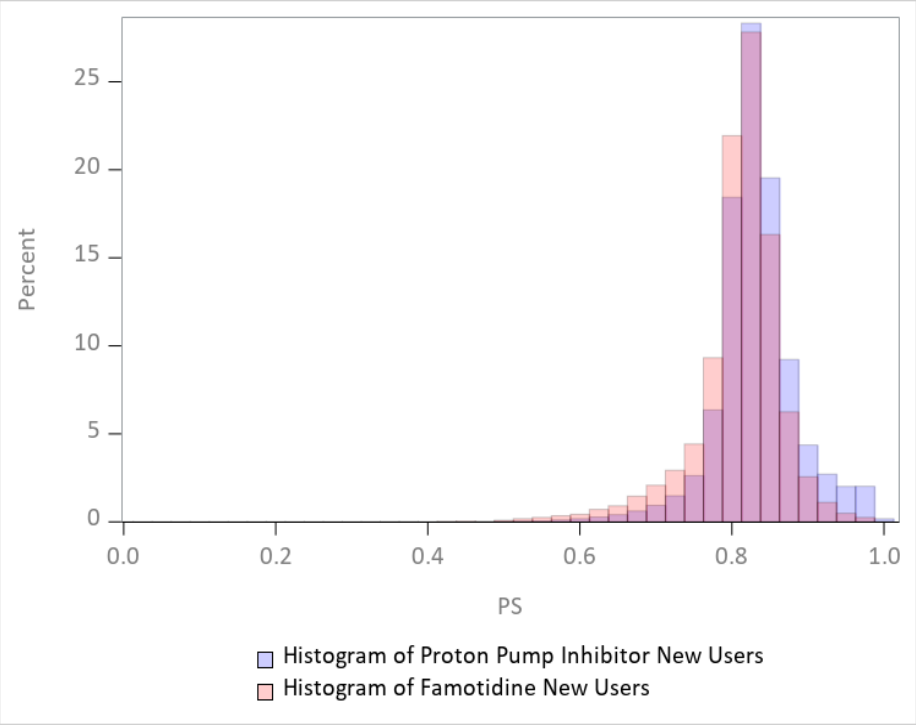


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

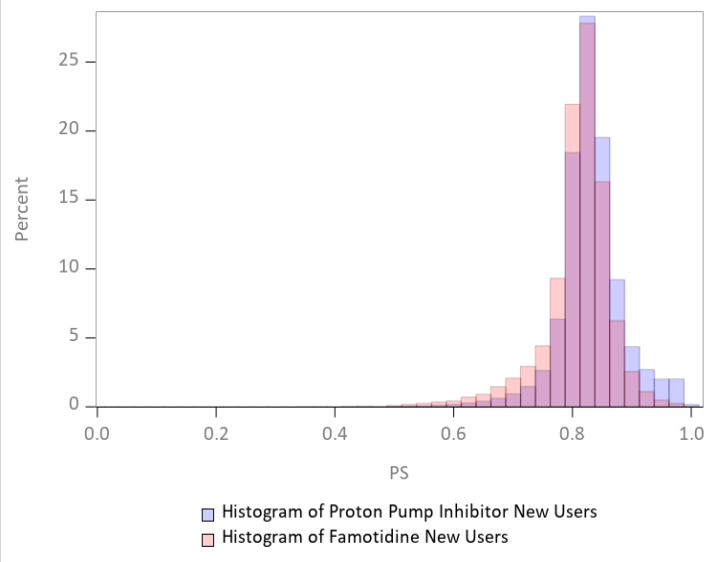


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

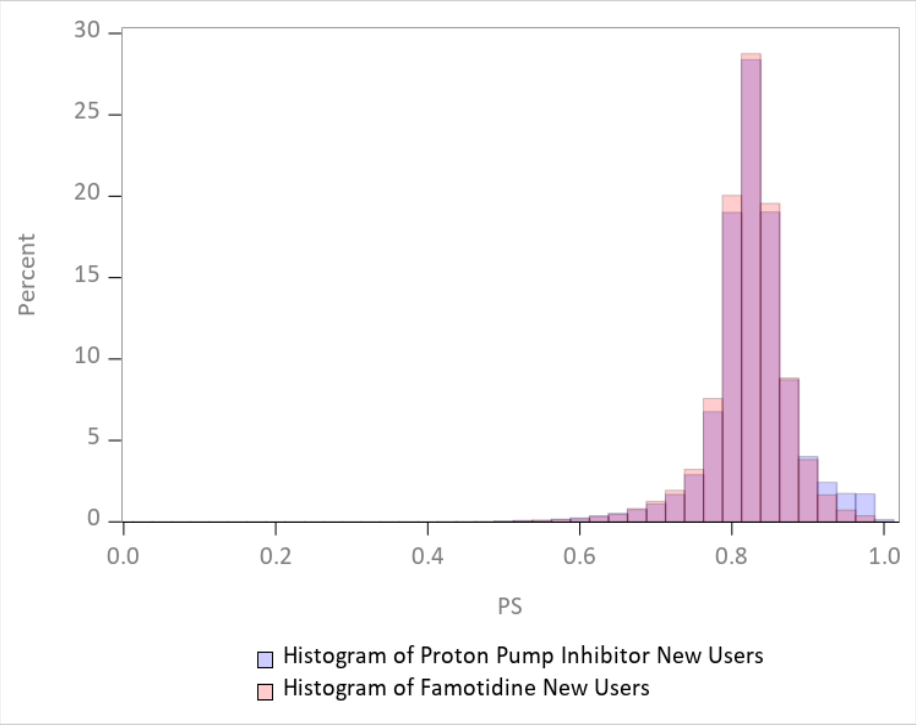
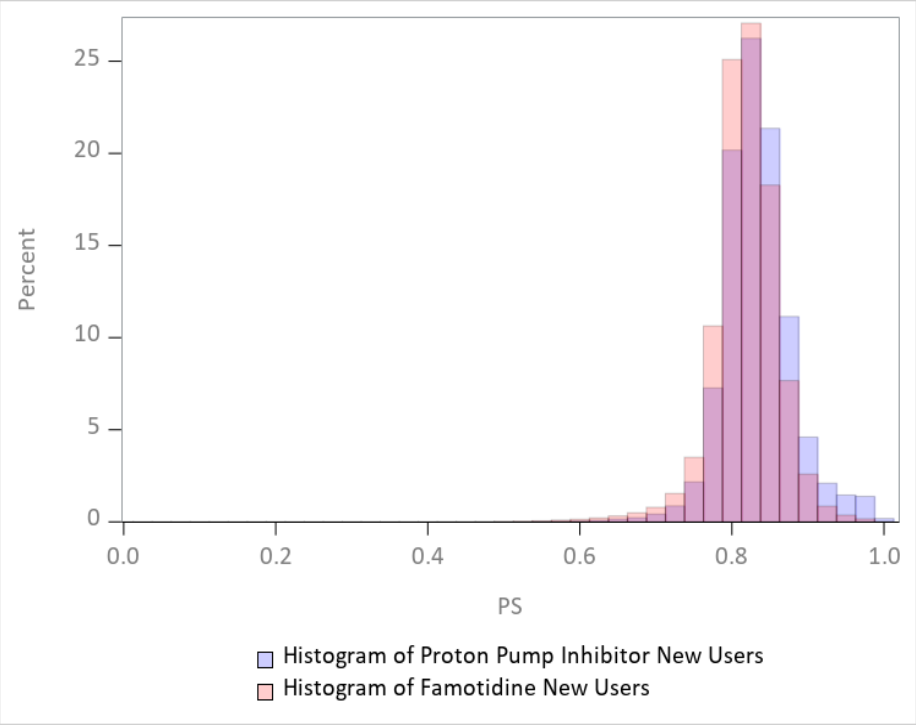


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

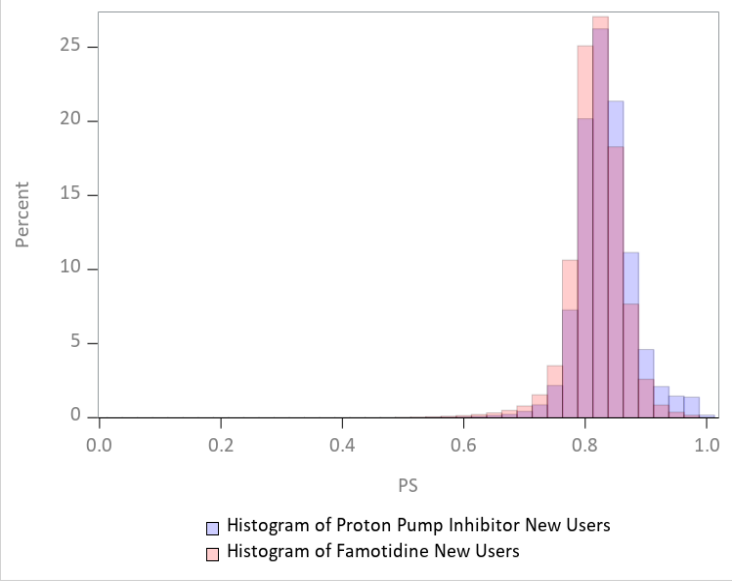


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

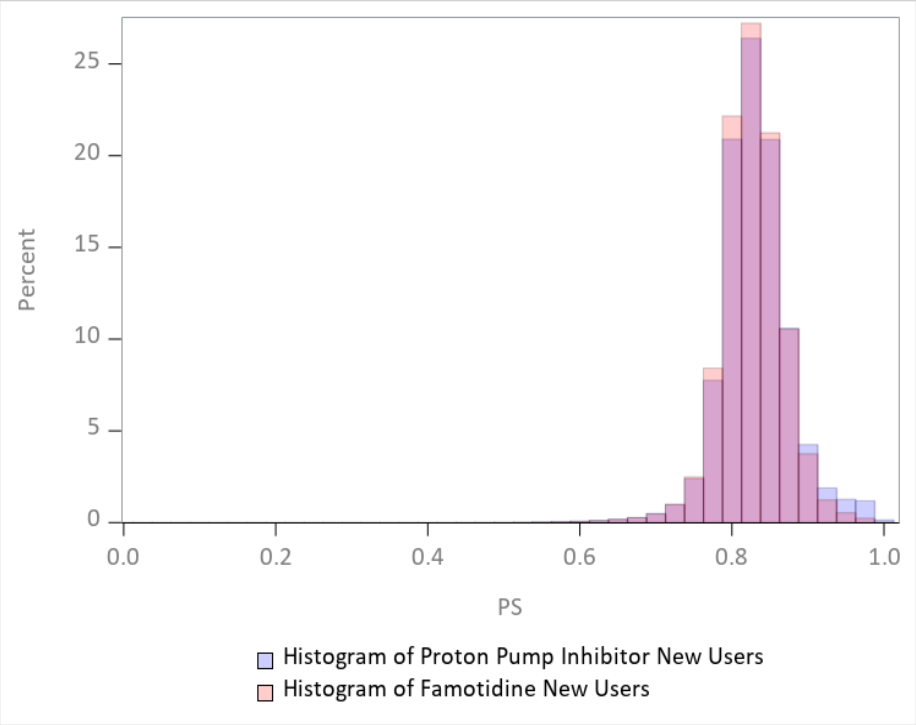
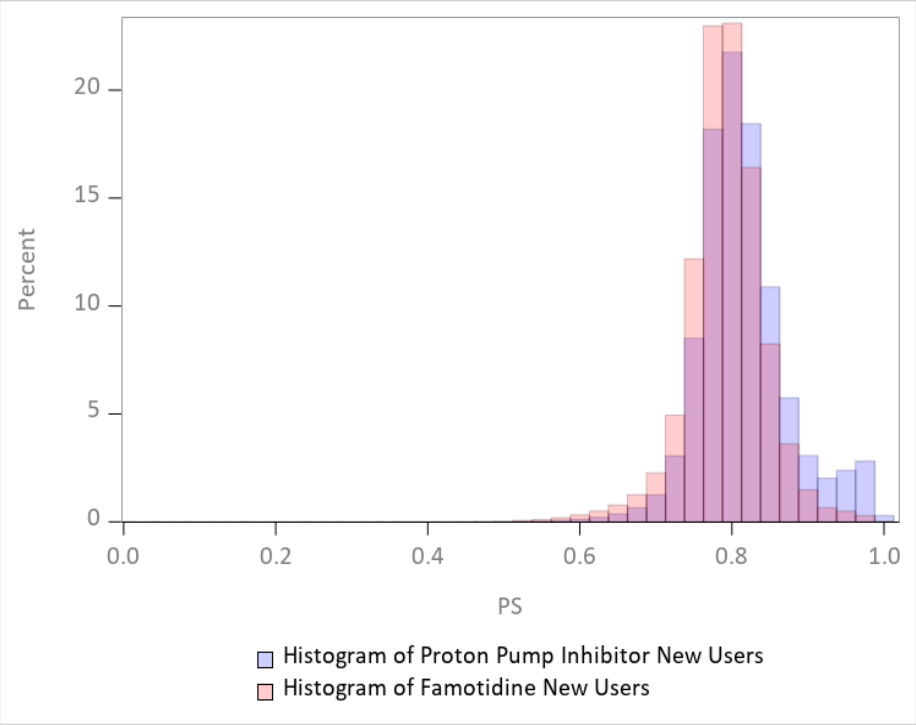


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

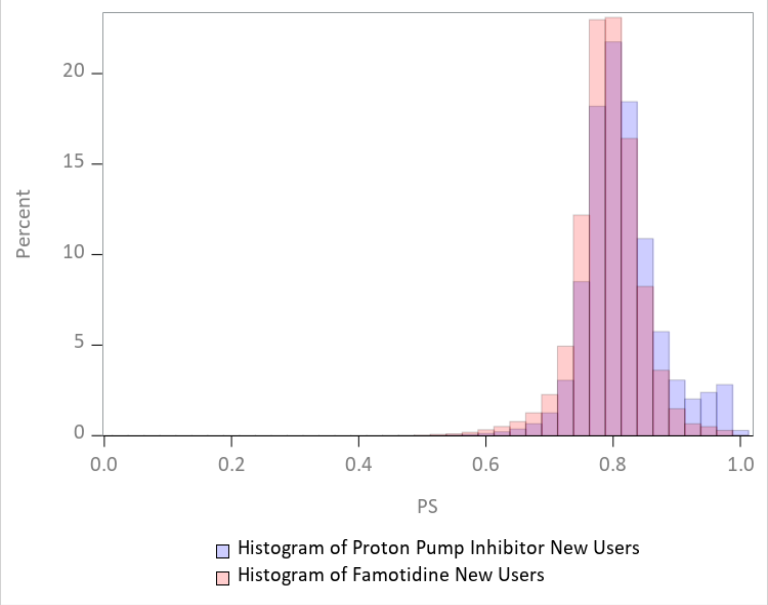


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect (ATE)

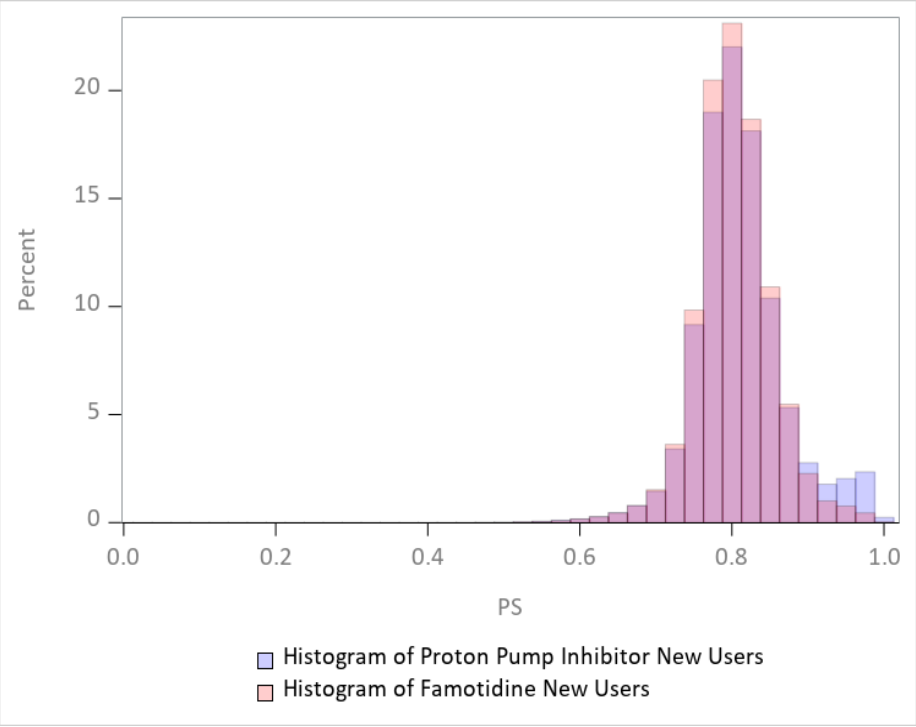
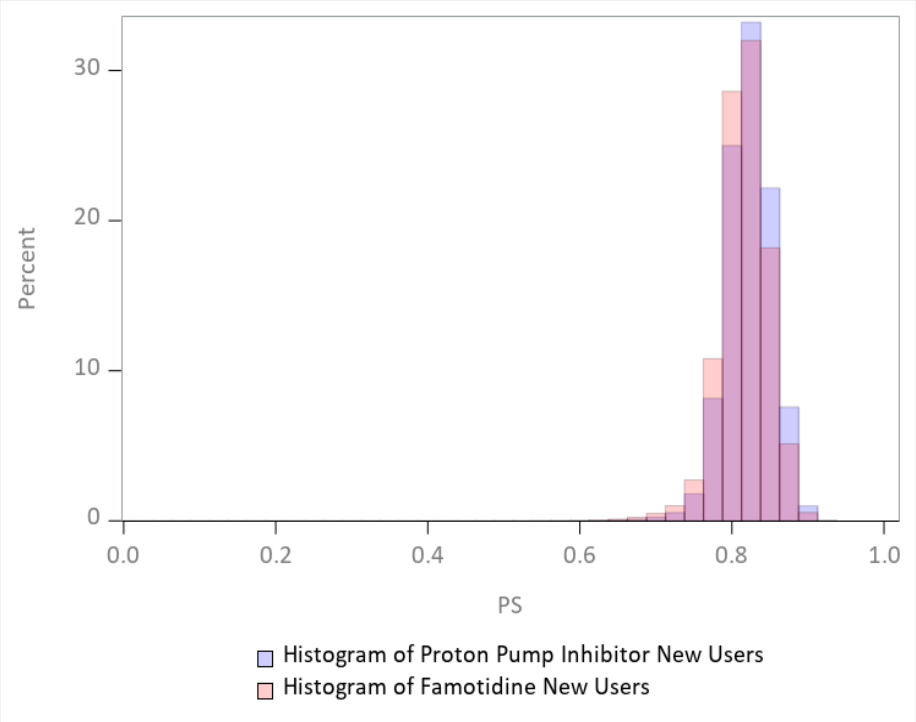


Figure 9a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

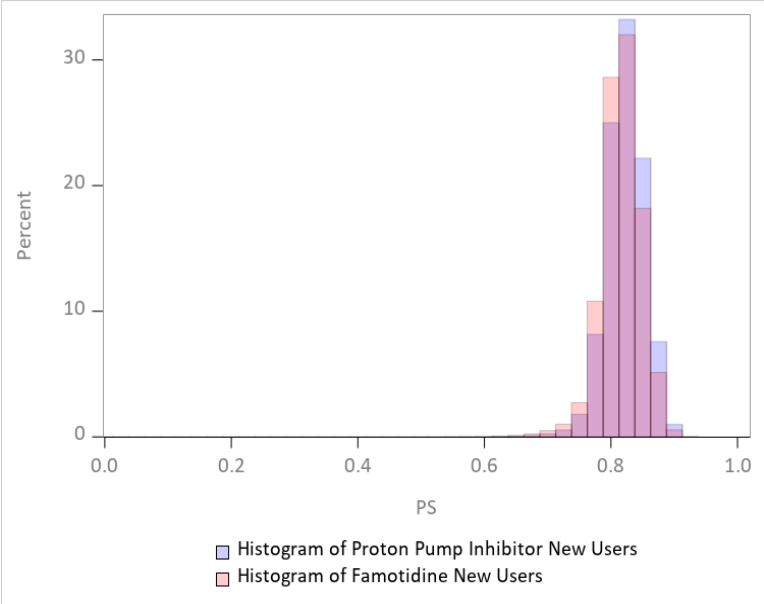


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

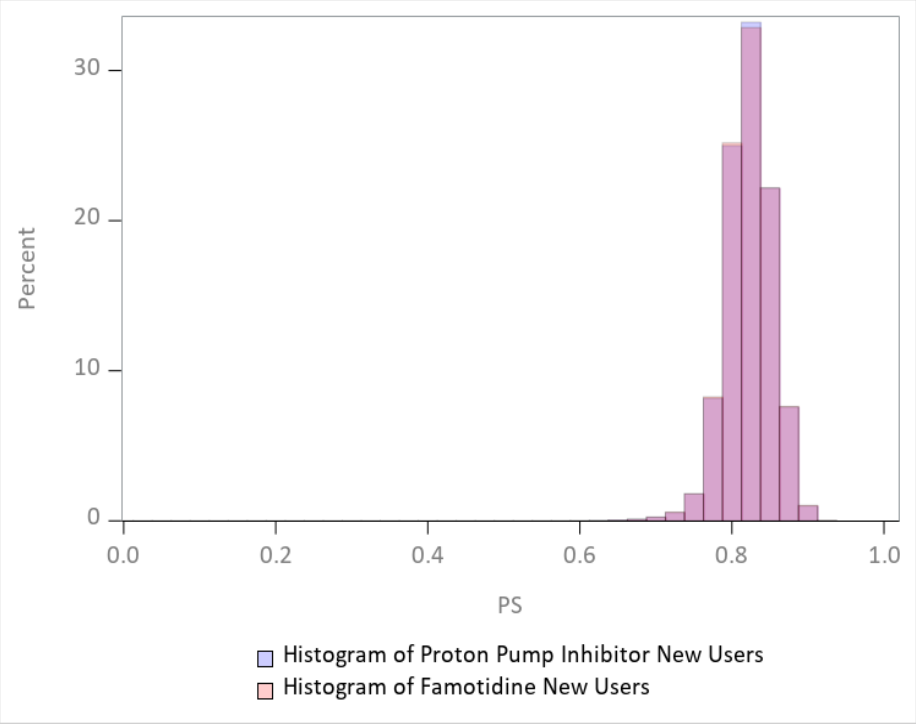
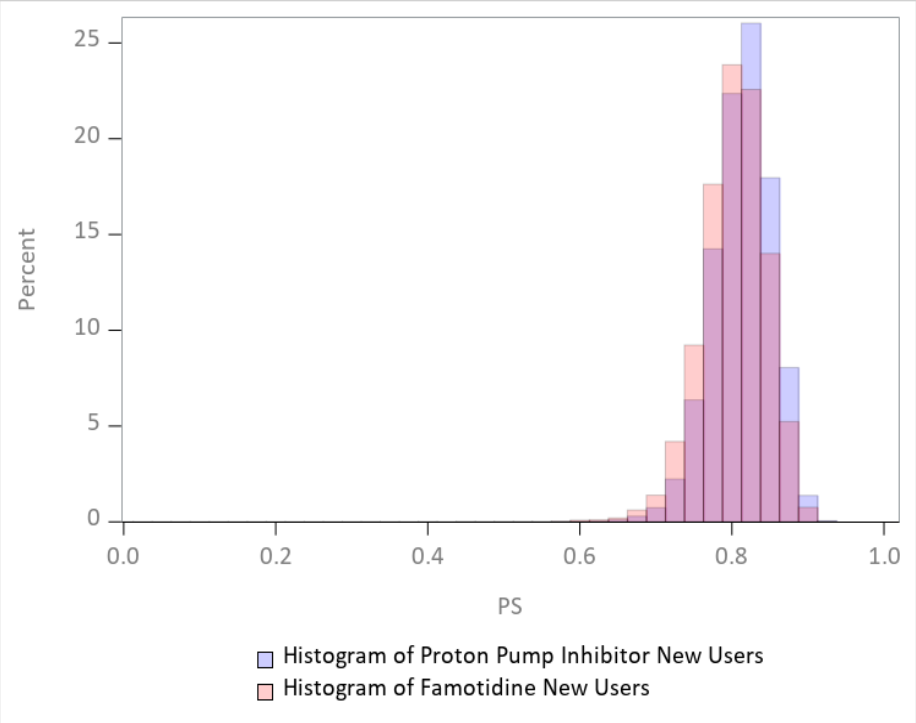


Figure 9b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

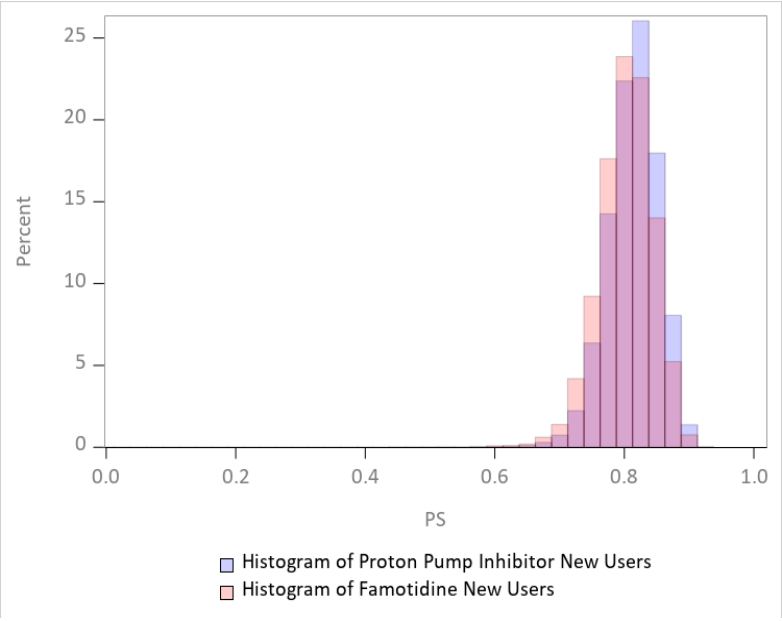


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

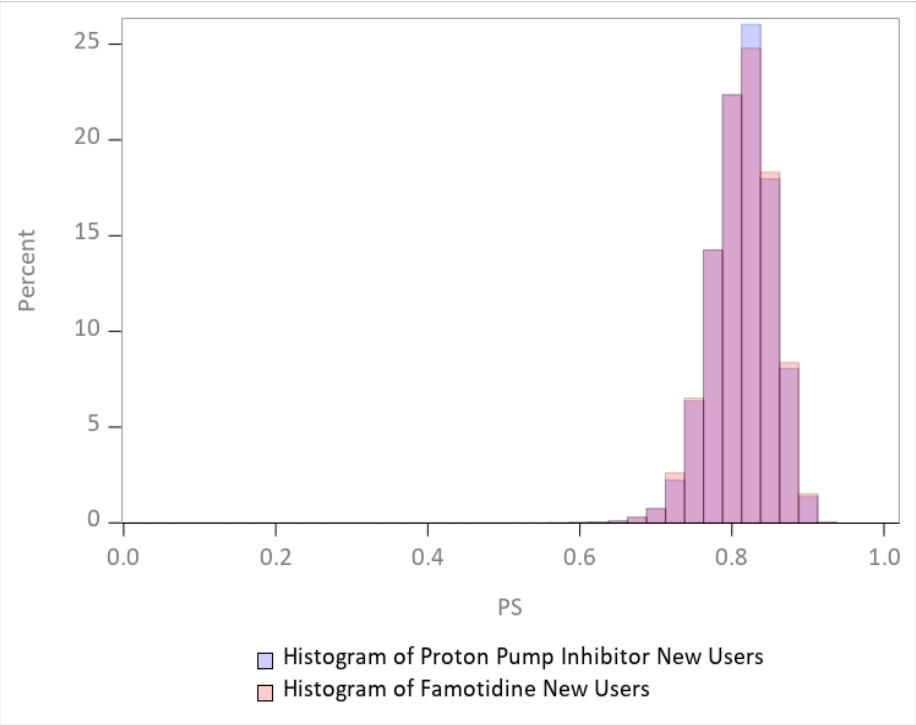
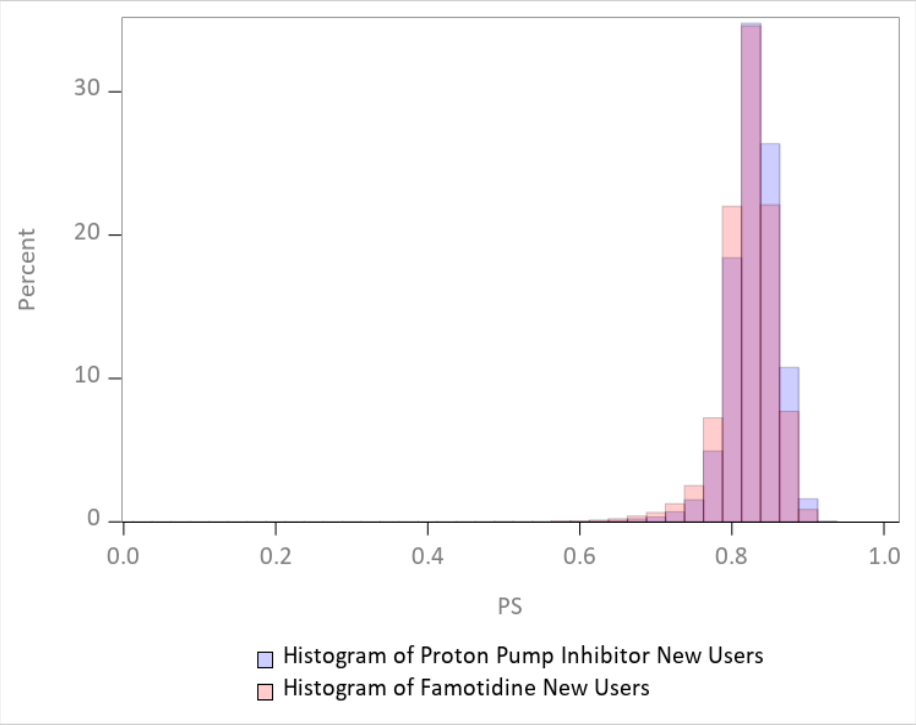


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

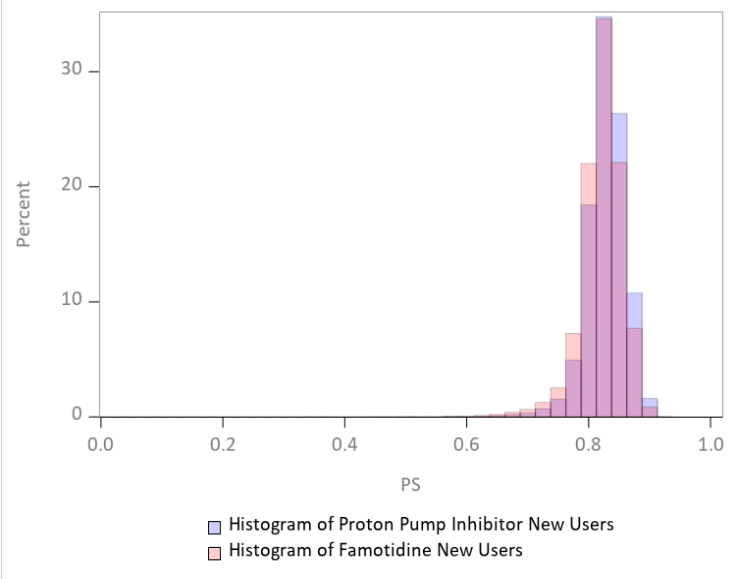


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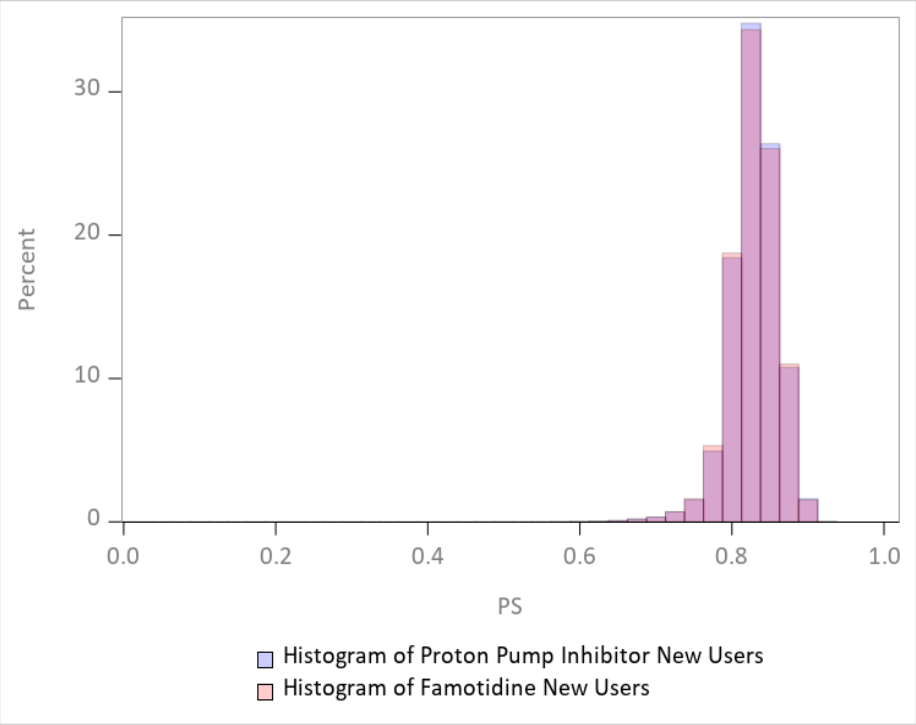
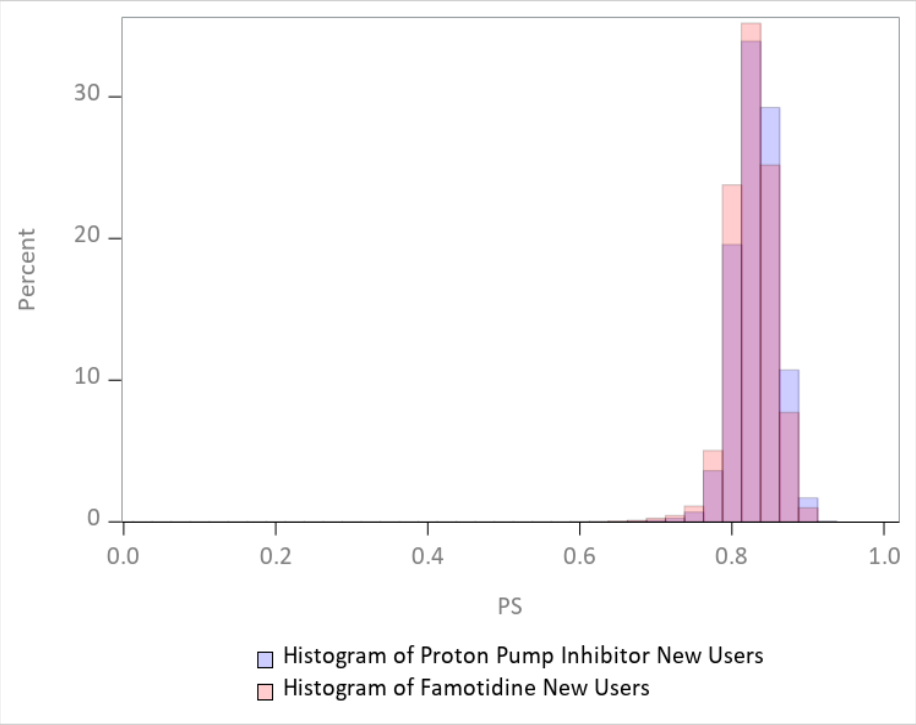


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

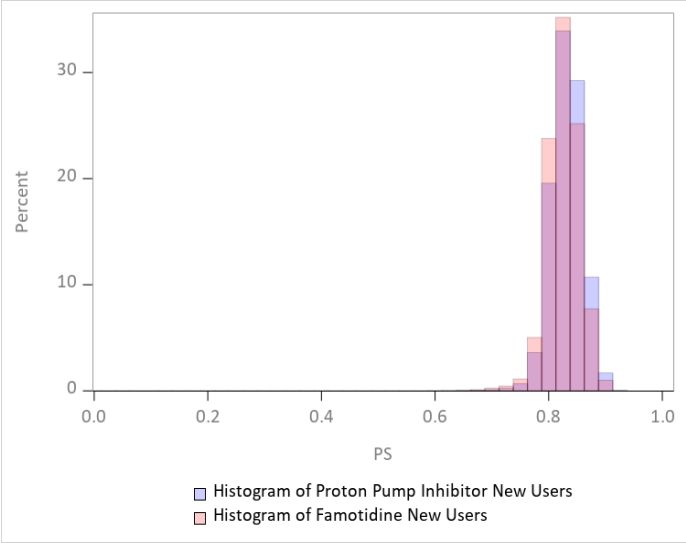


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

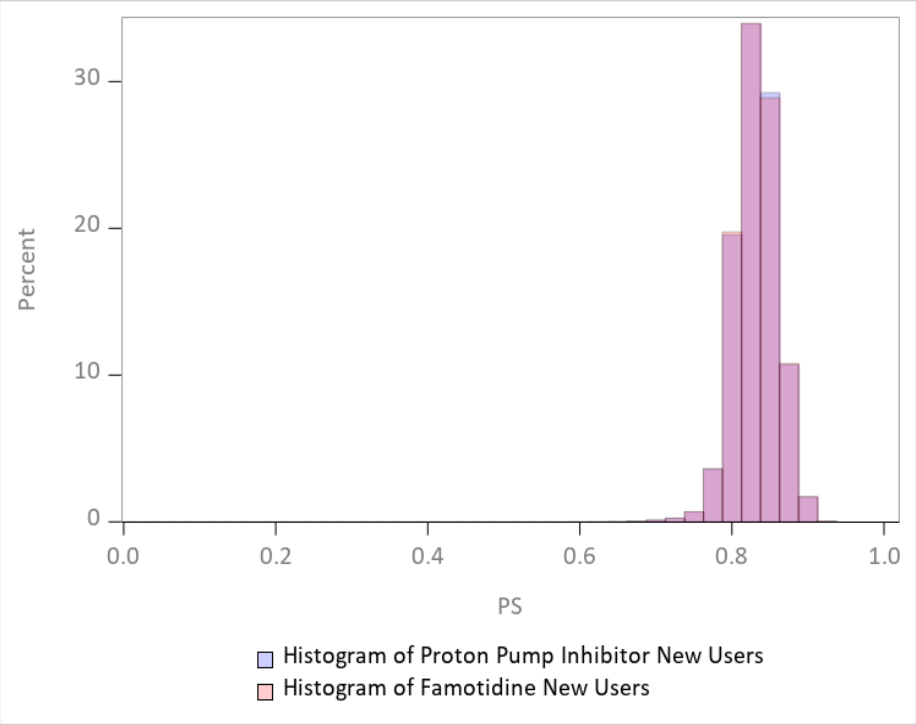
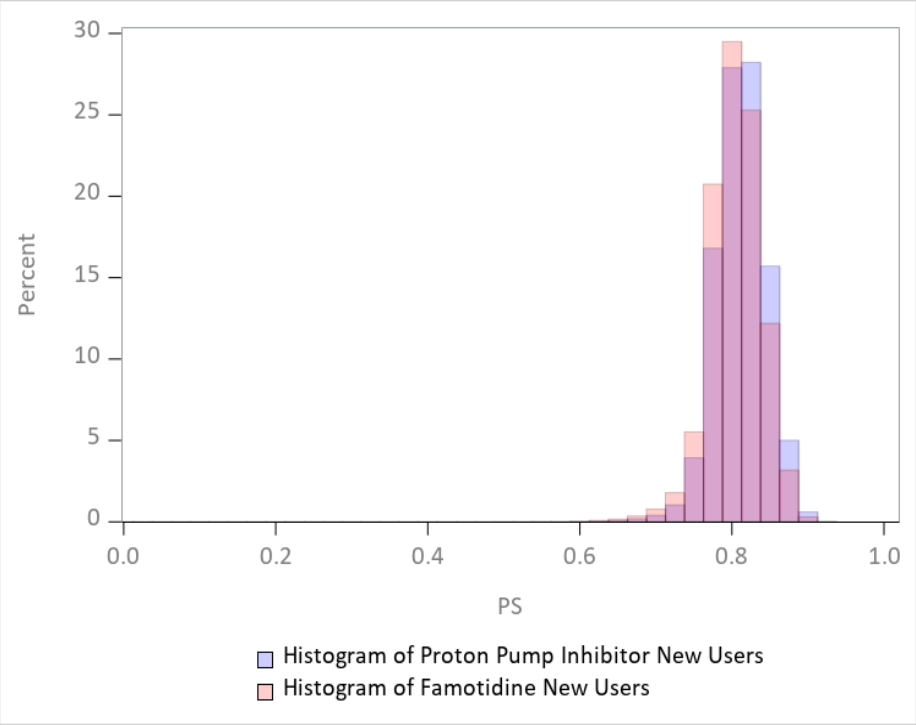


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

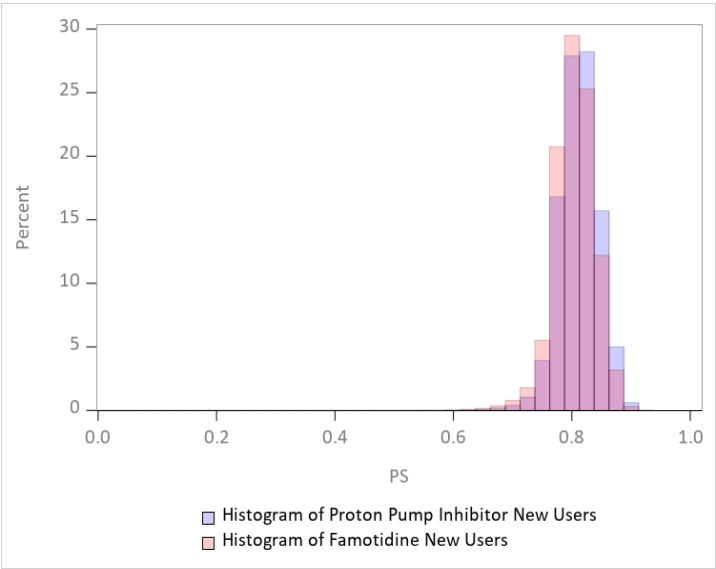


Figure 9e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

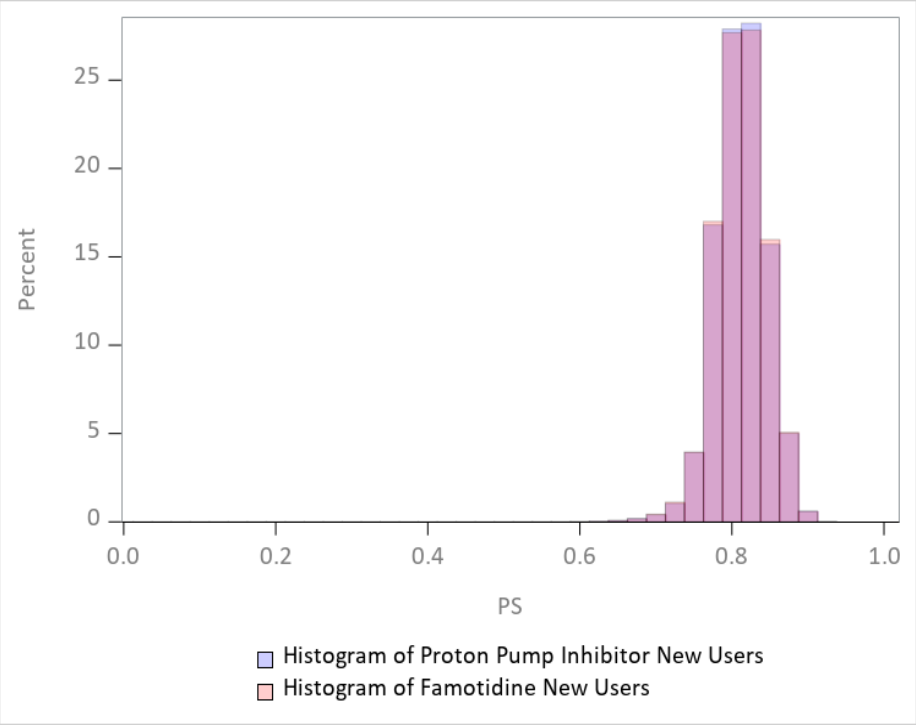
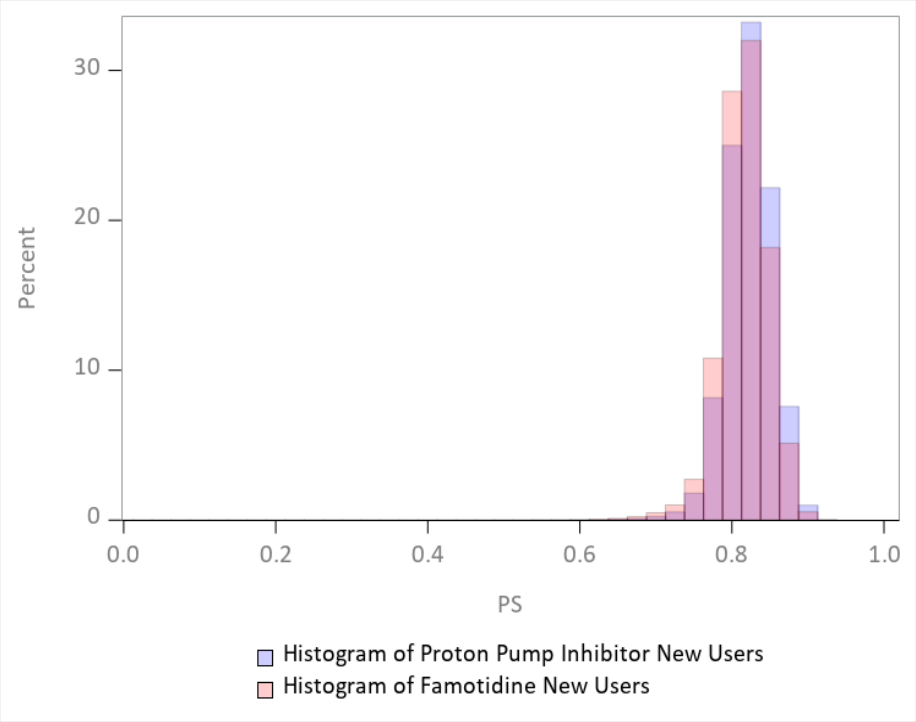


Figure 10a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

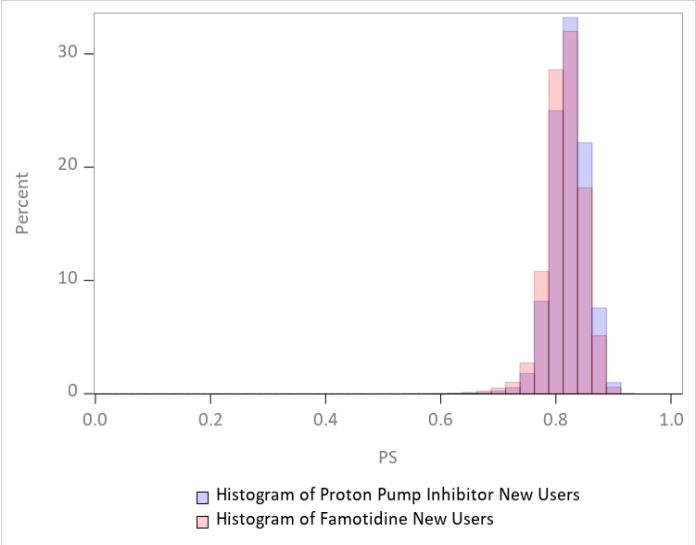


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

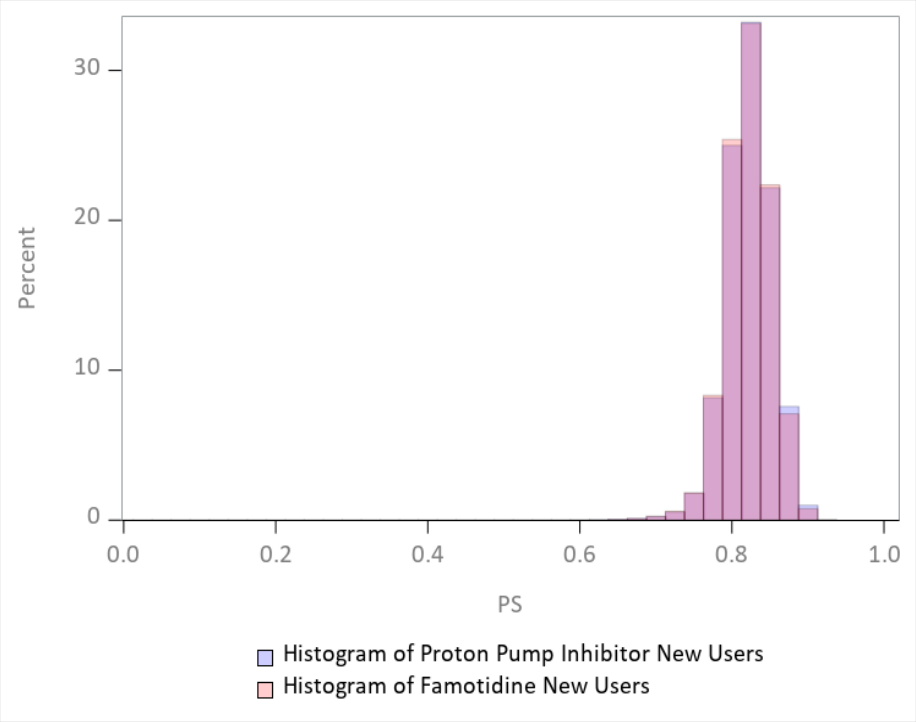
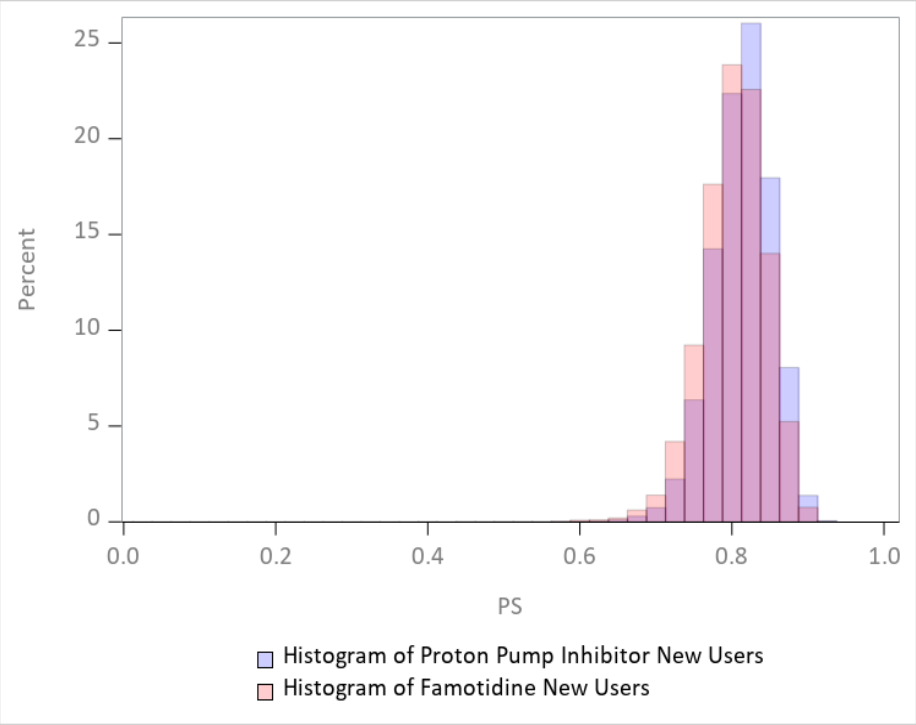


Figure 10b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

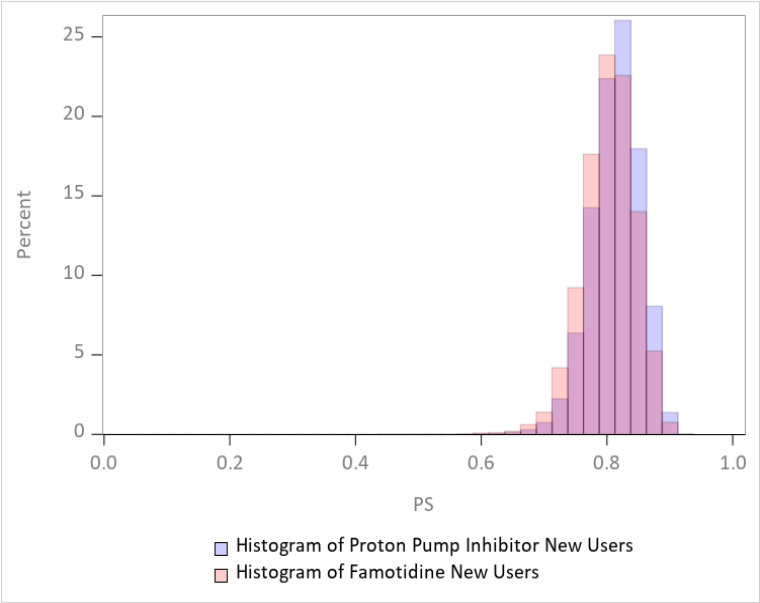


Figure 10b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

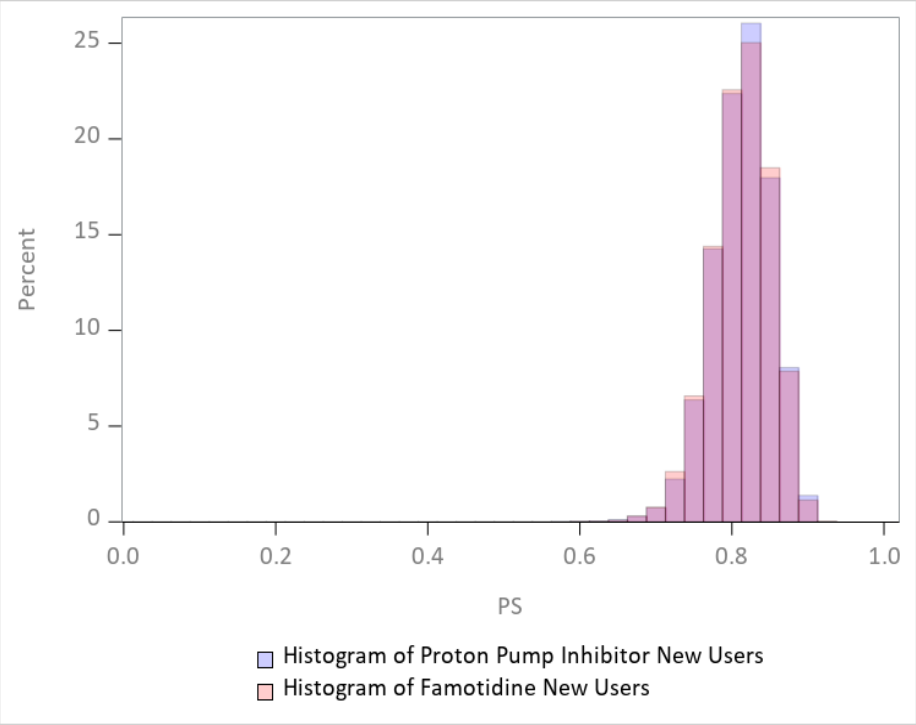
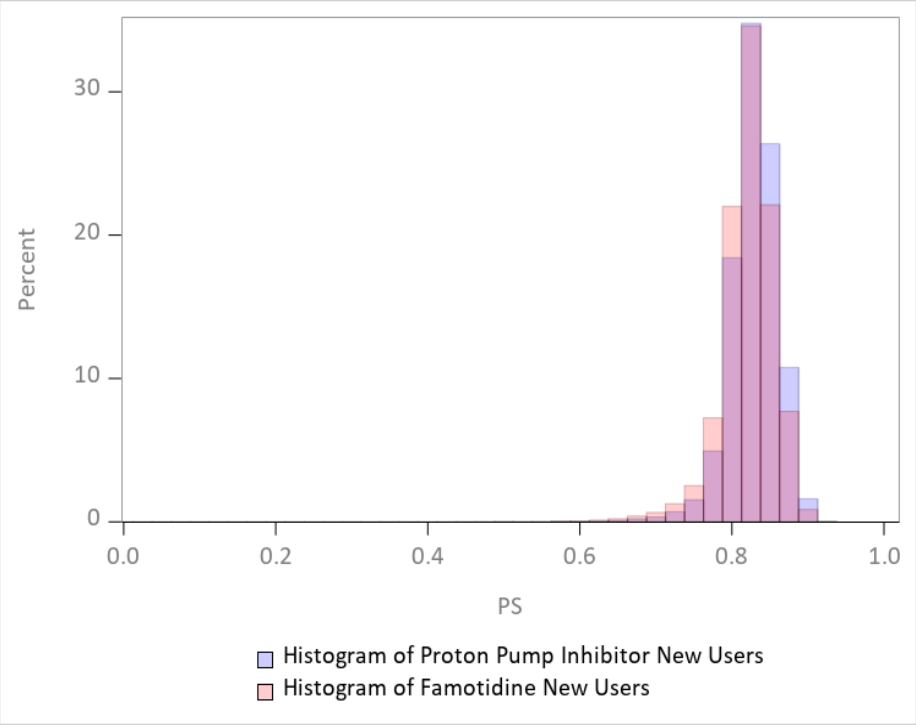


Figure 10c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

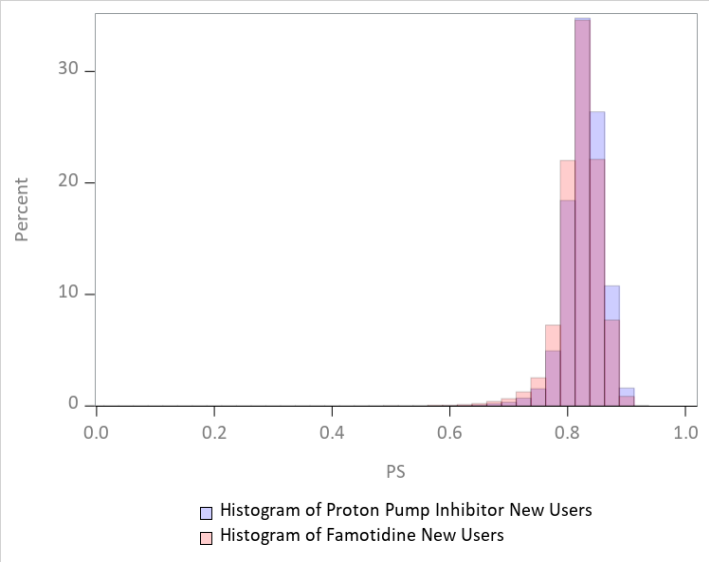


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

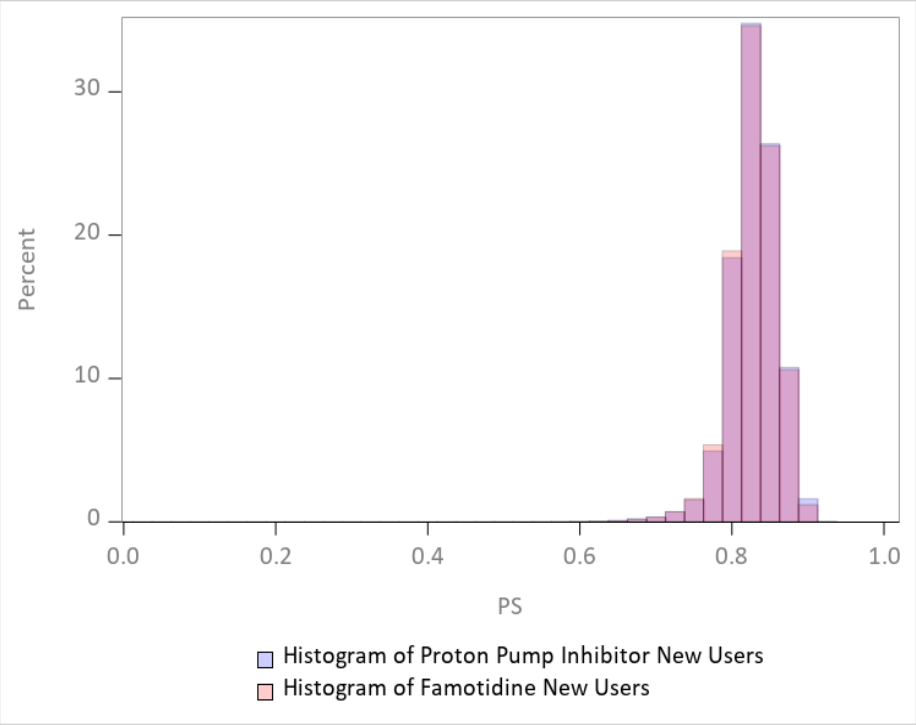
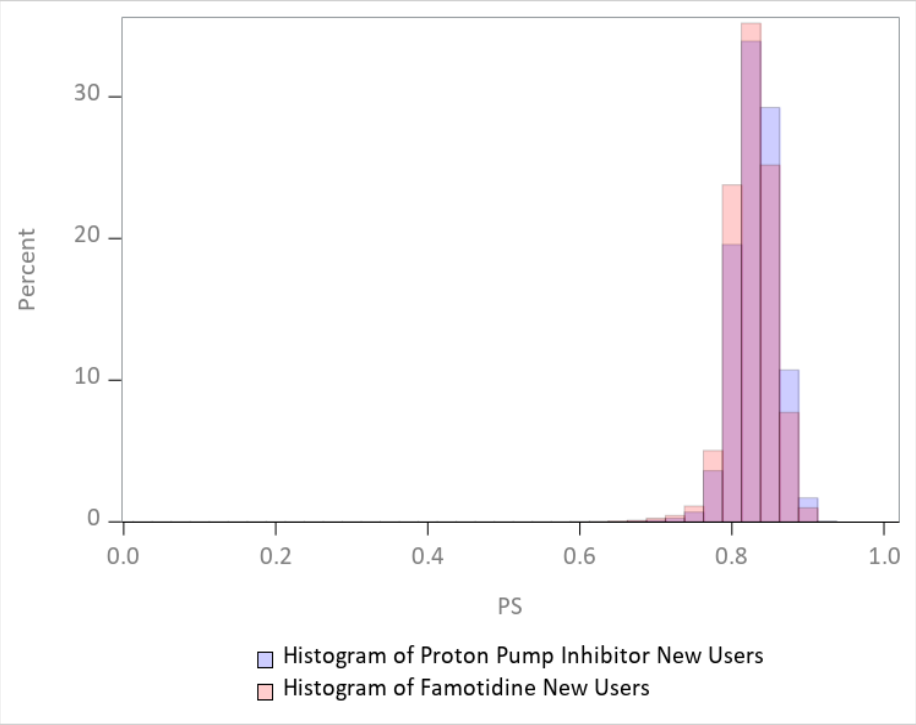


Figure 10d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

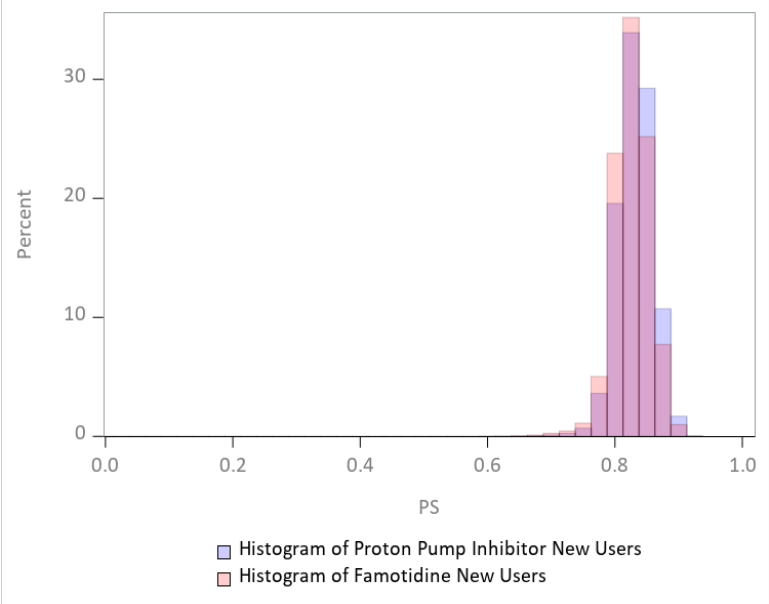


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

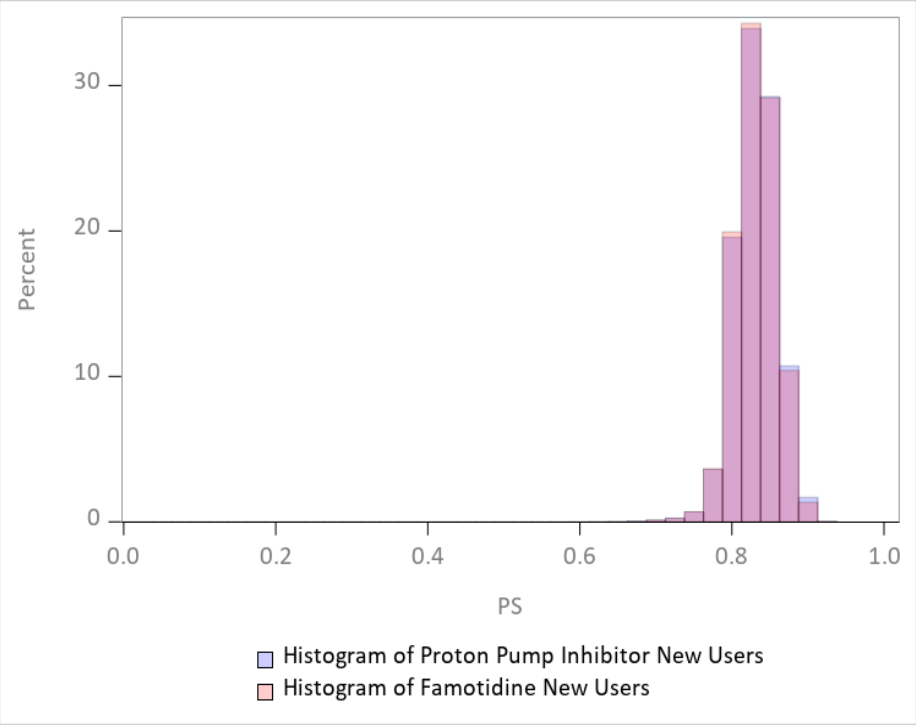
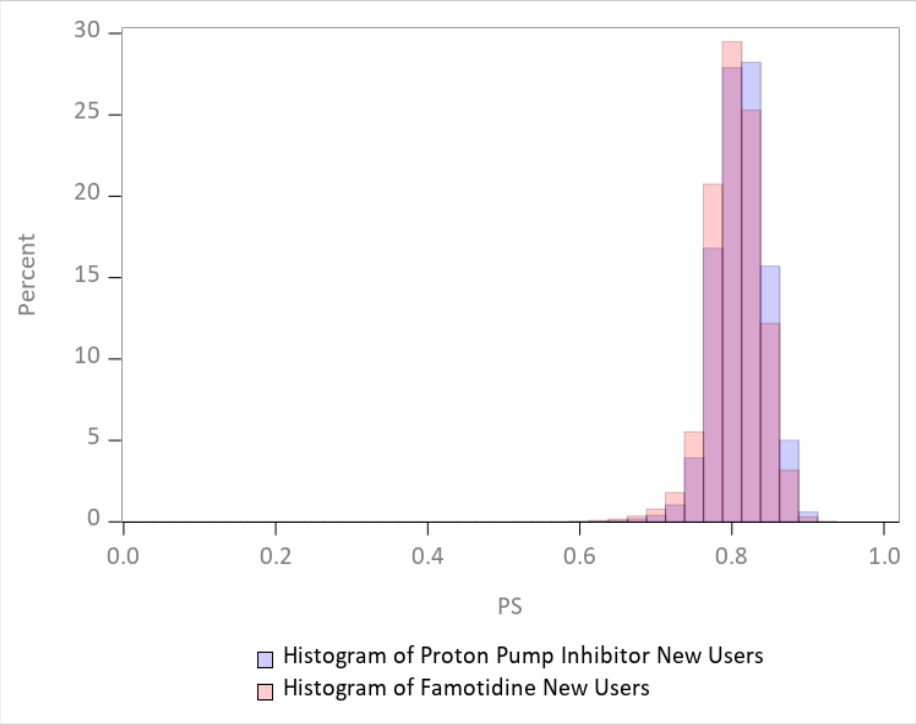


Figure 10e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

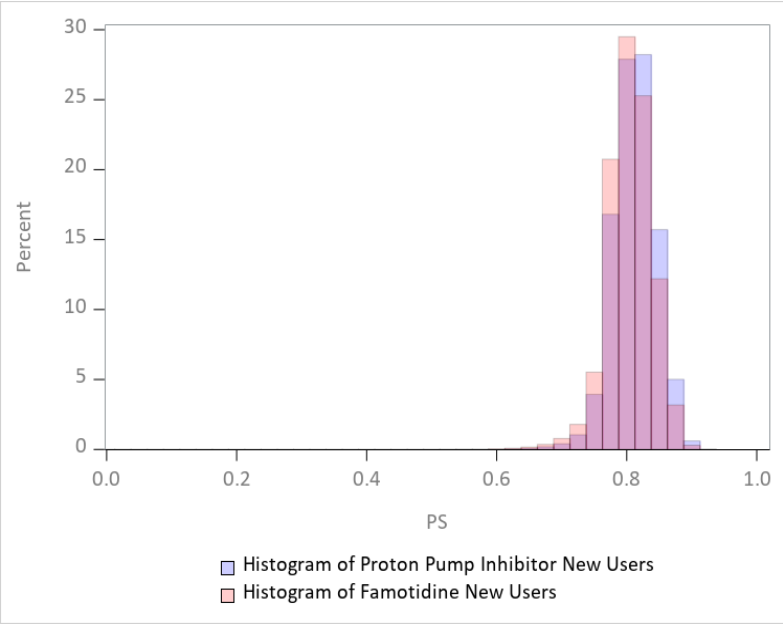


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

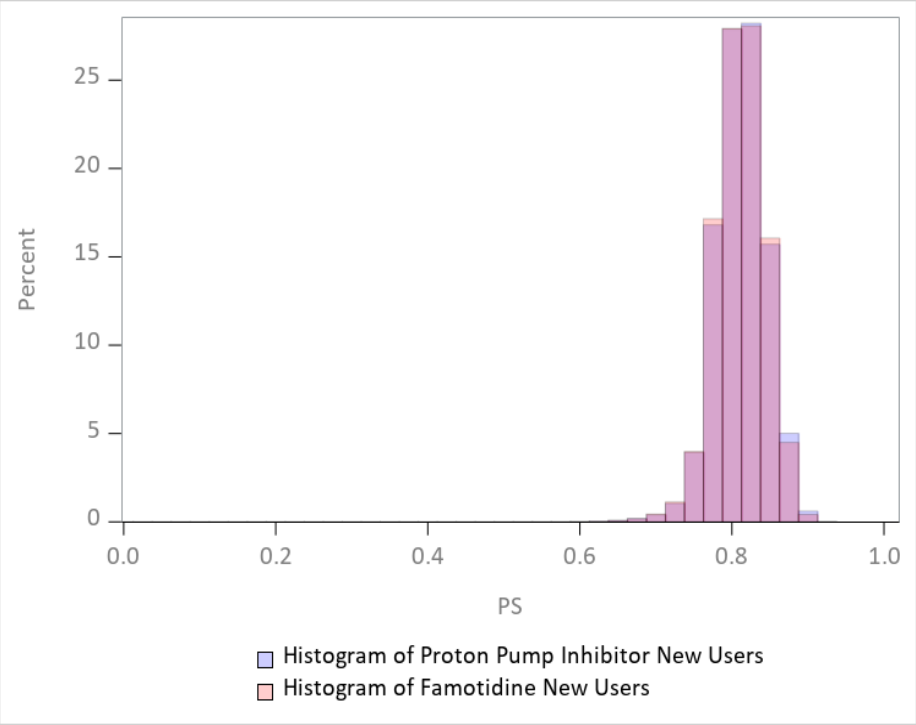
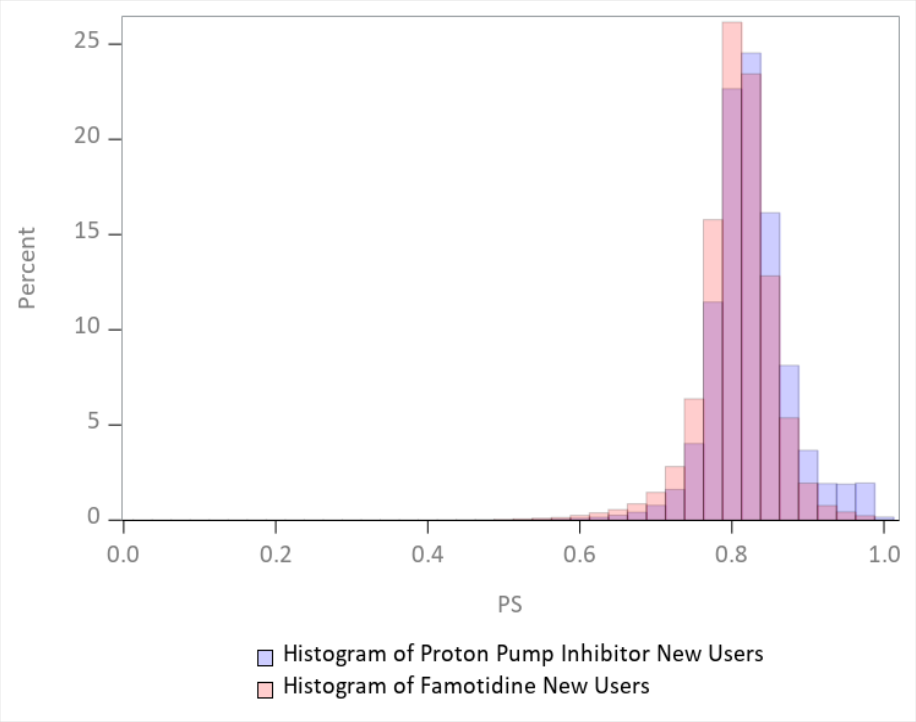


Figure 11a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

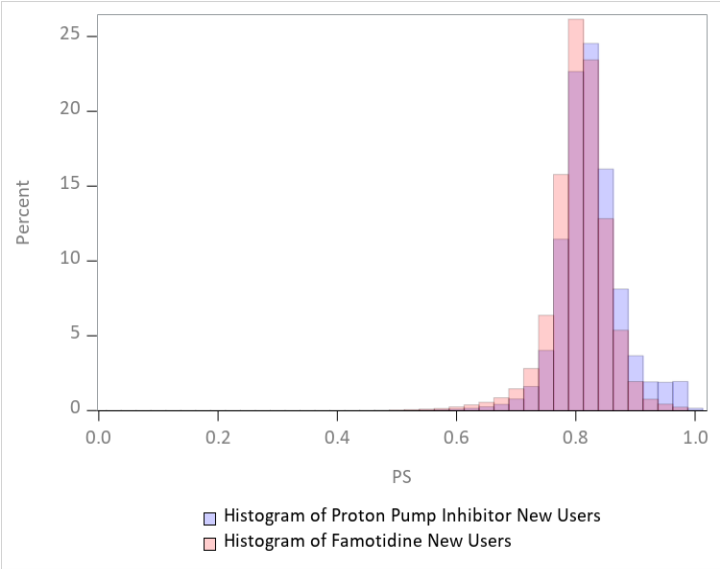


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

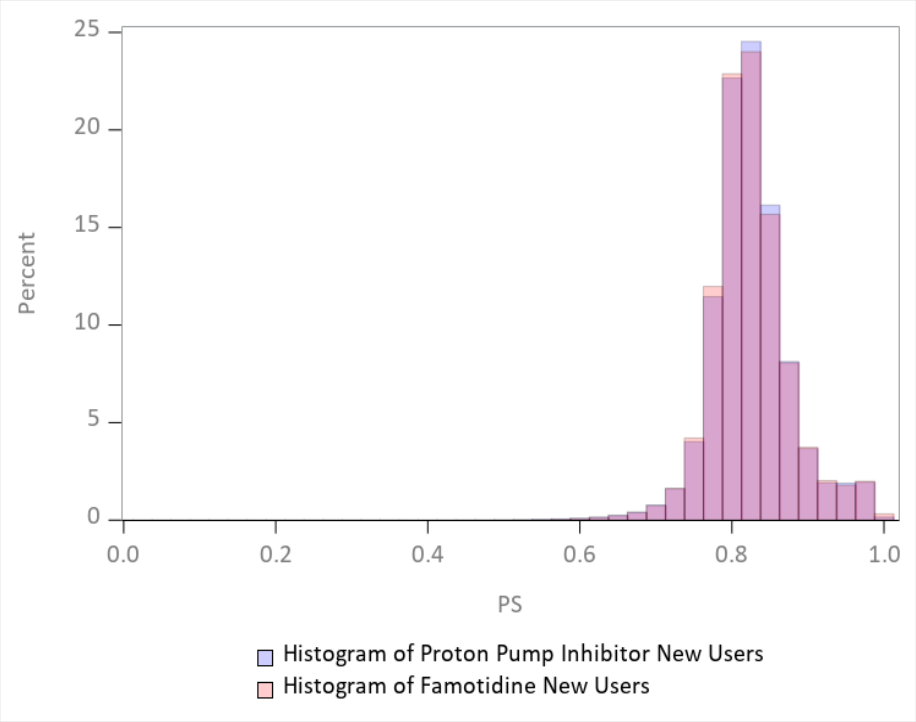
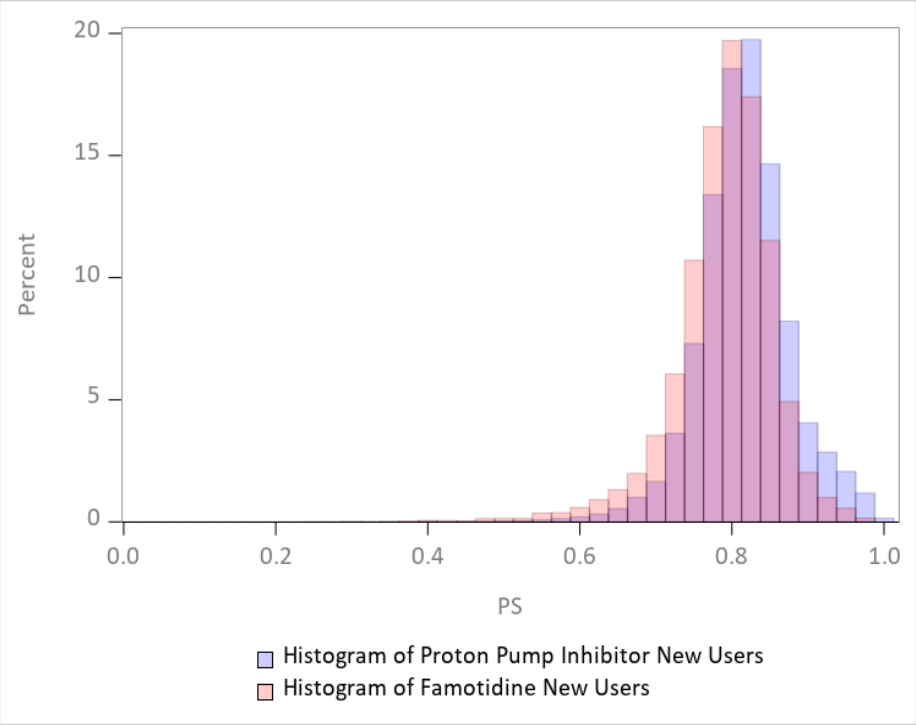


Figure 11b. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

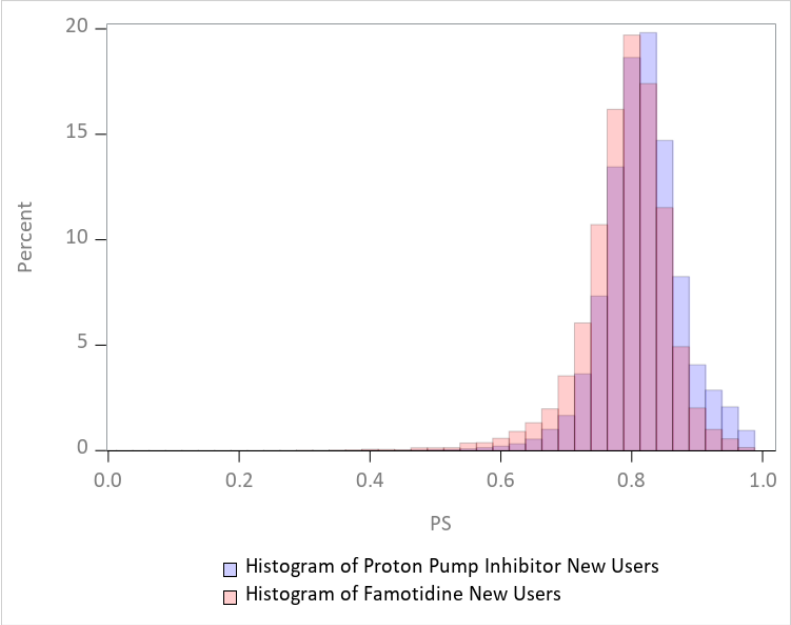


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

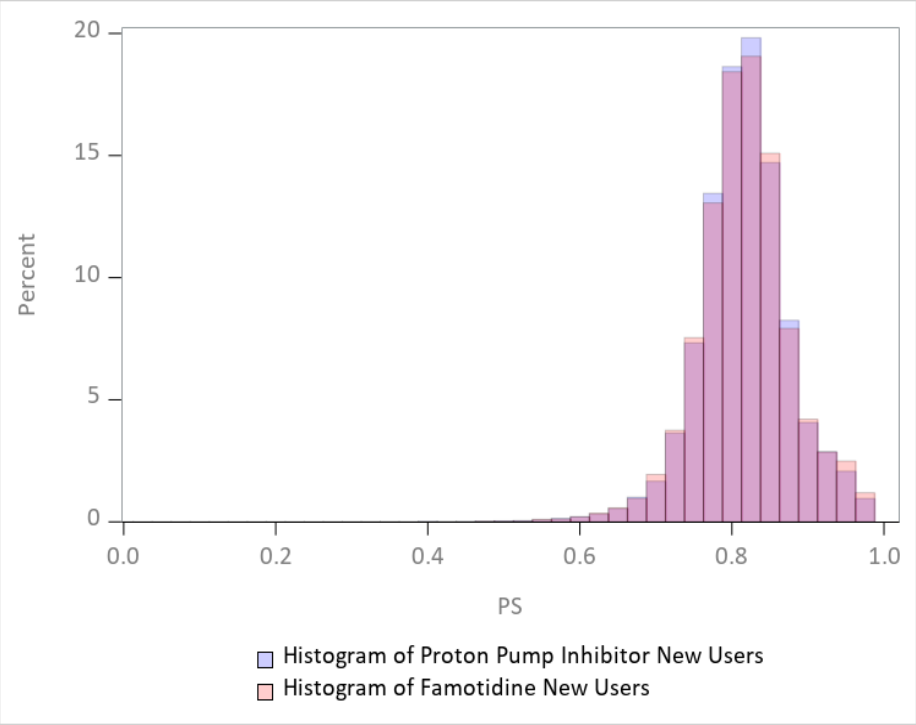
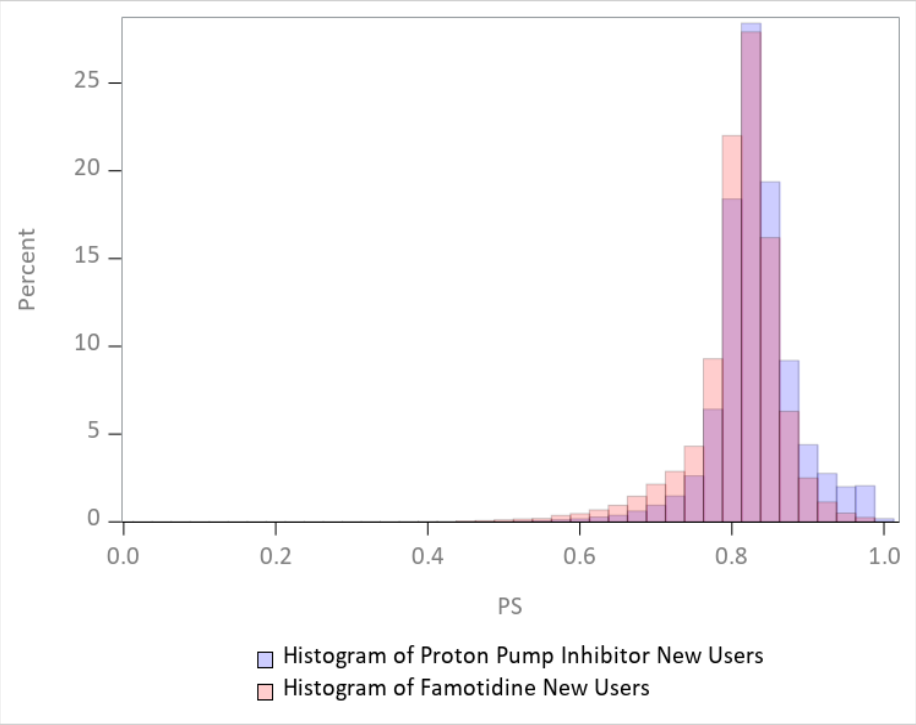


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

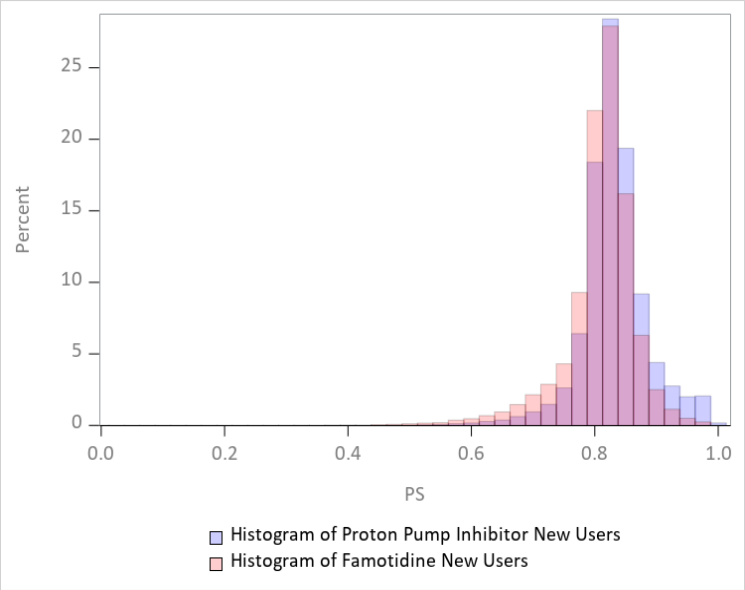


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

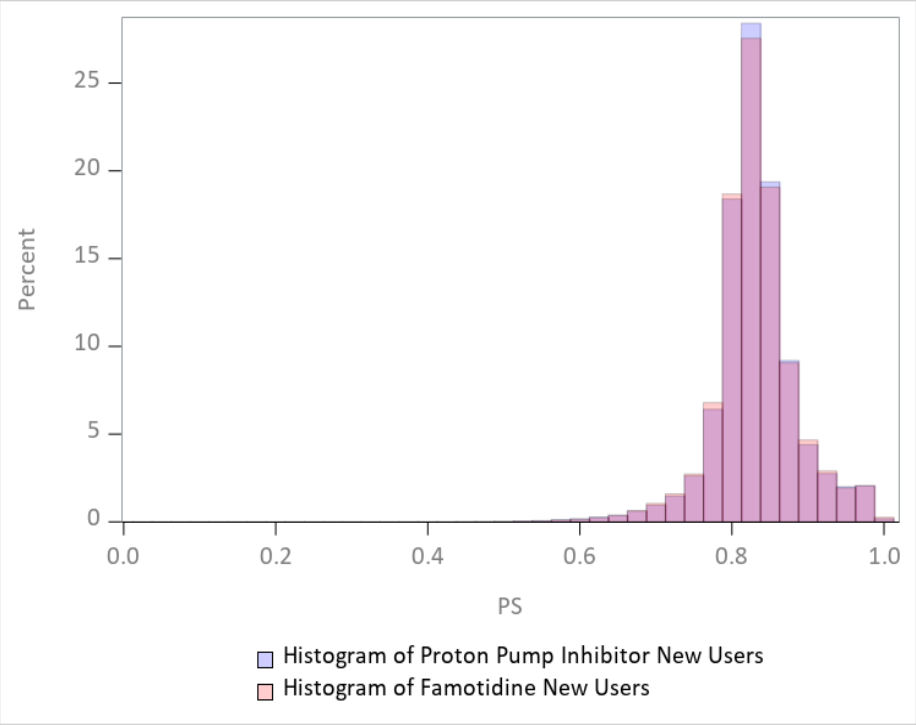
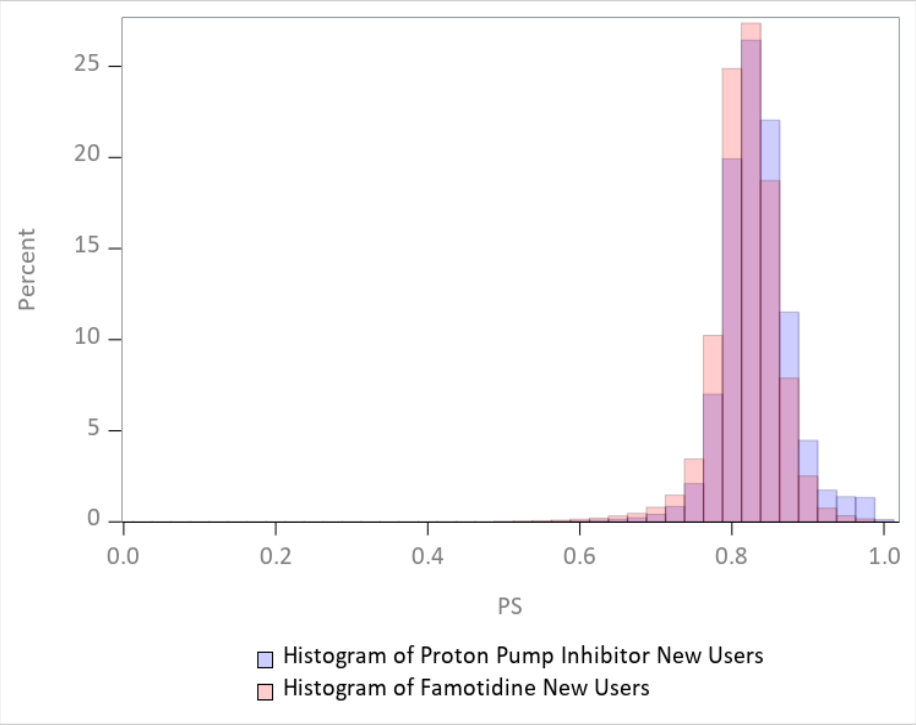


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

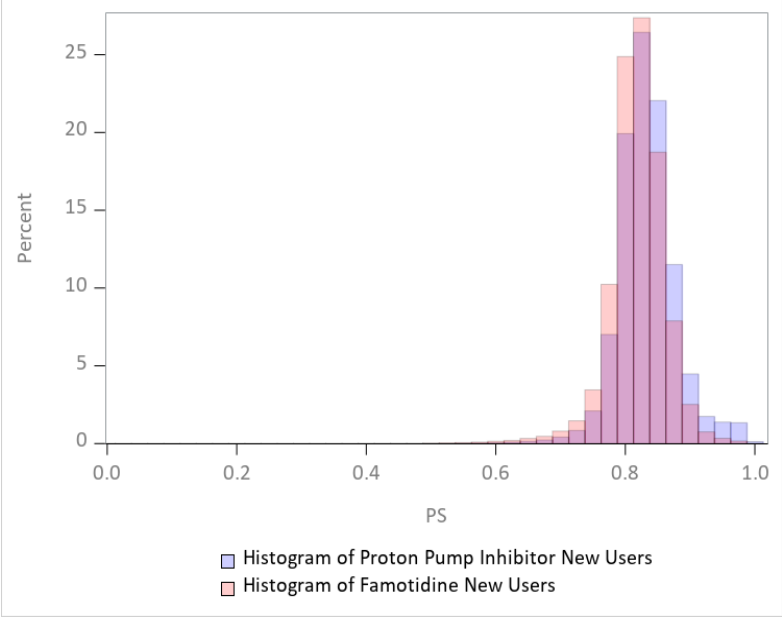


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

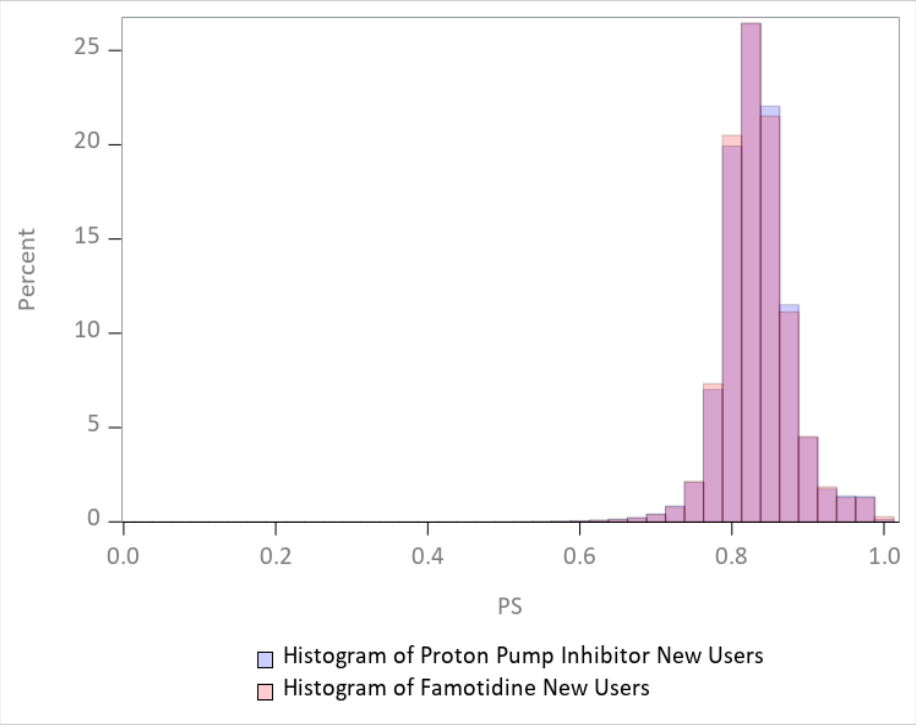
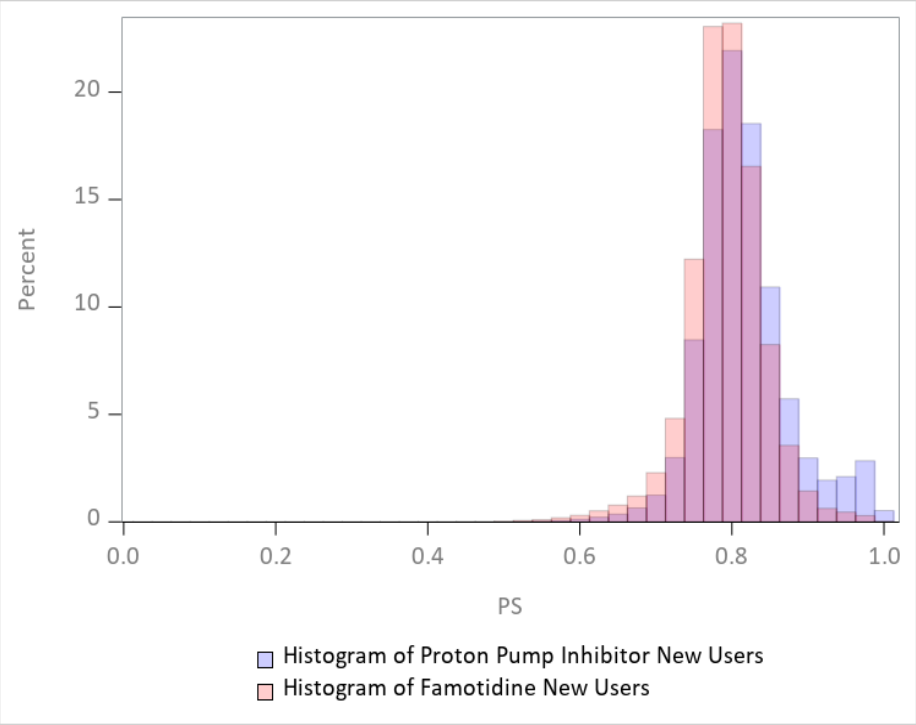


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

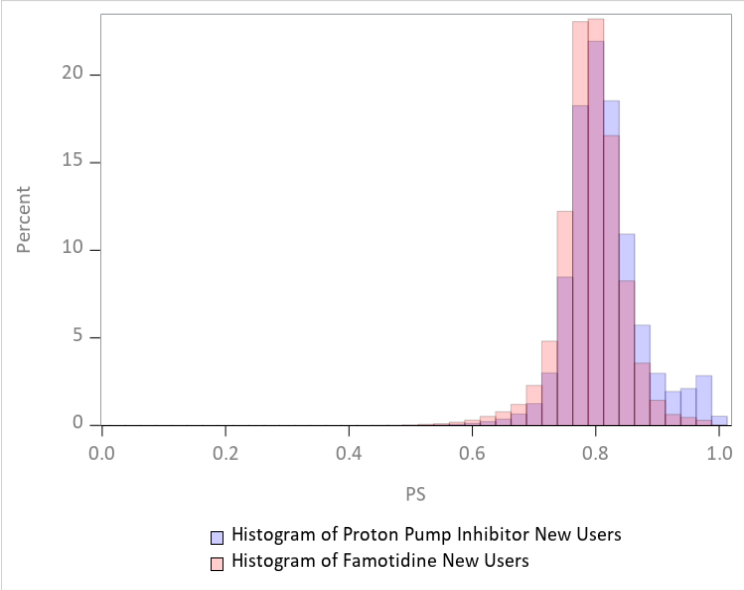


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

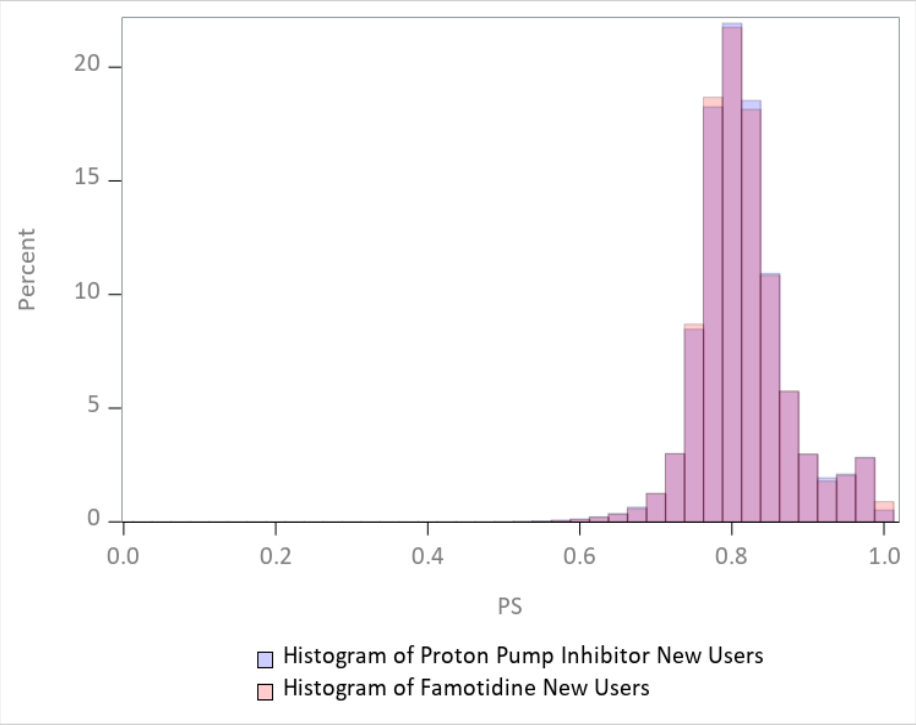
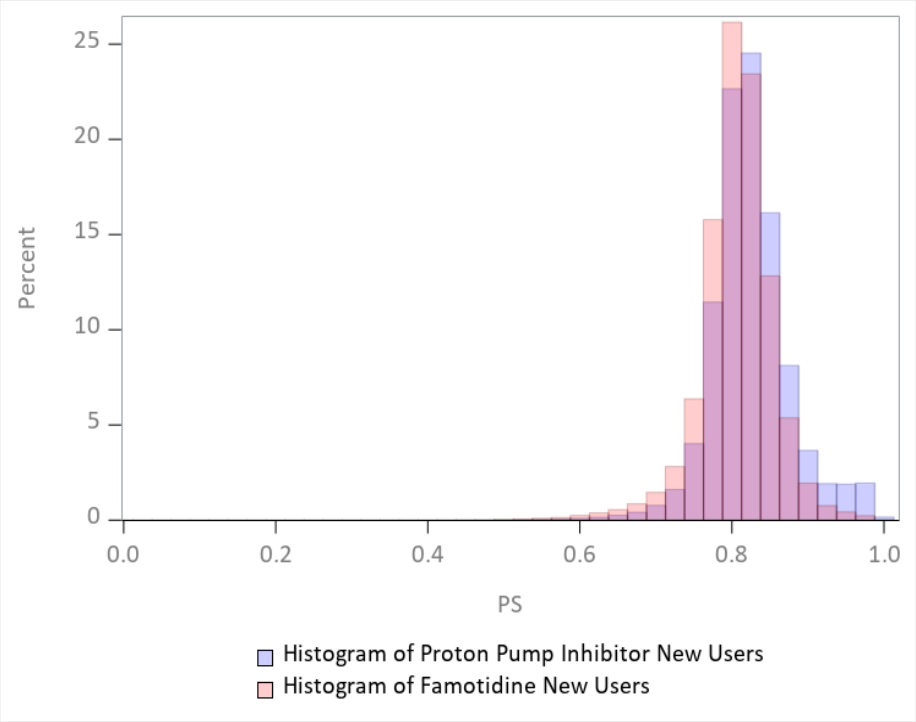


Figure 12a. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

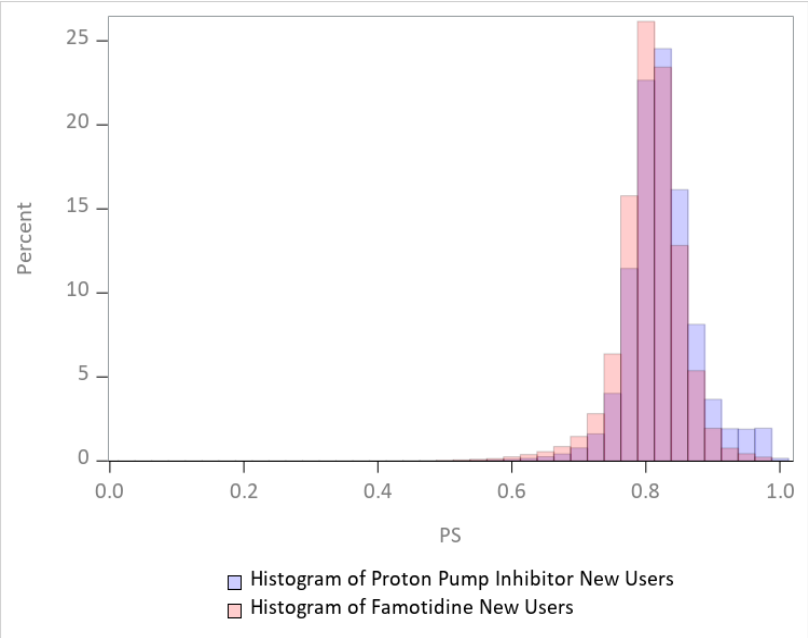


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

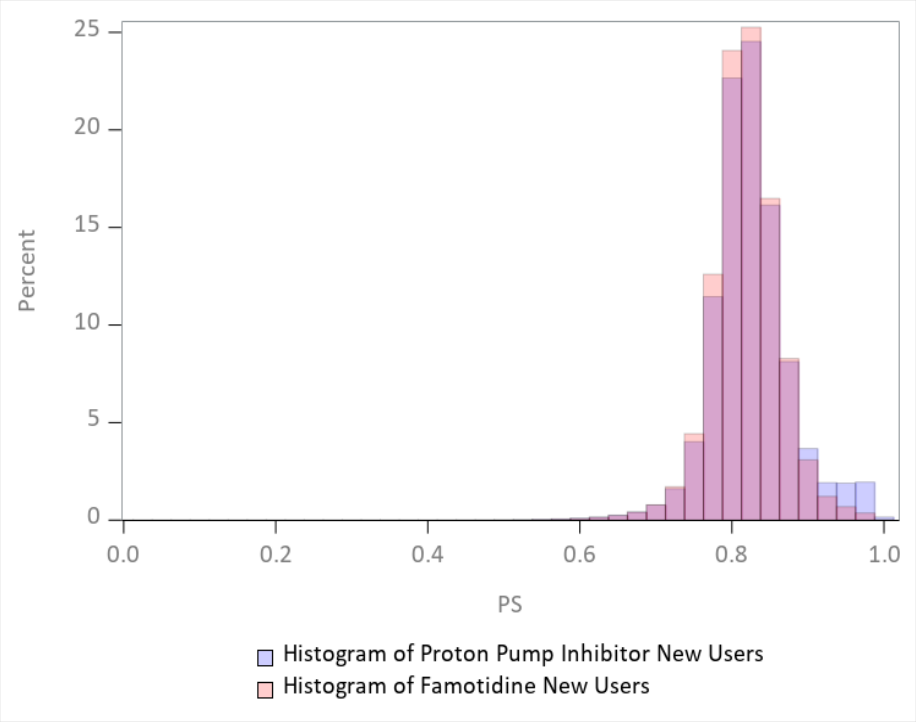
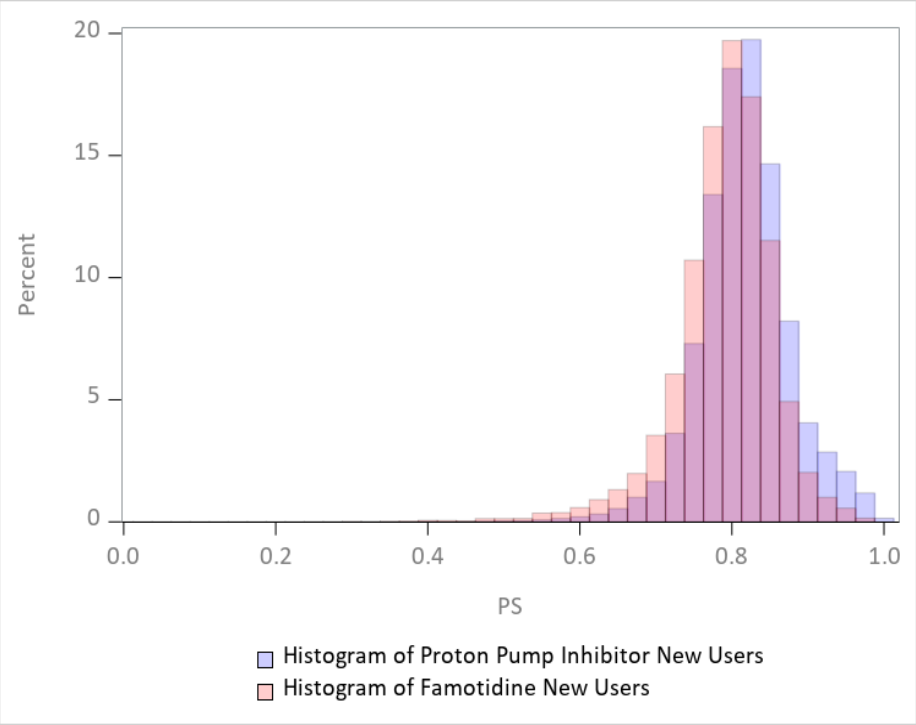


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Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

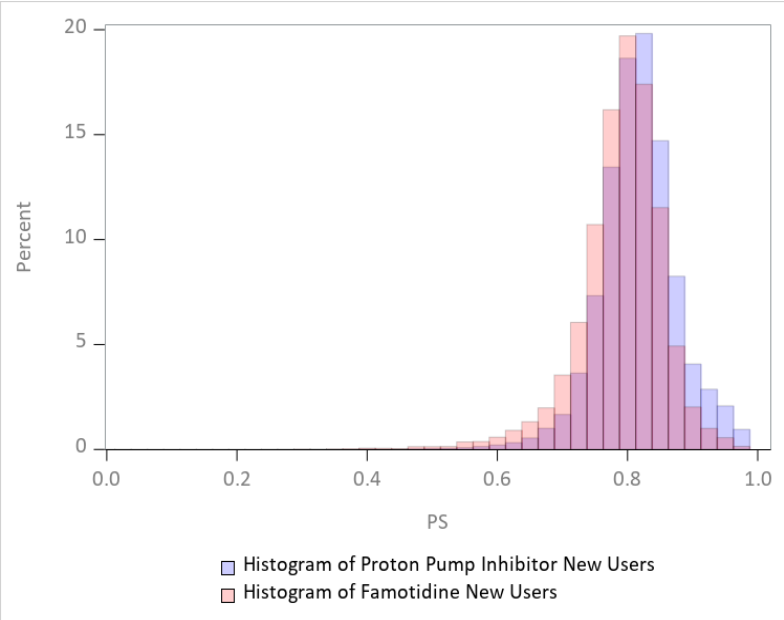


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

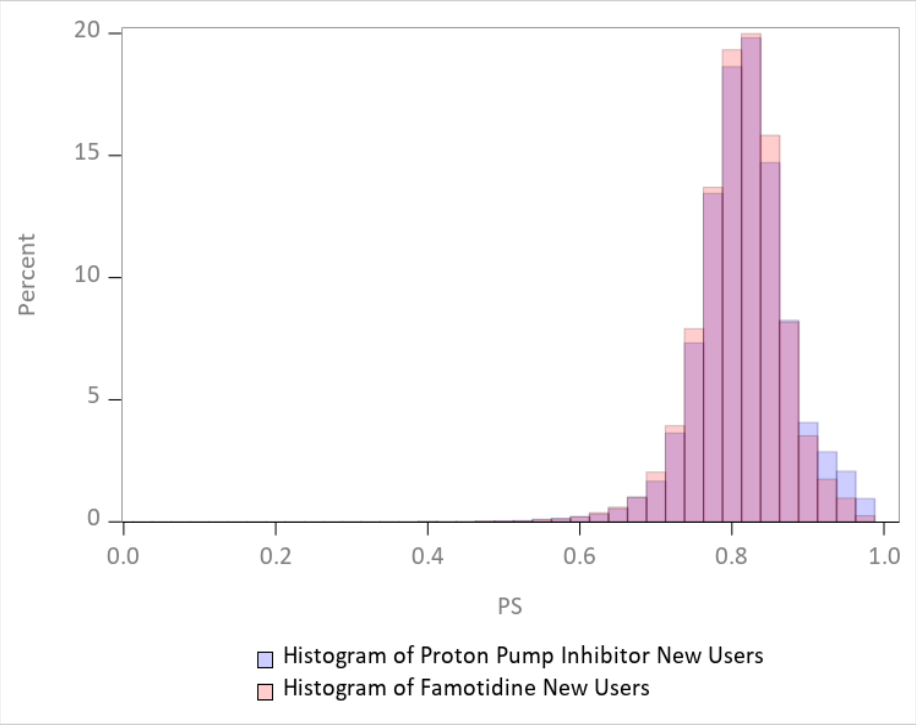
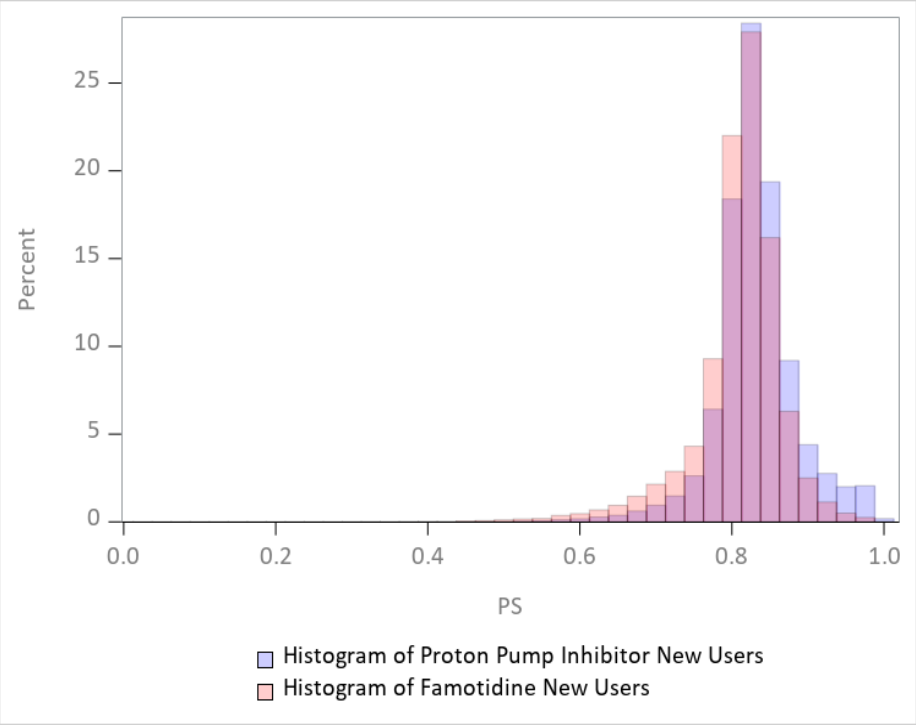


Figure 12c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

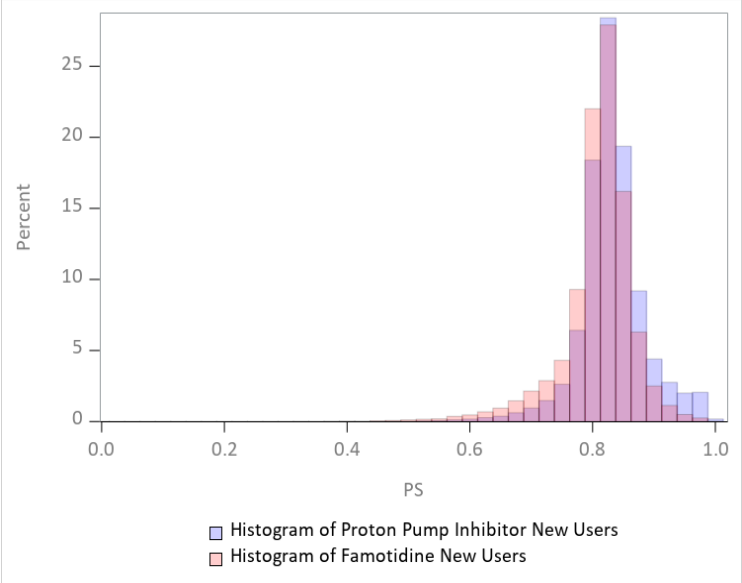


Figure 12c. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

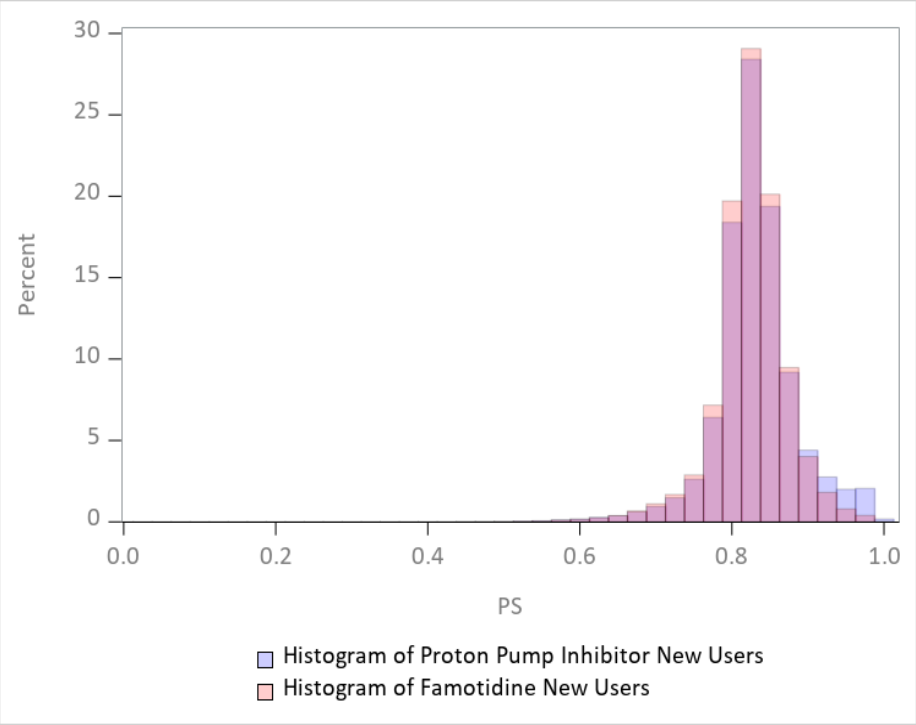
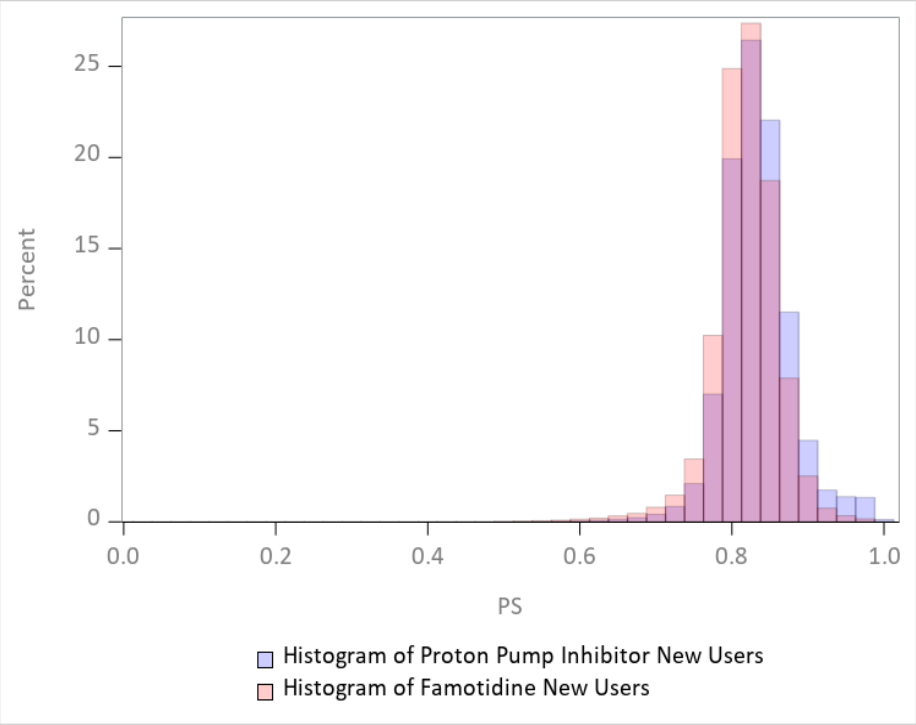


Figure 12d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

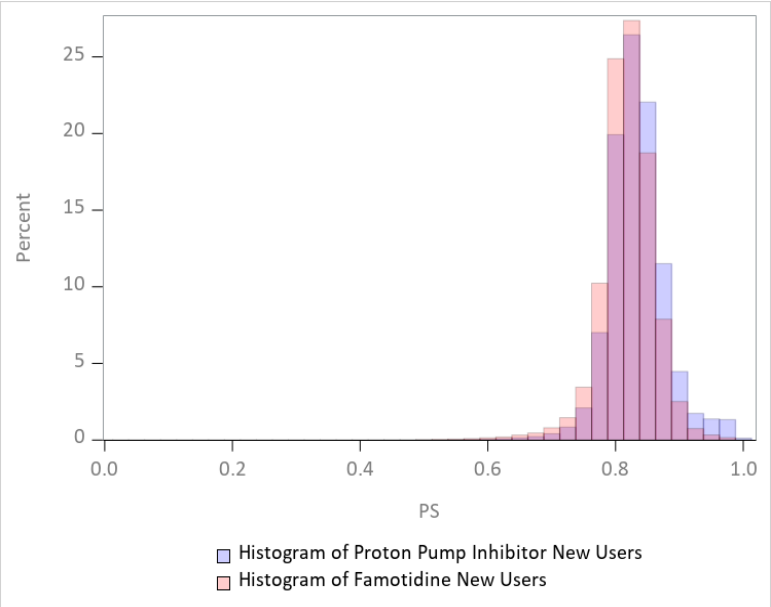


Figure 12d. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

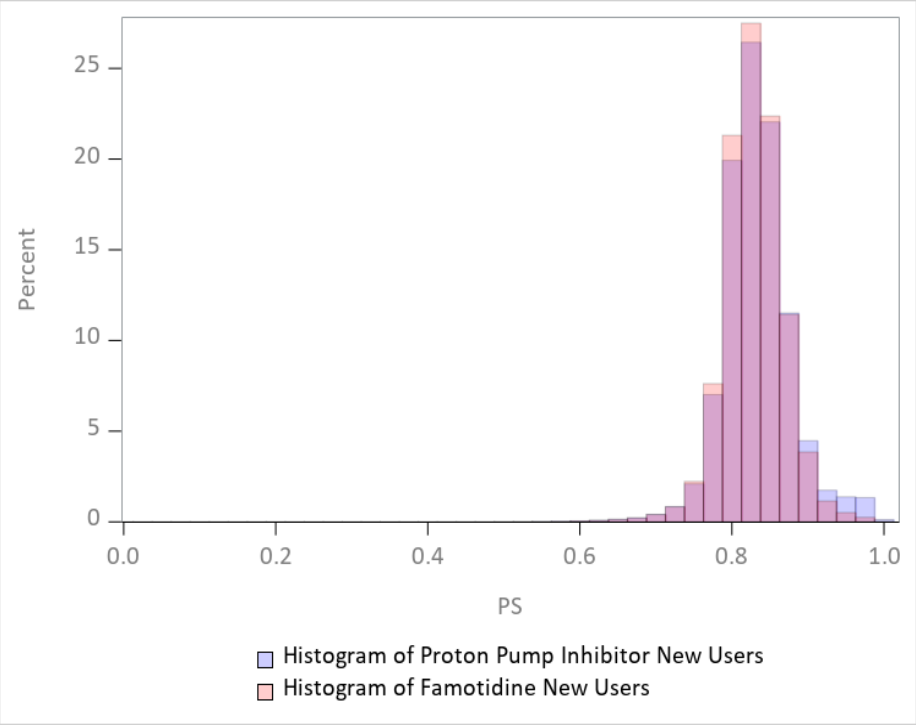
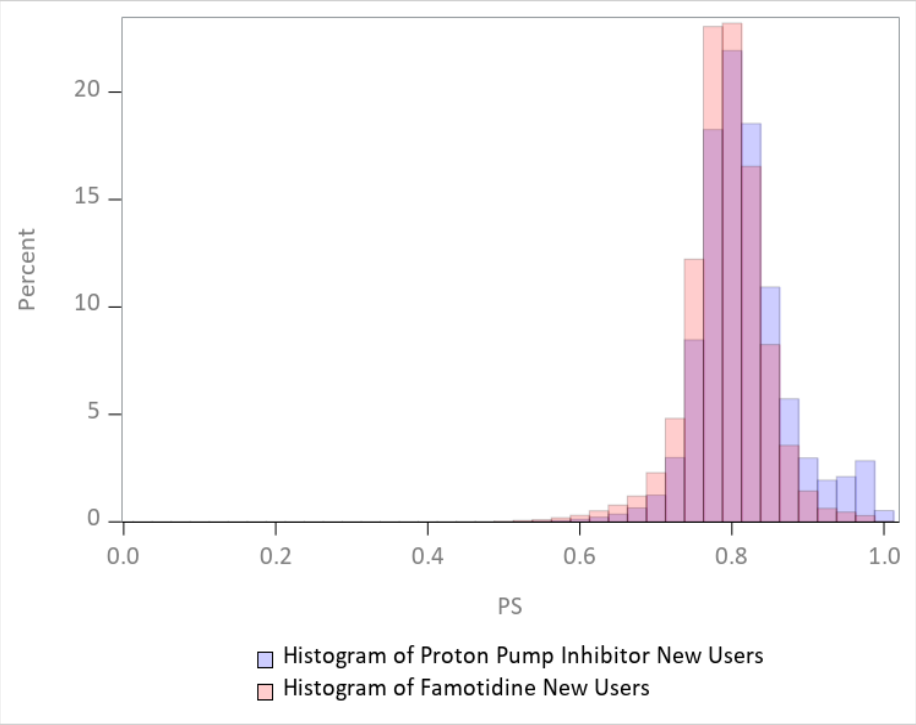


Figure 12e. Histograms Depicting Propensity Score Distributions Before and After Adjustment for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

Unweighted Propensity Score Distribution Before Trimming



Unweighted Propensity Score Distribution After Trimming

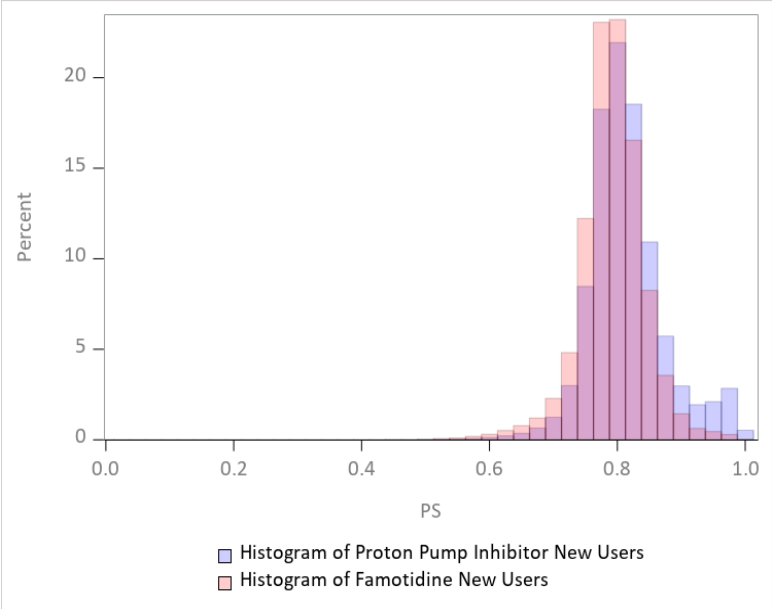


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Weighted Propensity Score Distribution After Trimming, Inverse Probability of Treatment Weighted, Average Treatment Effect in the Treated (ATT)

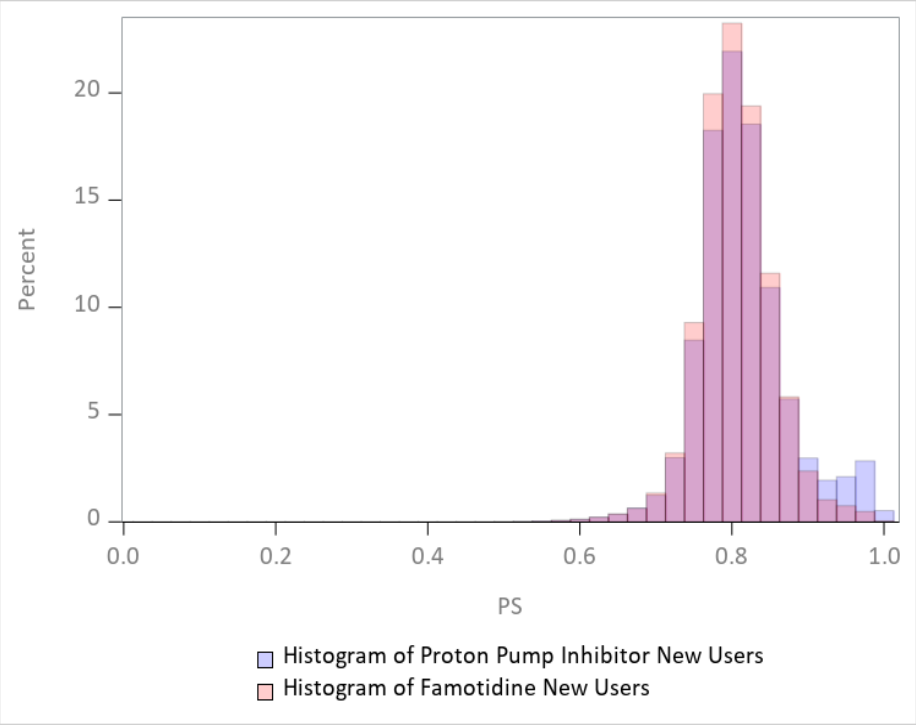


Figure 13a. Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Site-Adjusted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

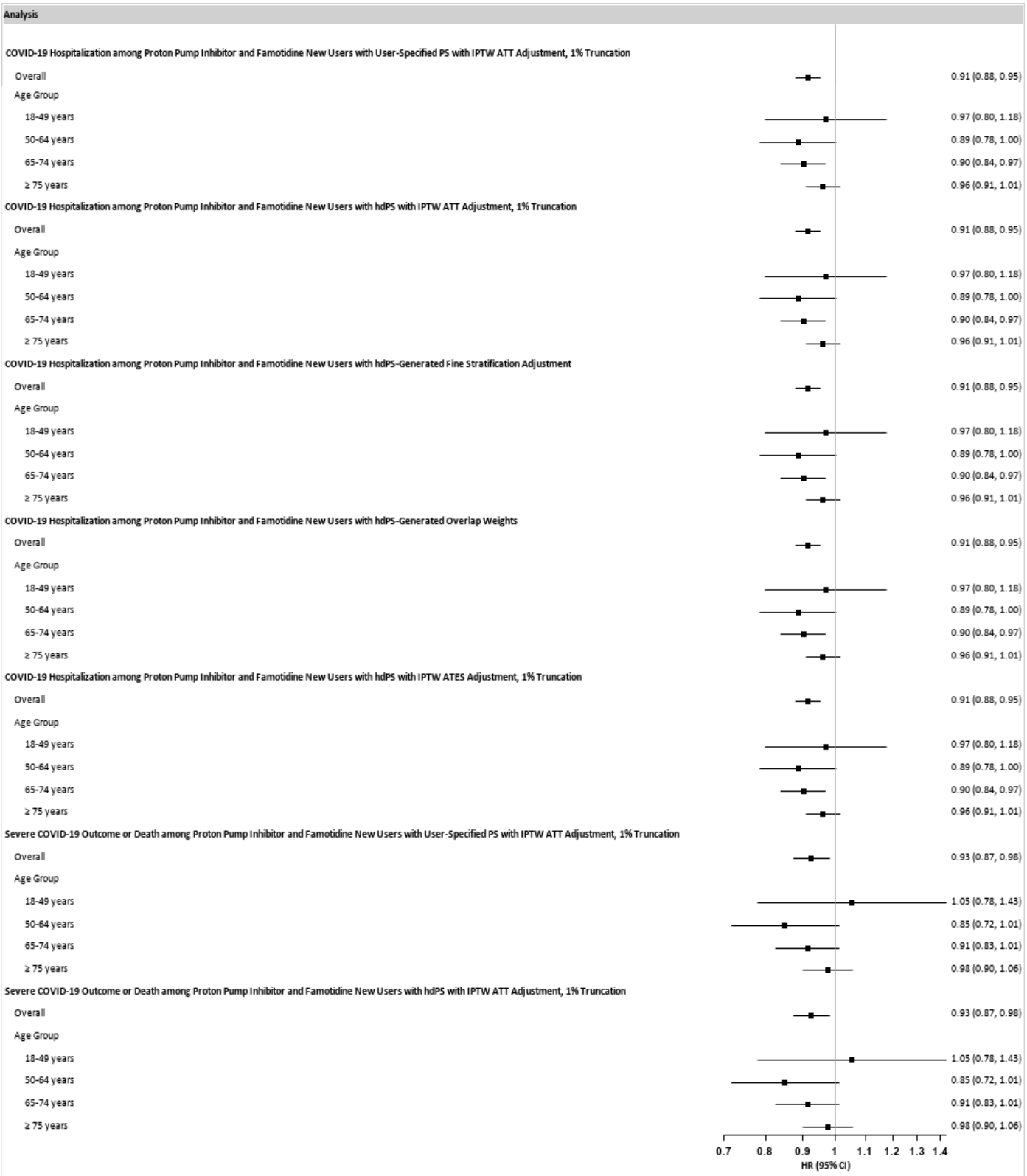
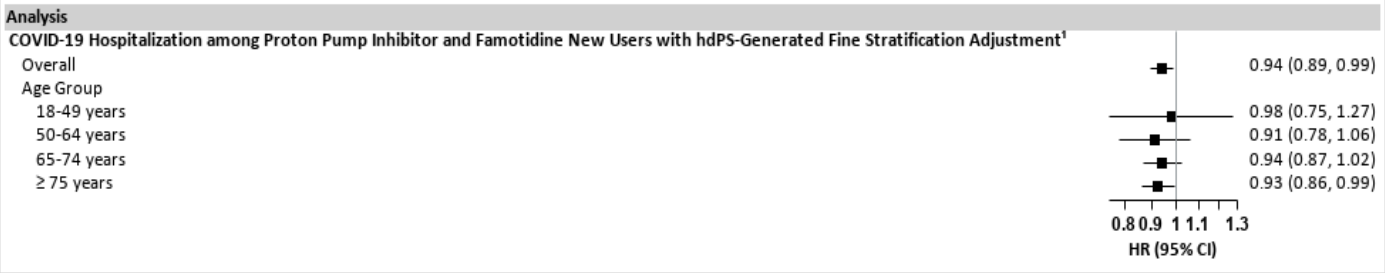
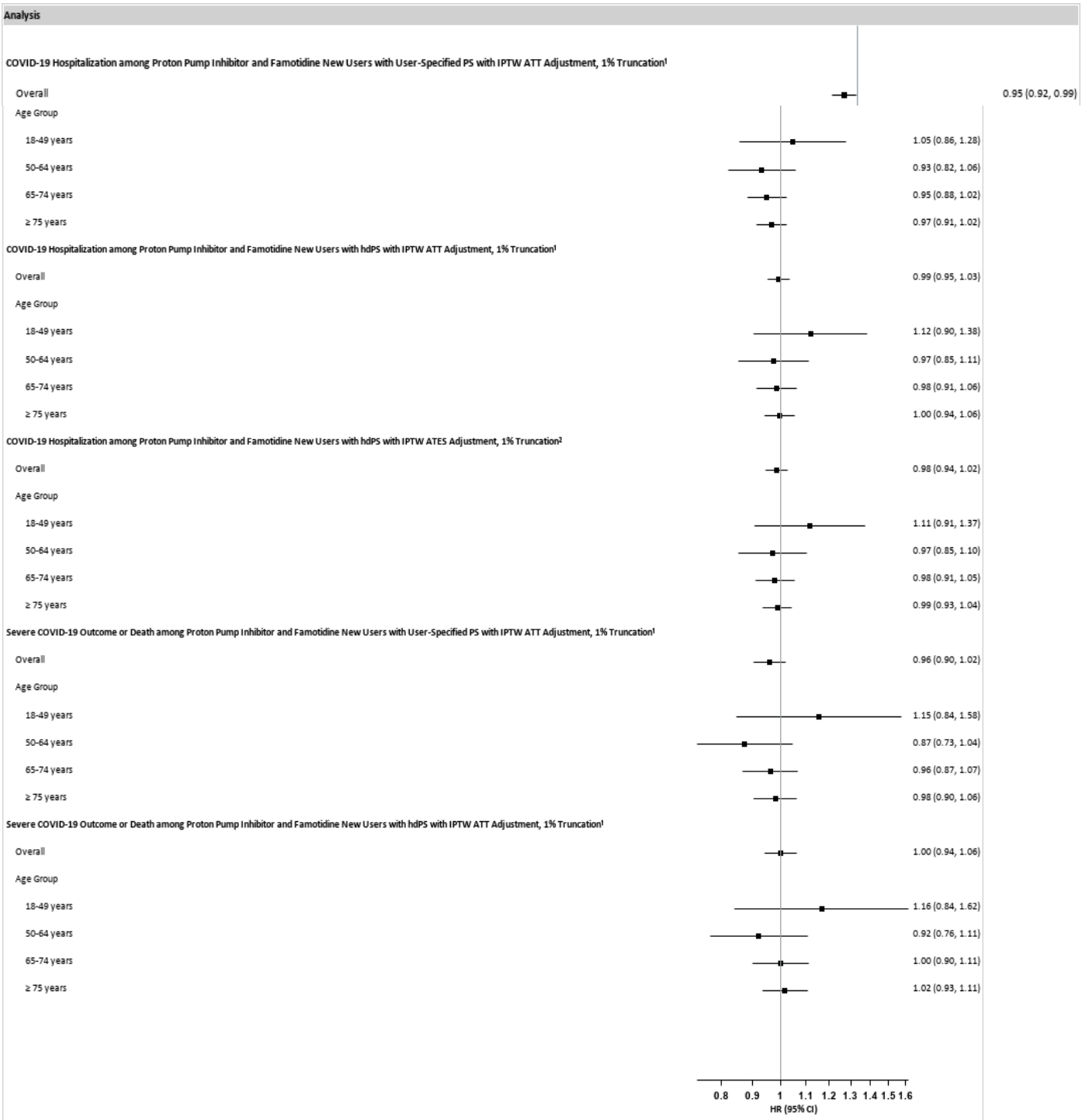


Figure 13b. Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Propensity Score Stratum Weighted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023



[1]Weighted using Average Treatment Effect in the Treated, (ATT); Percentiles: 50

Figure 13c. Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Inverse Probability of Treatment Weighted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023



[1]Weighted using Average Treatment Effect in the Treated, (ATT)

[2]Weighted using Average Treatment Effect, (ATE)

Figure 13d. Forest Plot of Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Overlap Weighted Analyses in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

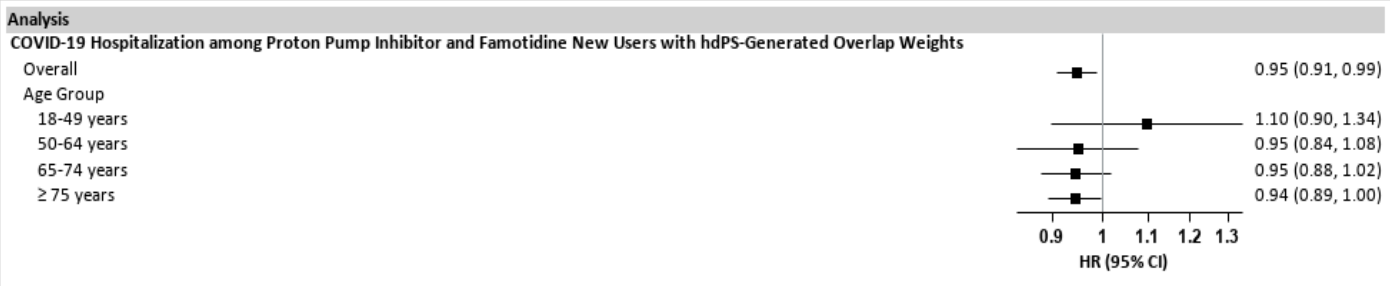


Figure 14a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

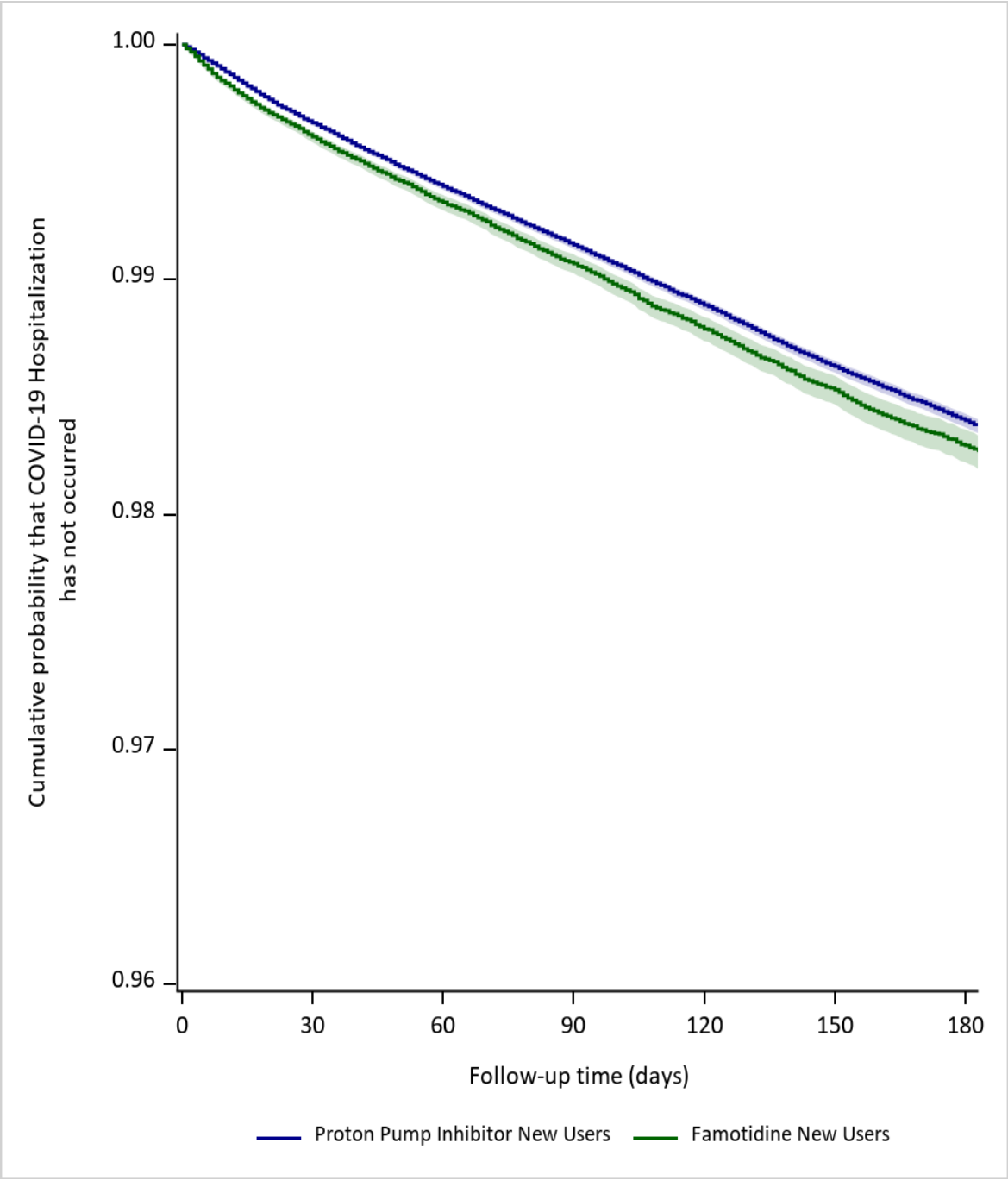


Figure 14b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

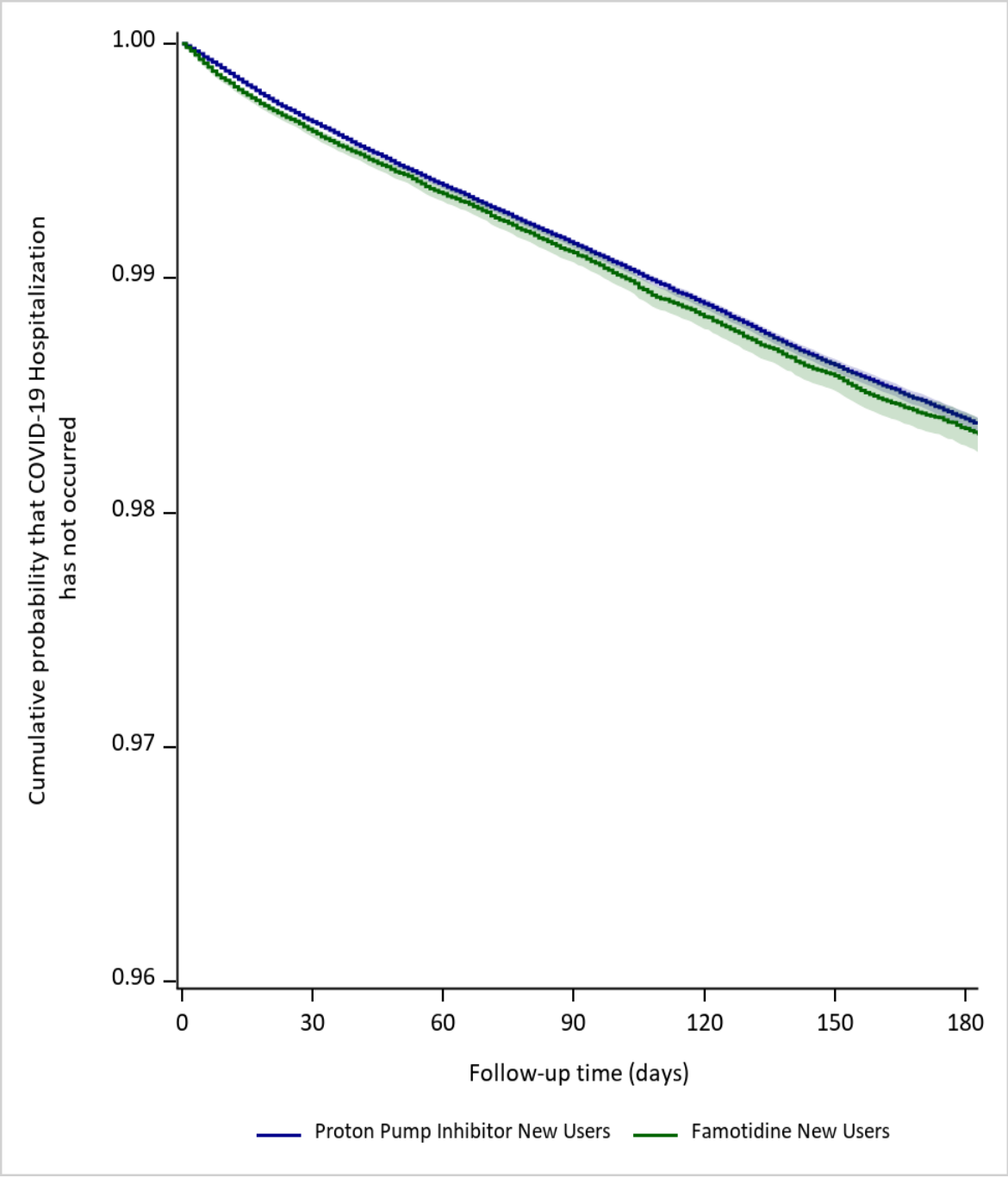


Figure 14c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

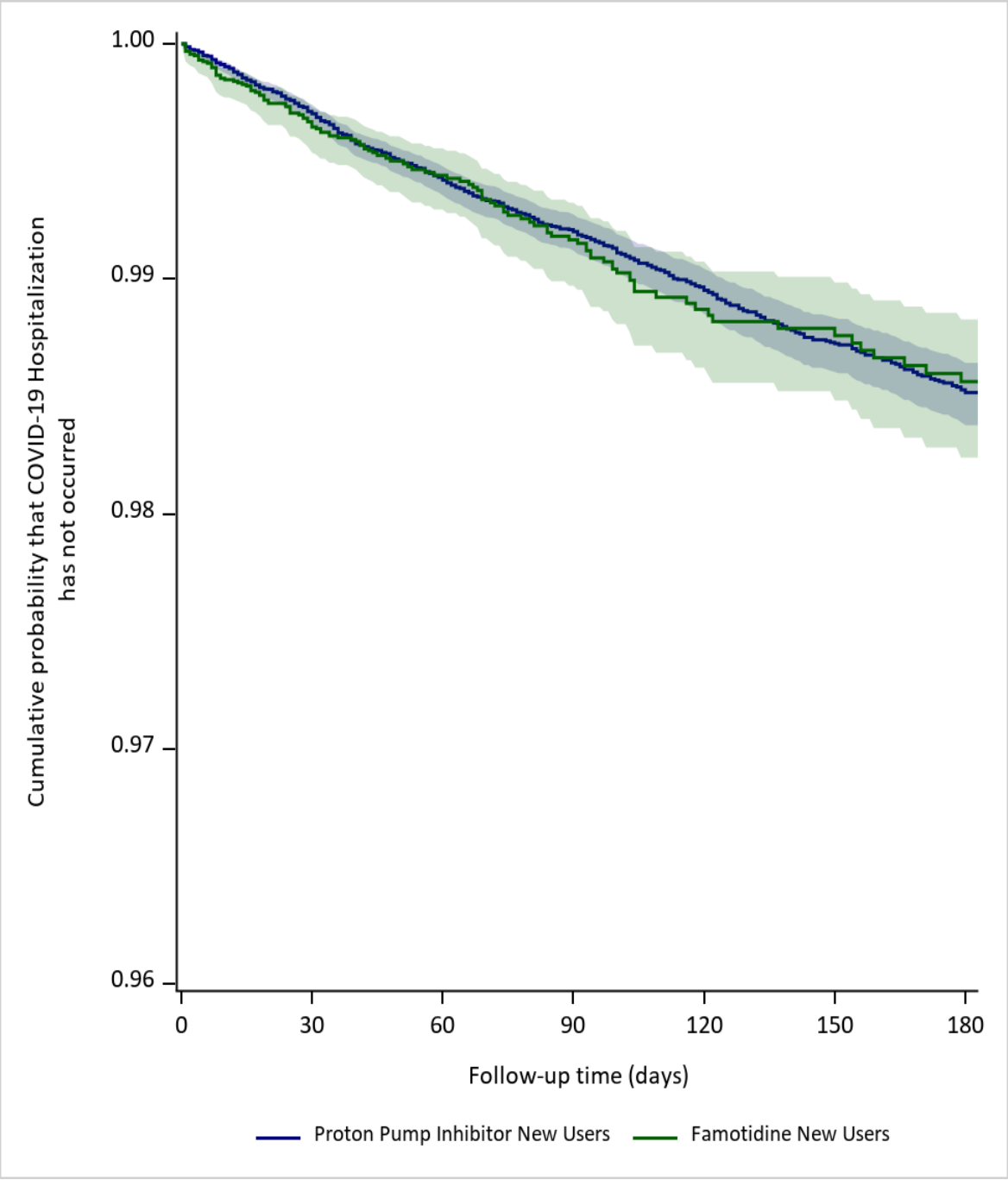


Figure 14d. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

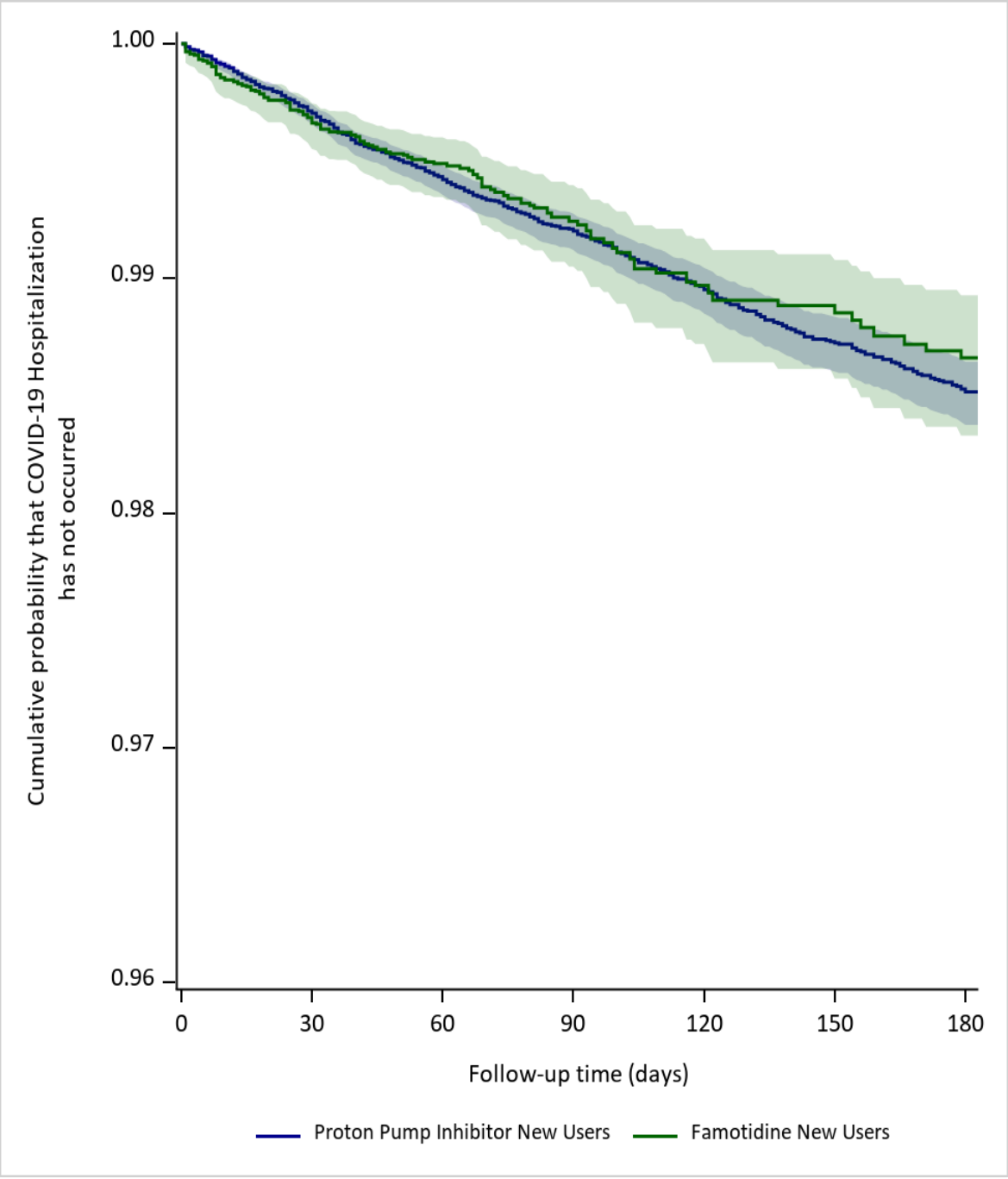


Figure 14e. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

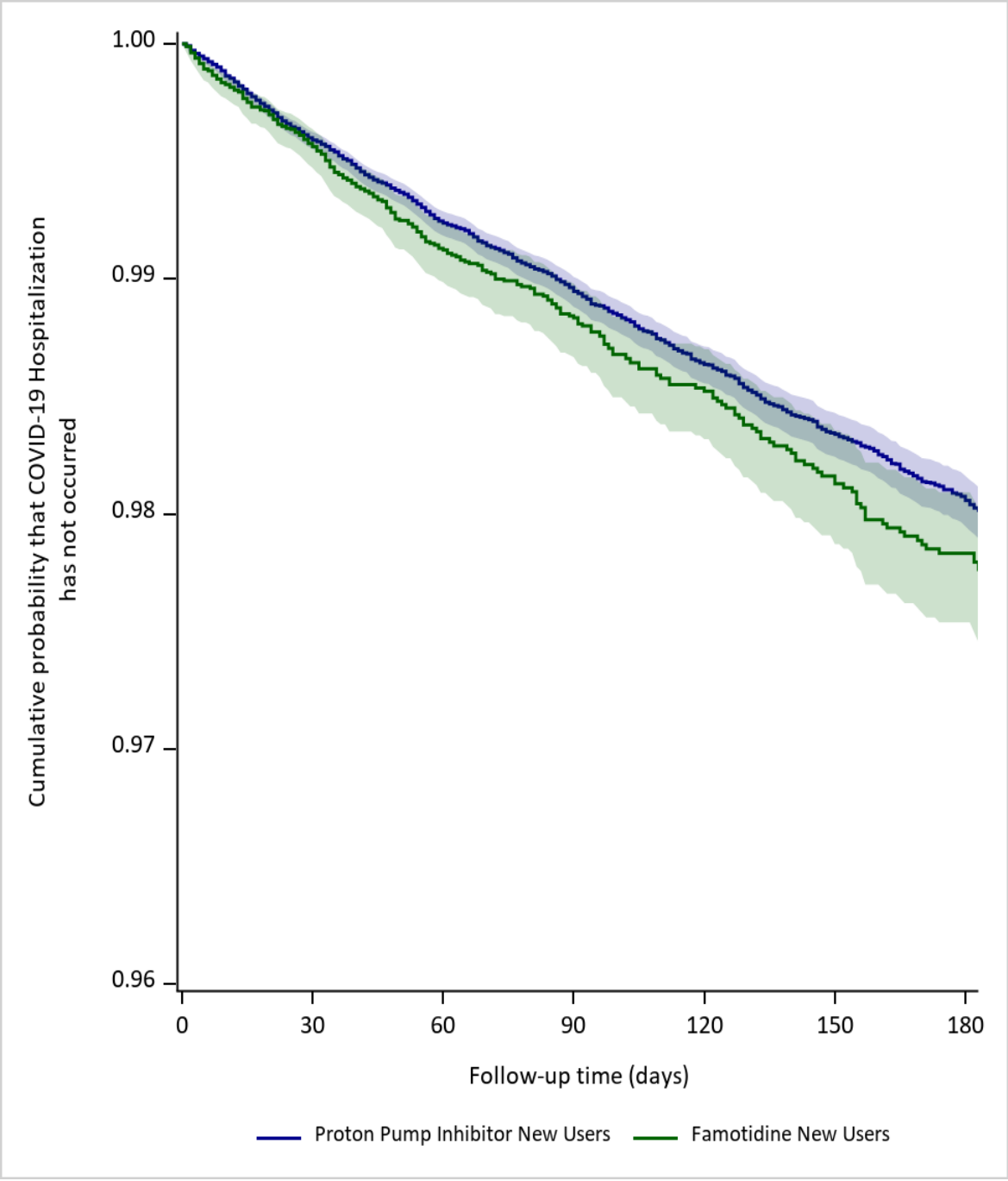


Figure 14f. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

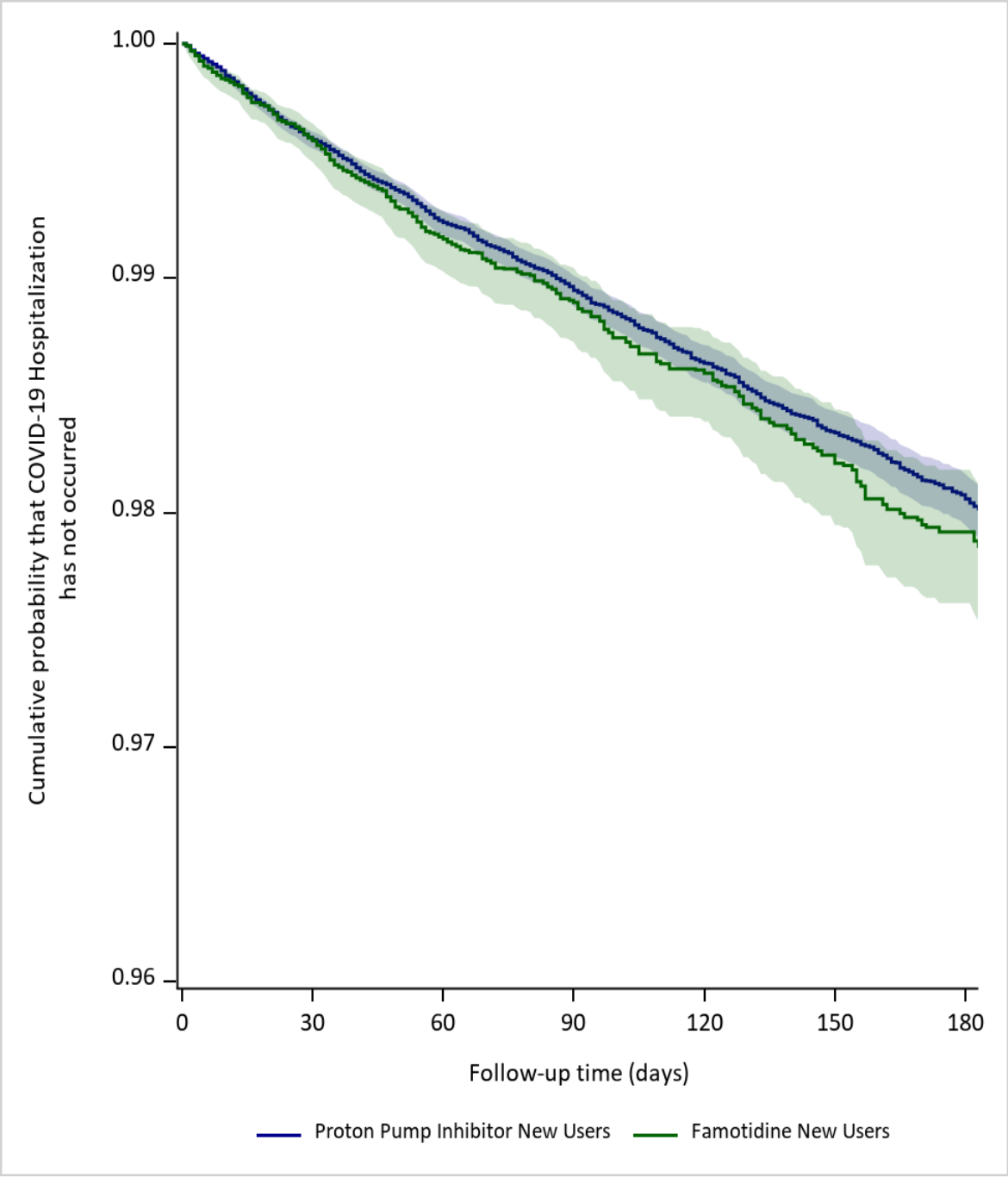


Figure 14g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

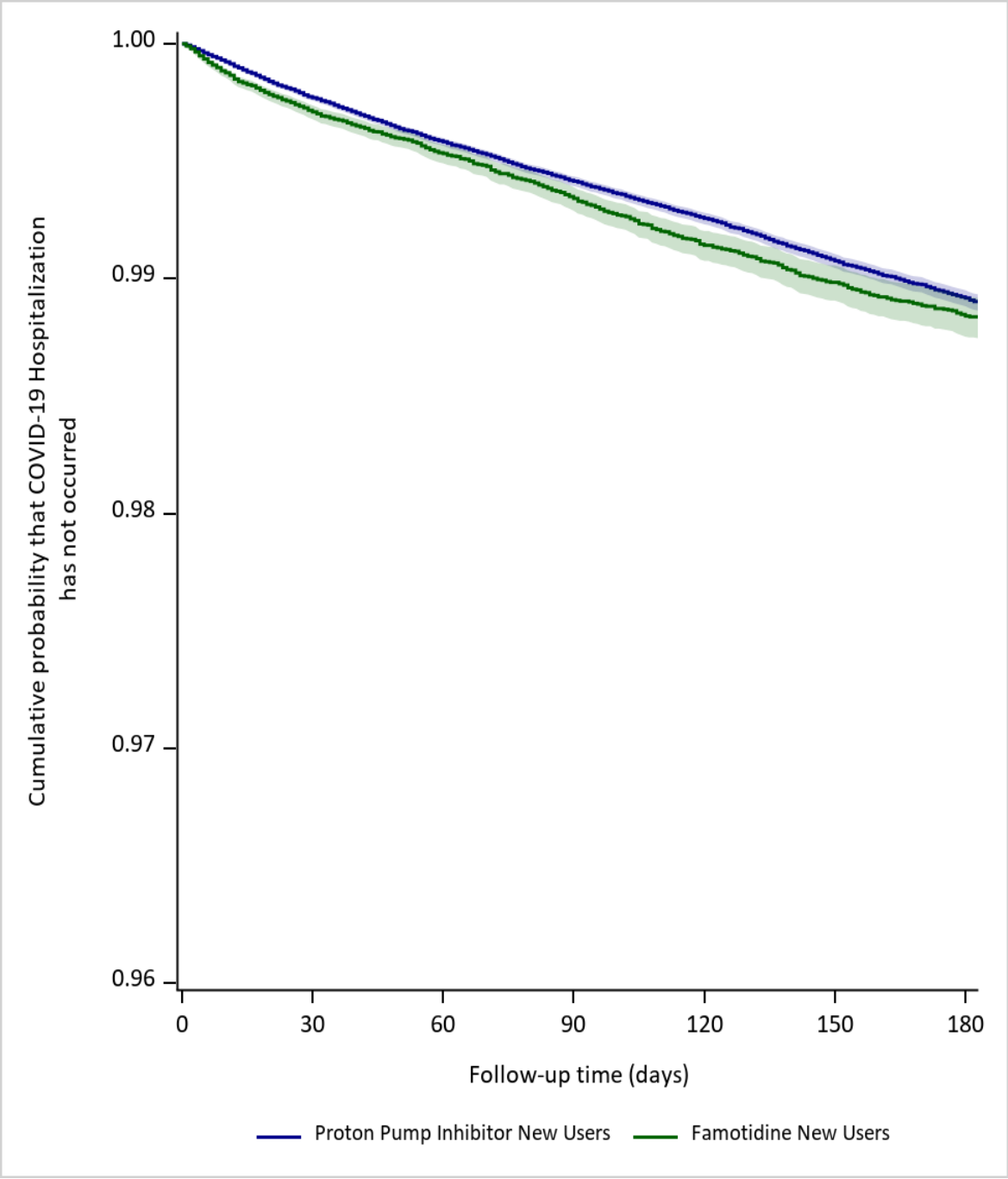


Figure 14h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

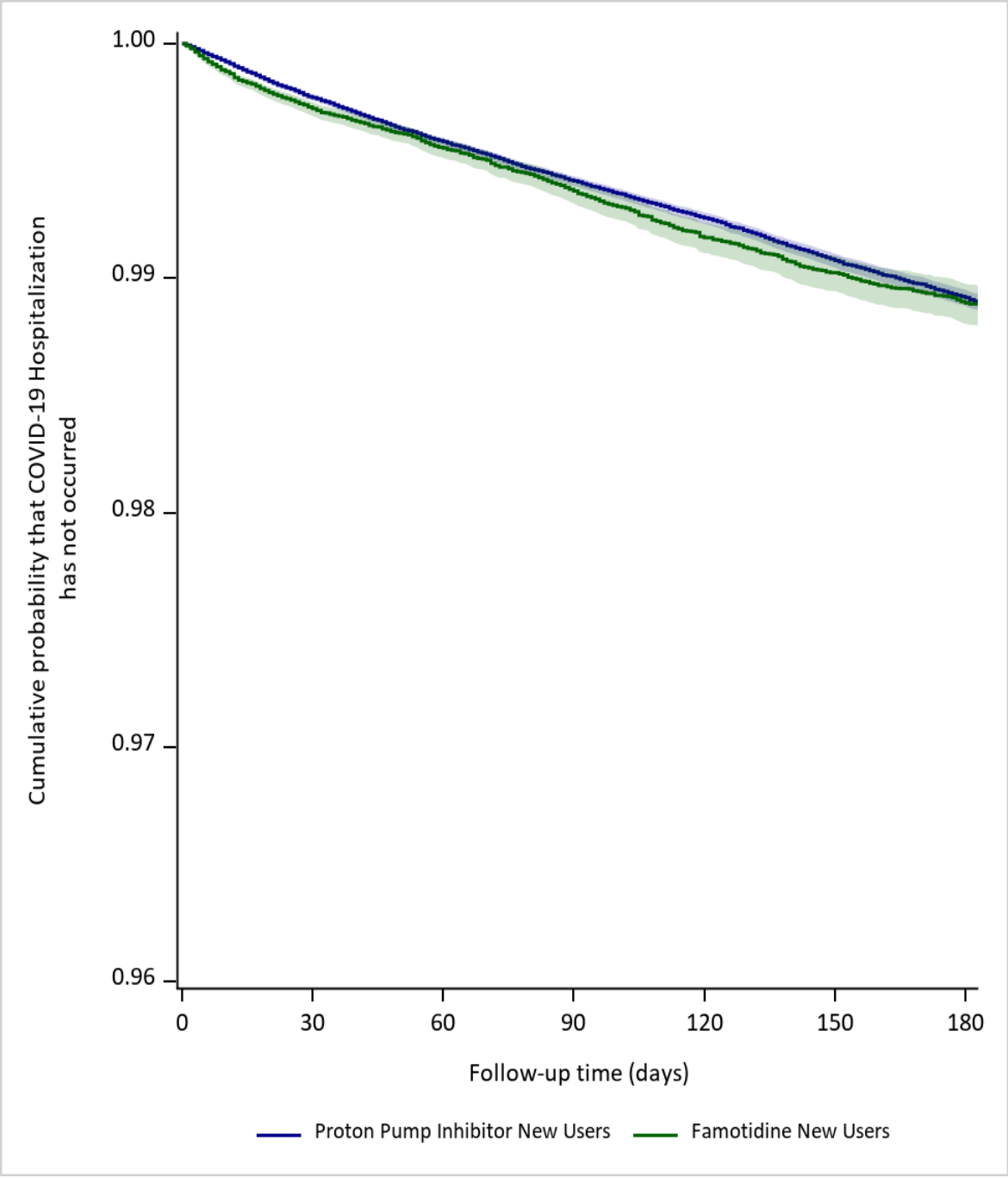


Figure 14i. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

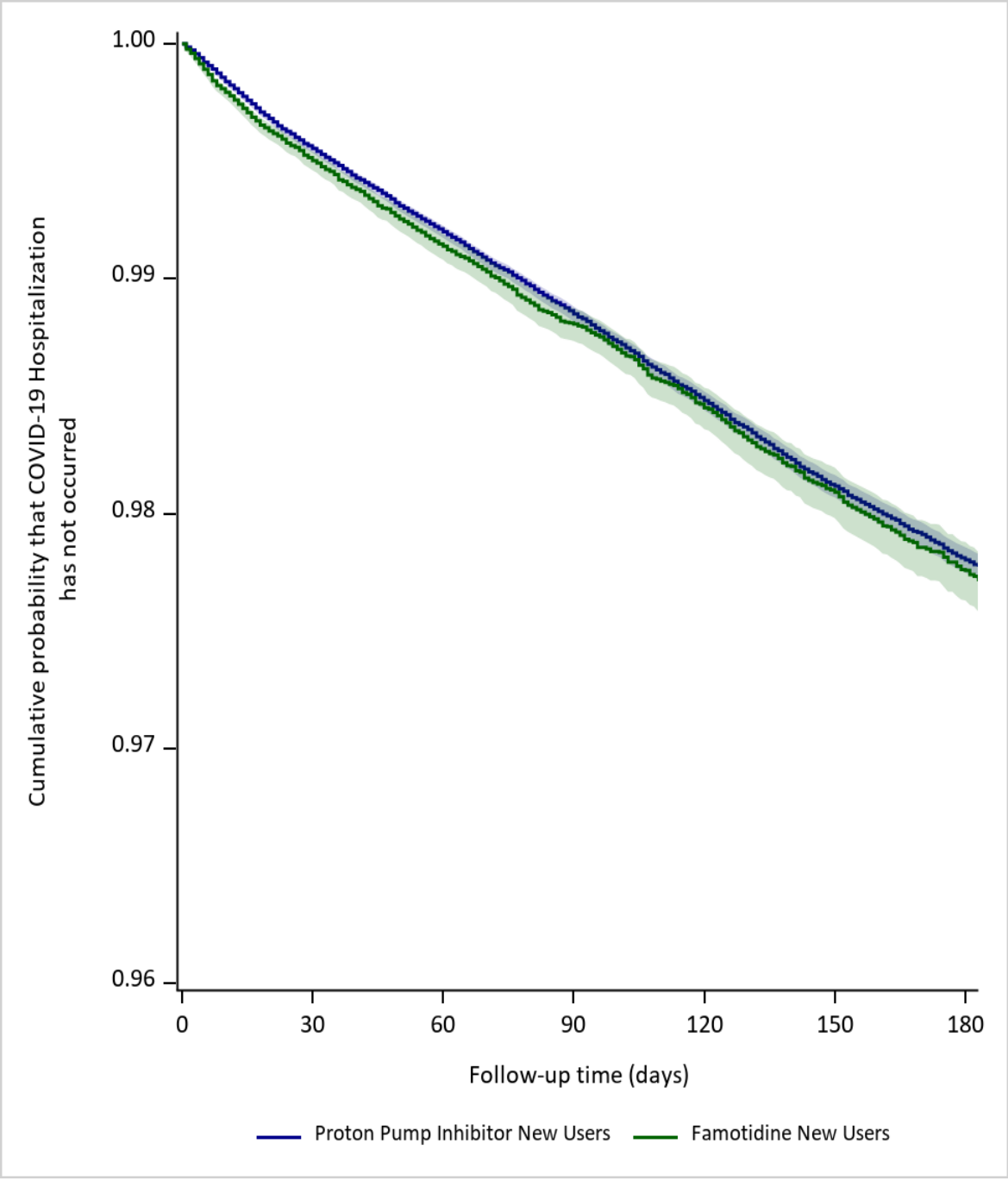


Figure 14j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

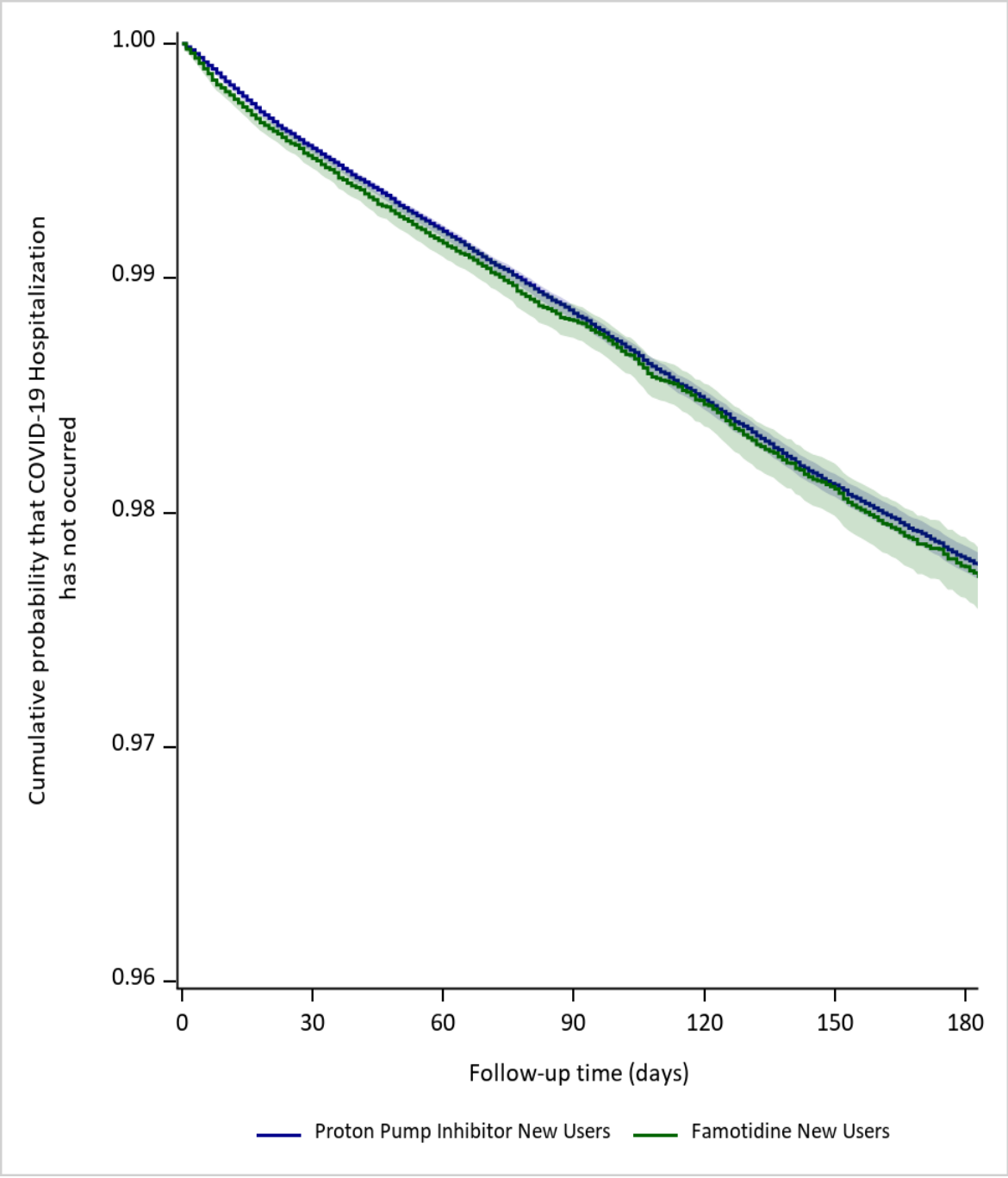


Figure 15a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

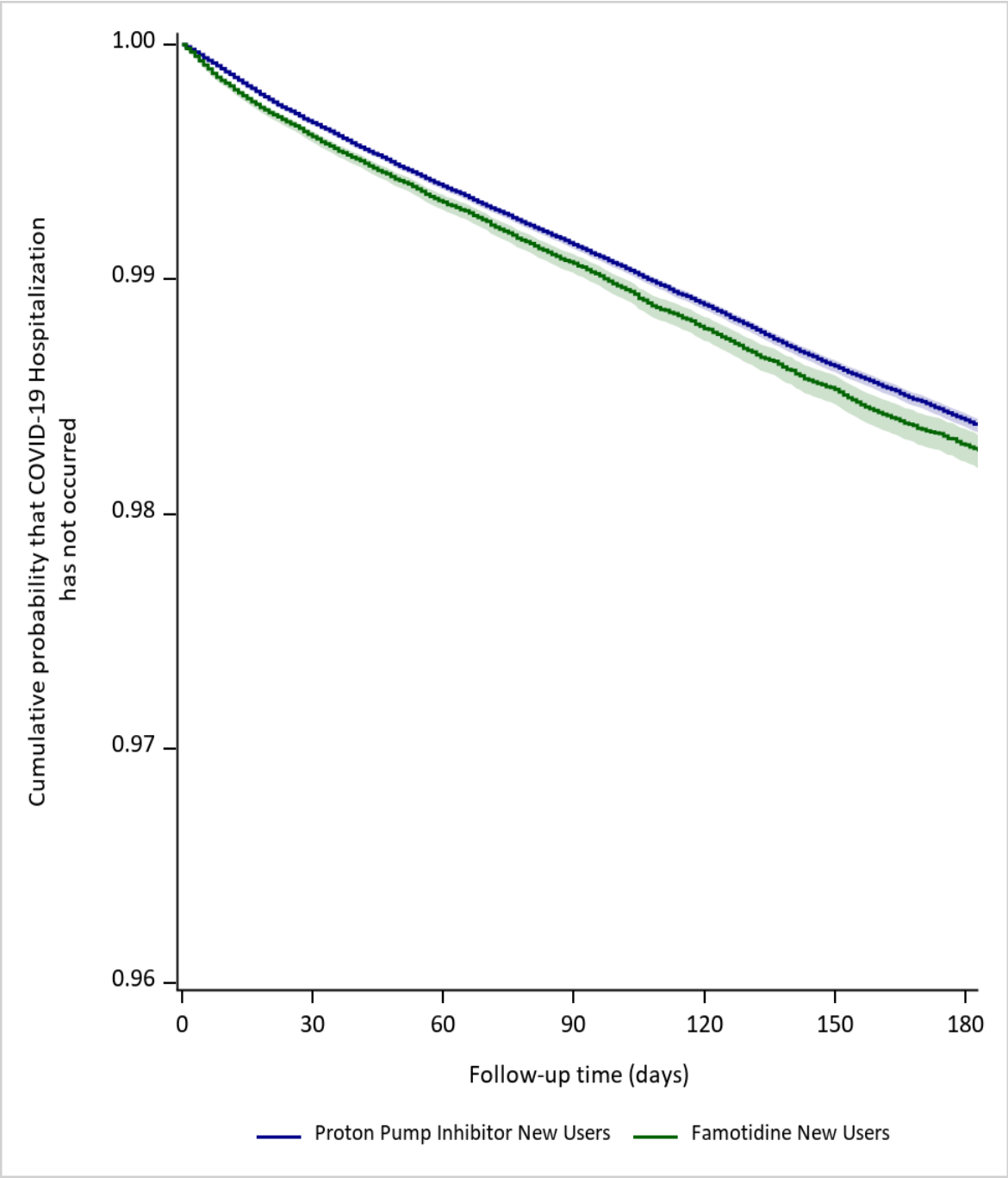


Figure 15b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

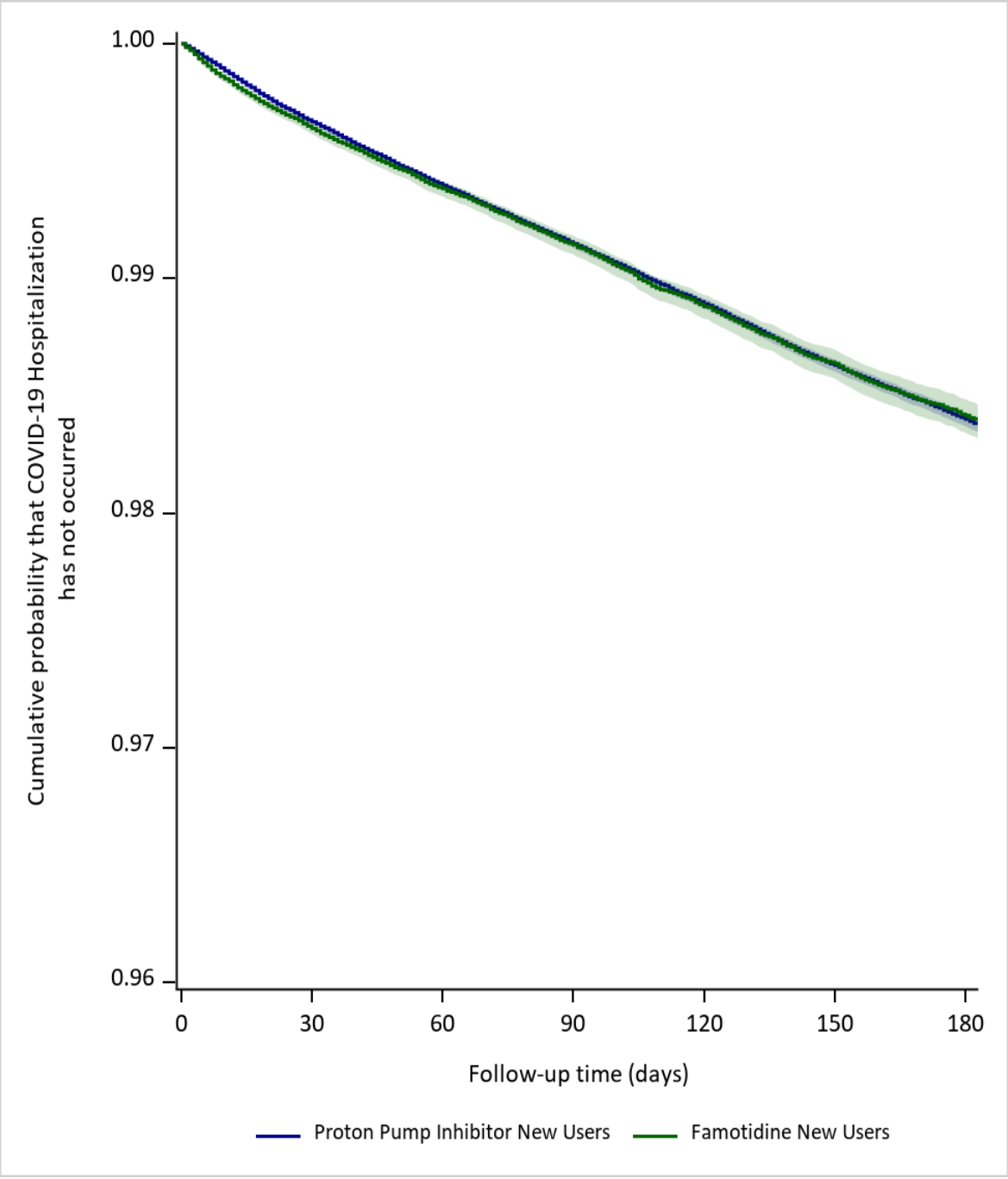


Figure 15c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

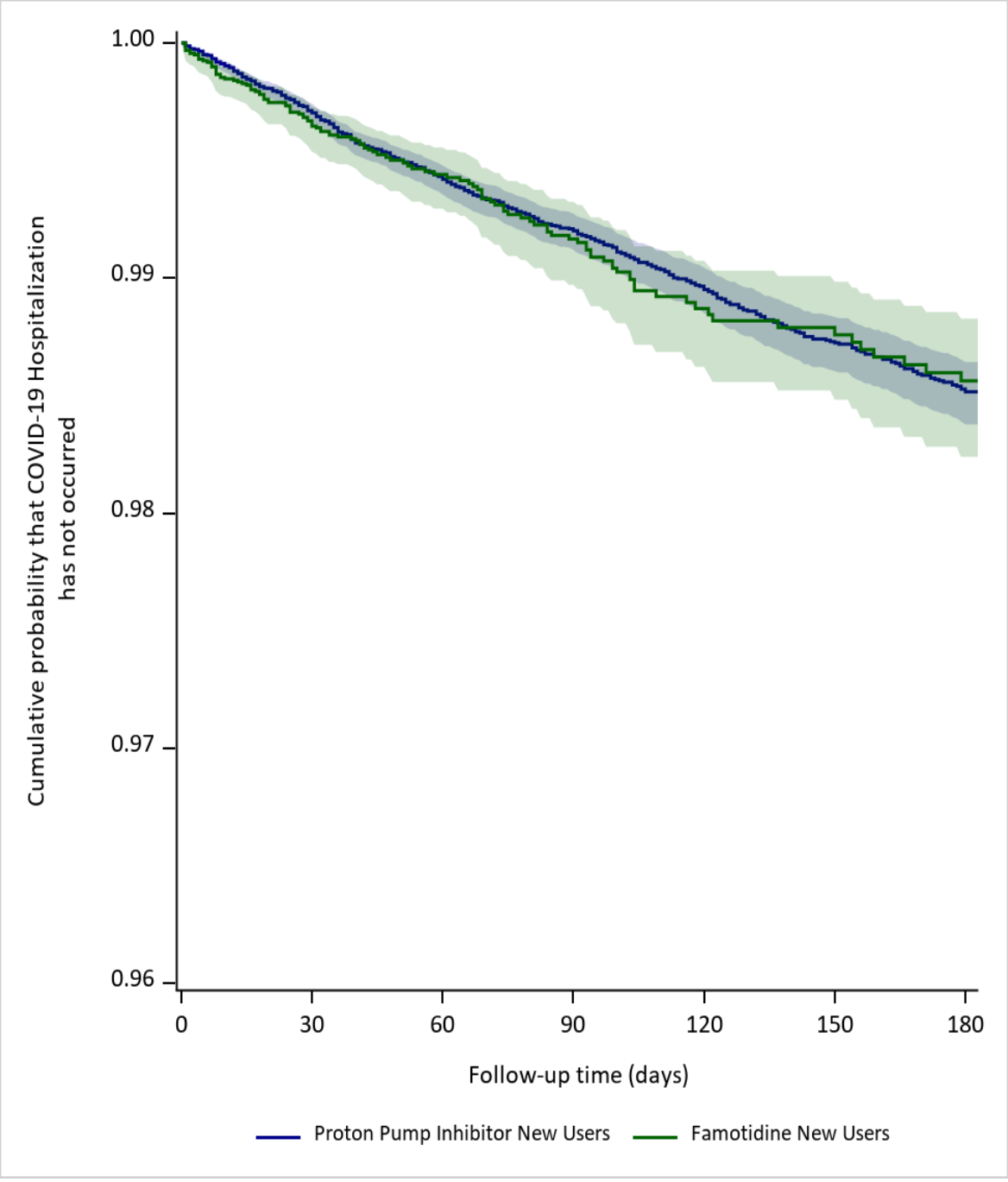


Figure 15d. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

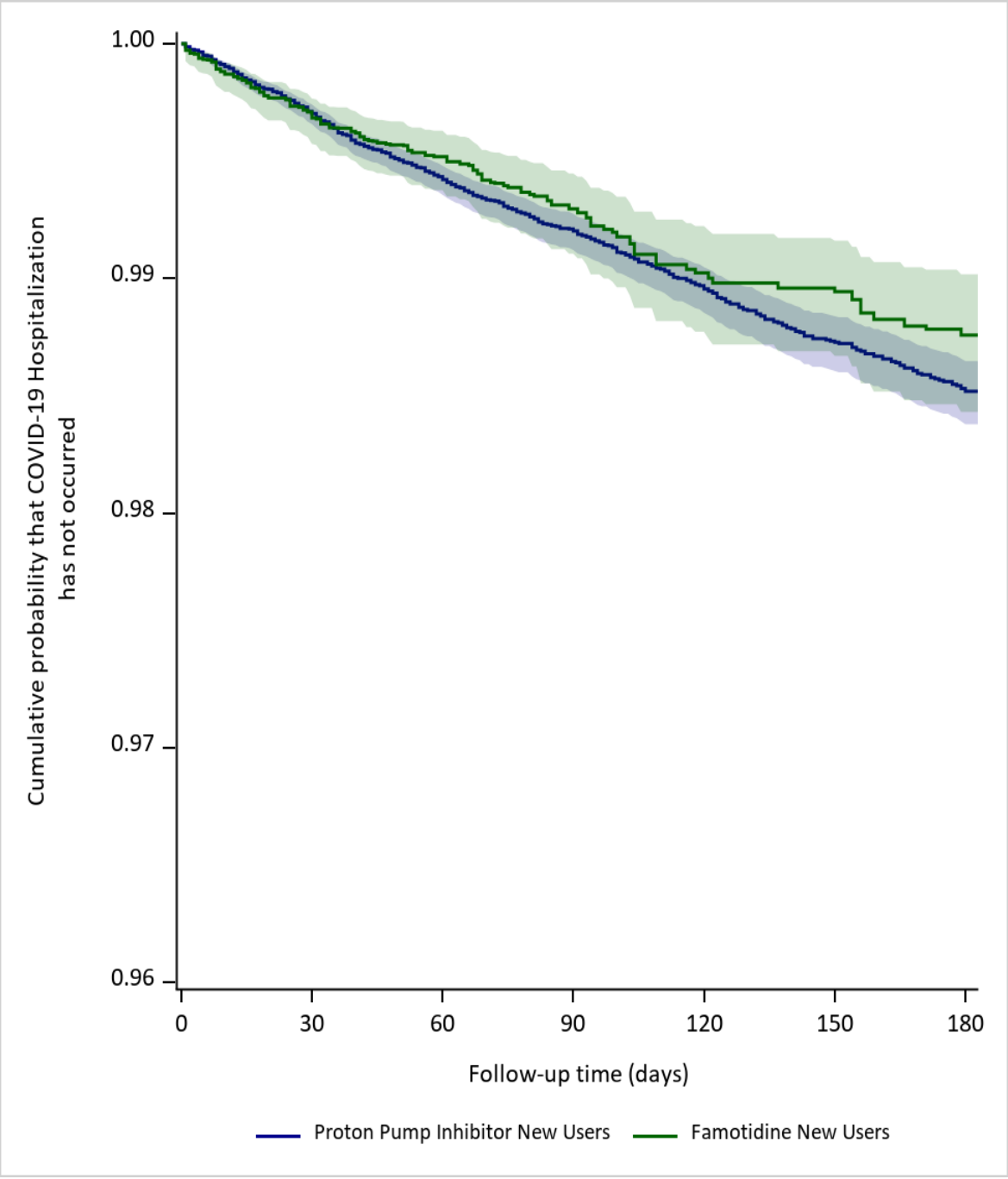


Figure 15e. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

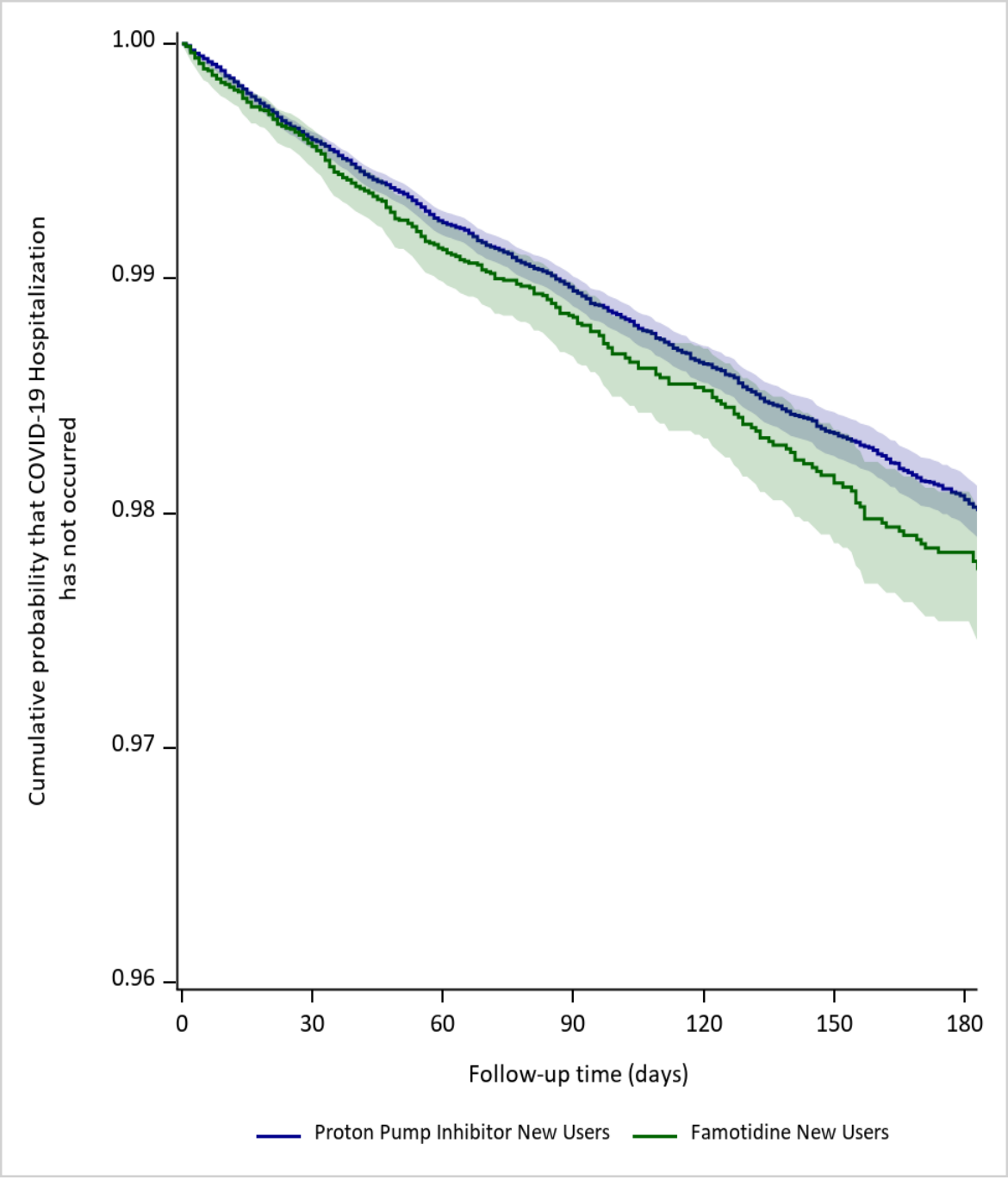


Figure 15f. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

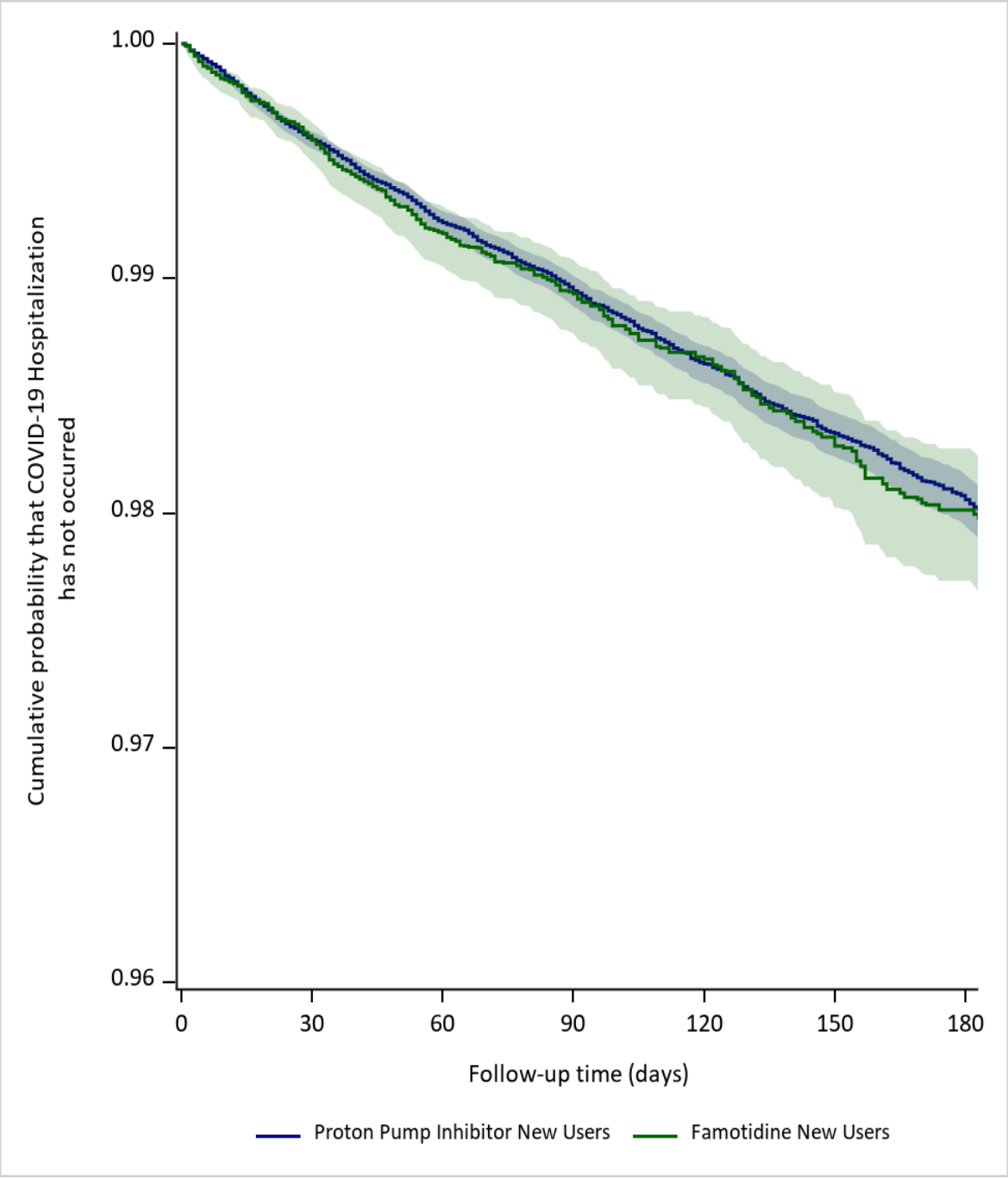


Figure 15g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

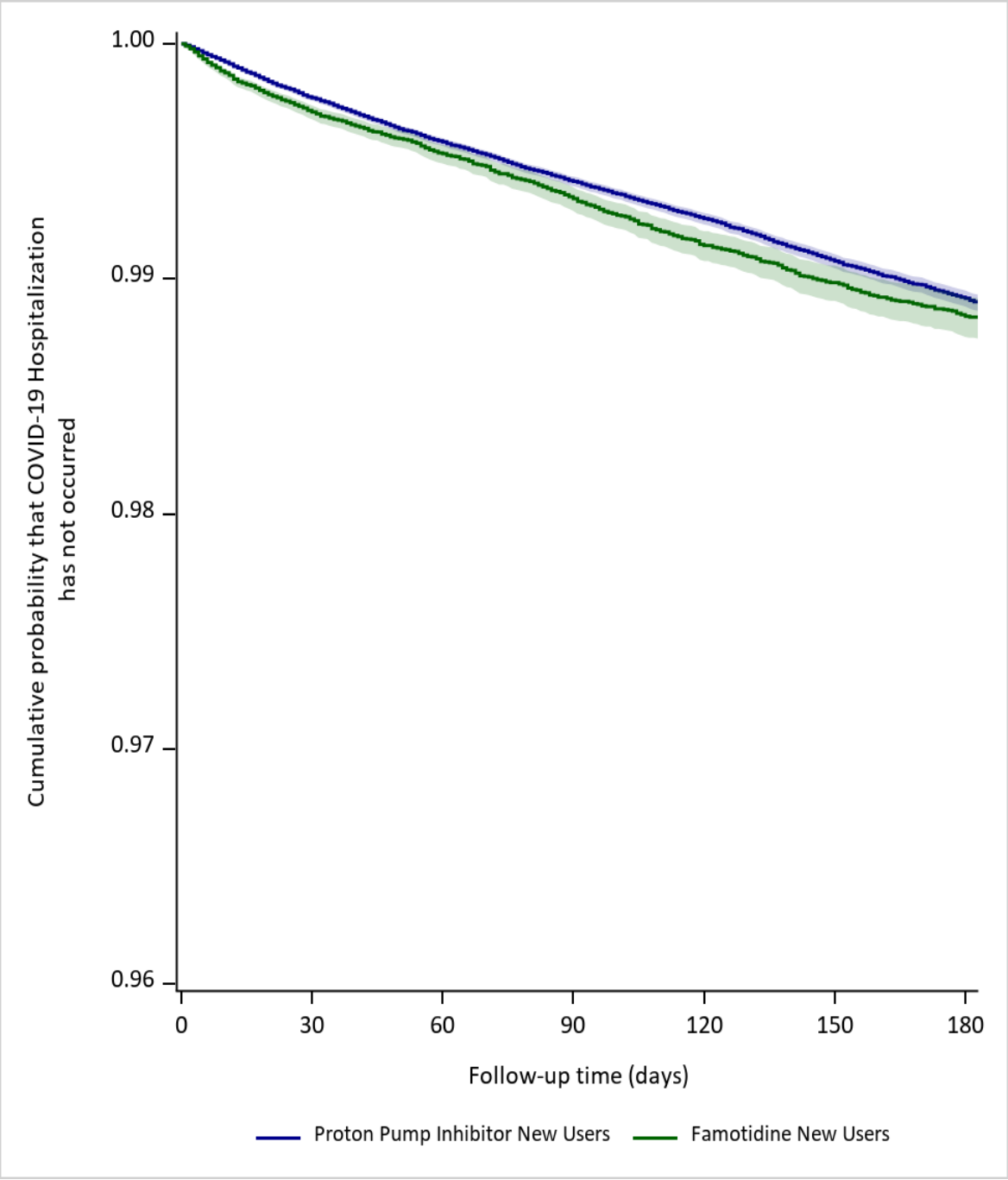


Figure 15h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

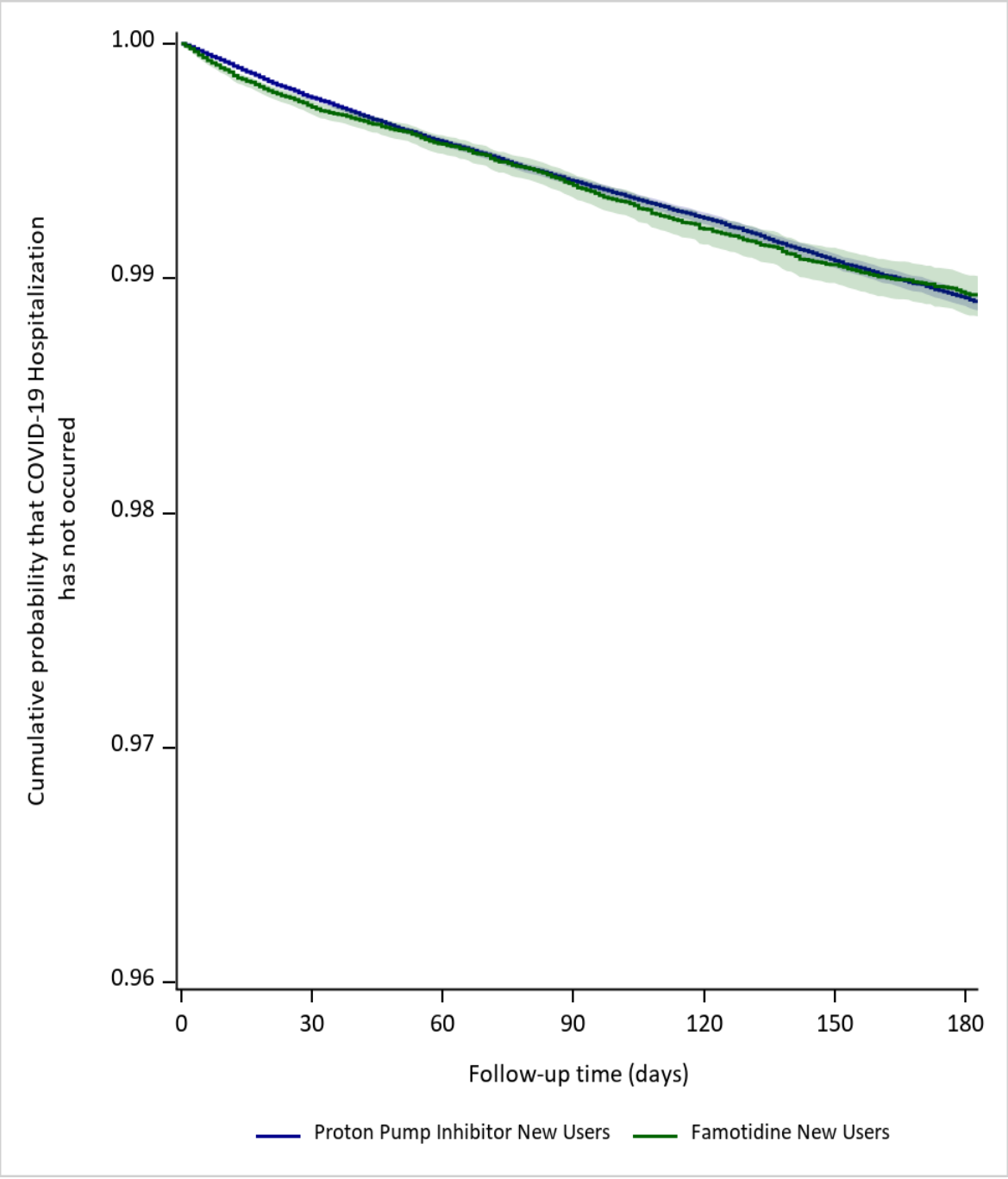


Figure 15i. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

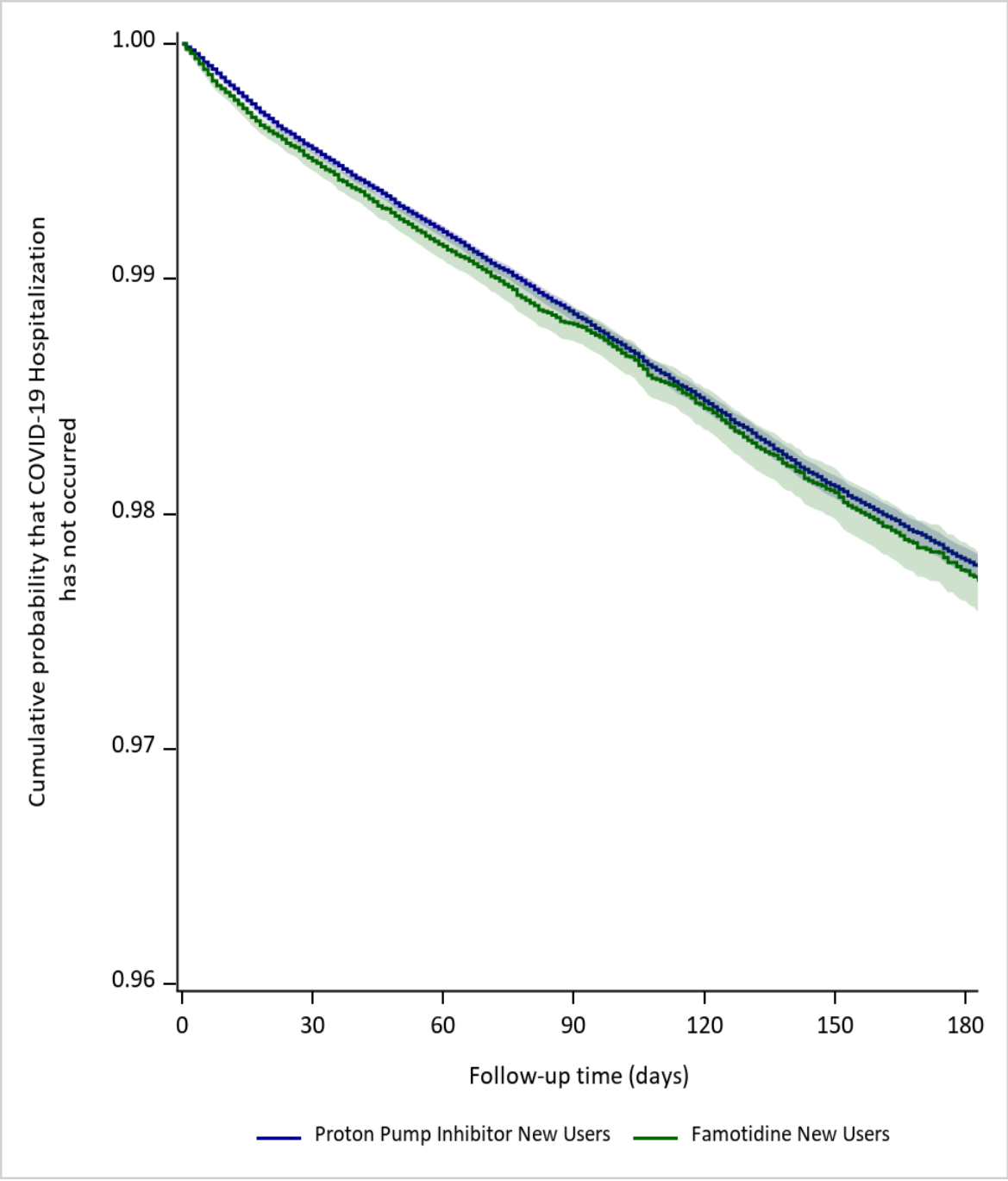


Figure 15j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

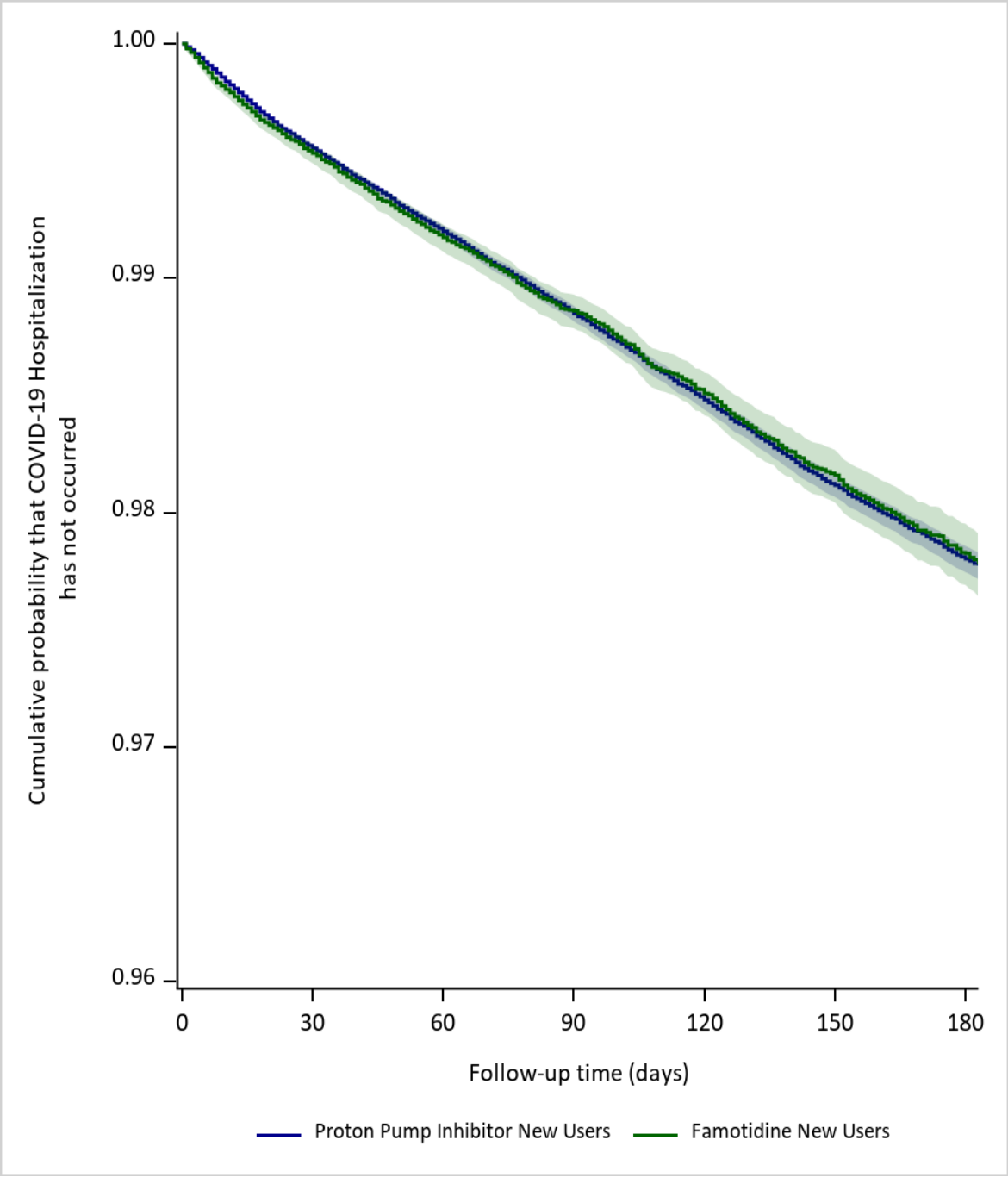


Figure 16a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

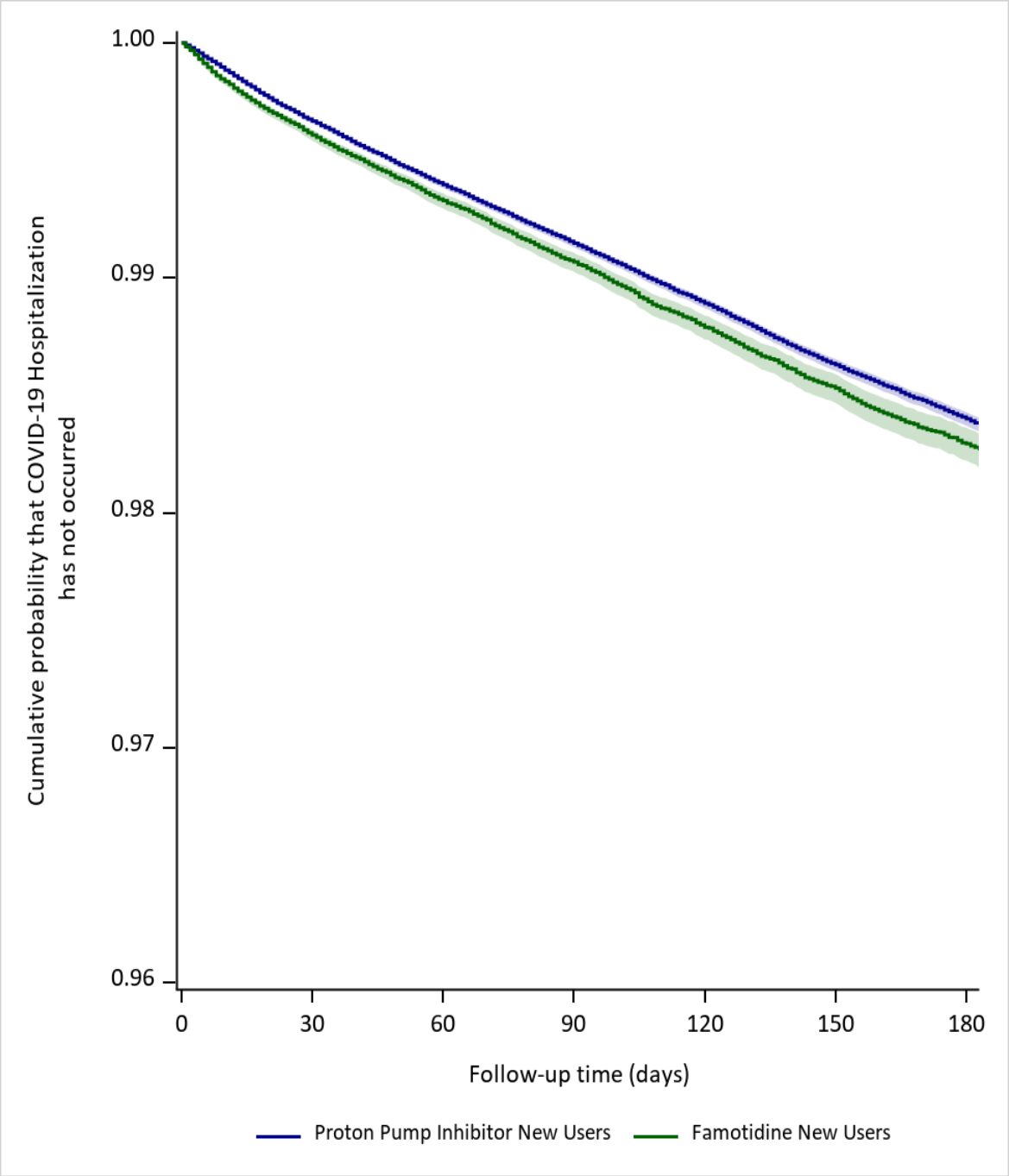


Figure 16b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

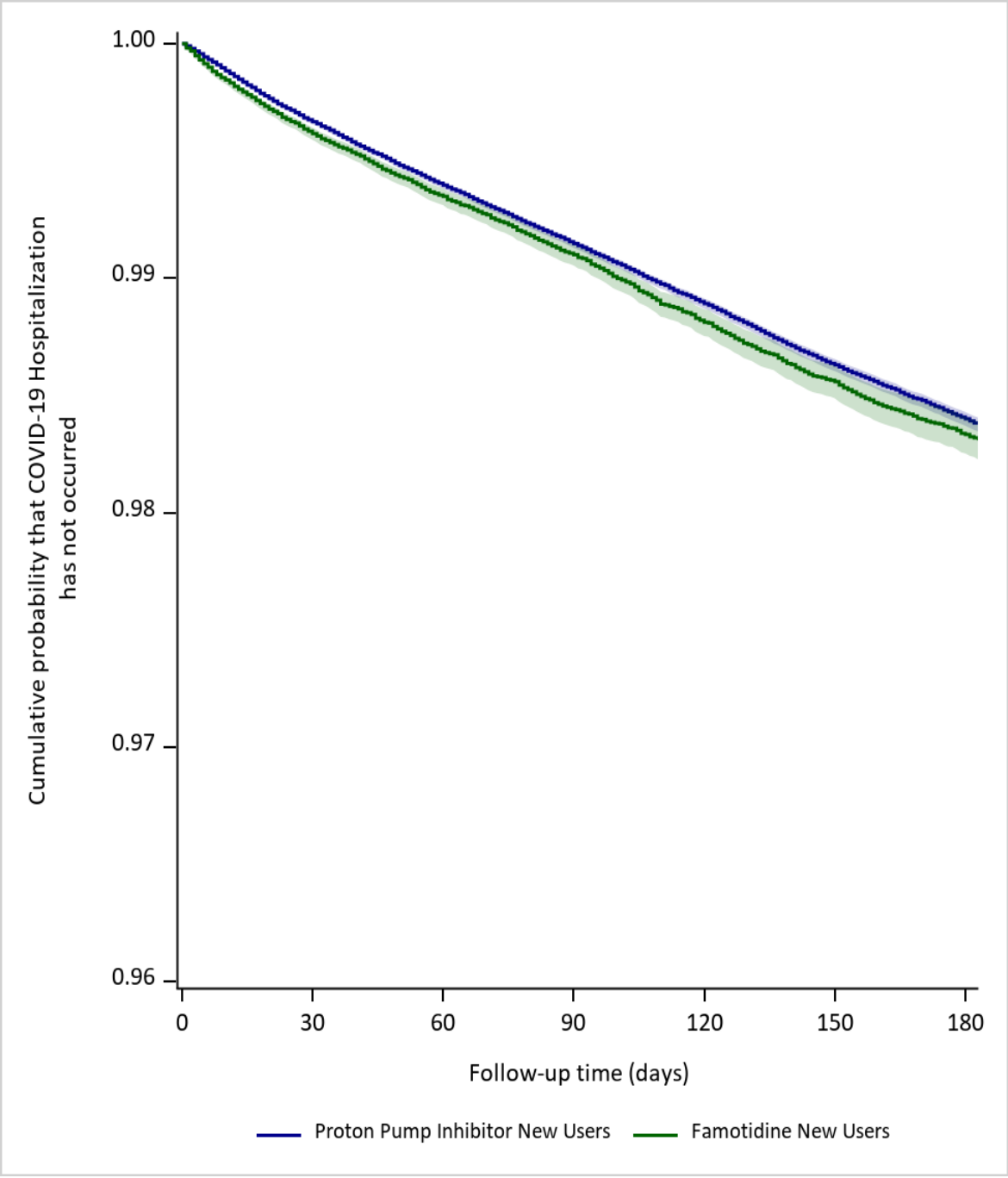


Figure 16c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

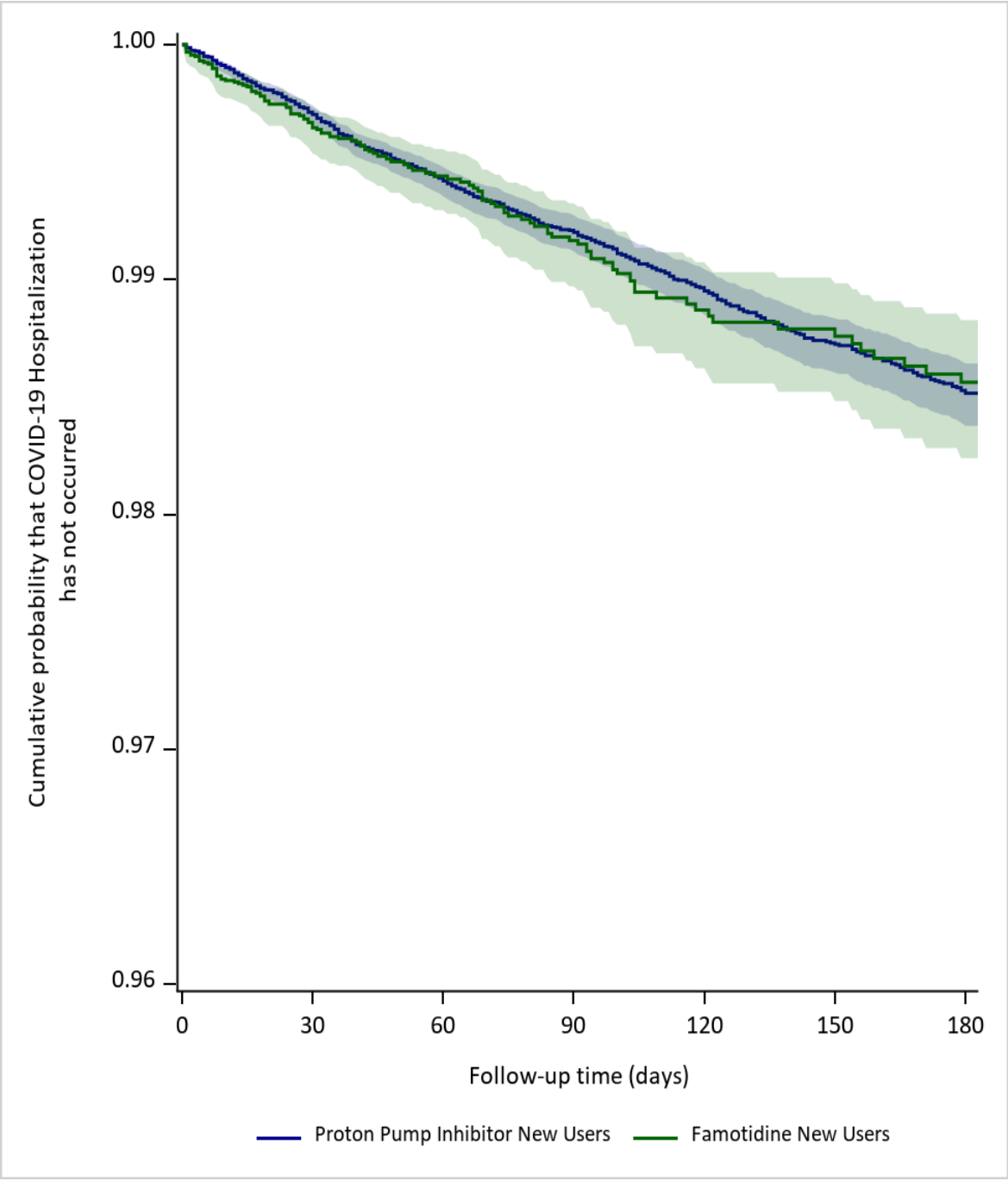


Figure 16d. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

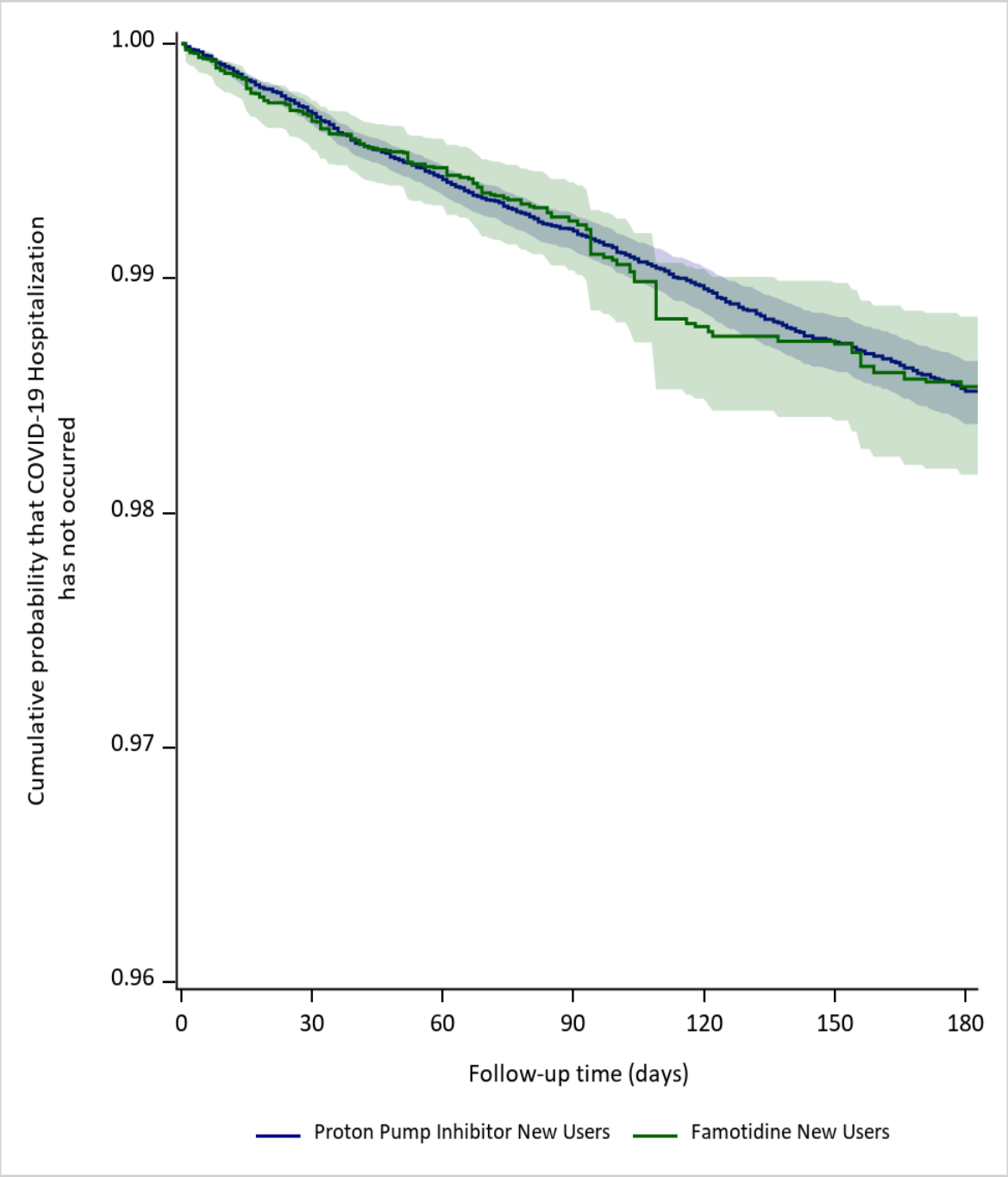


Figure 16e. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

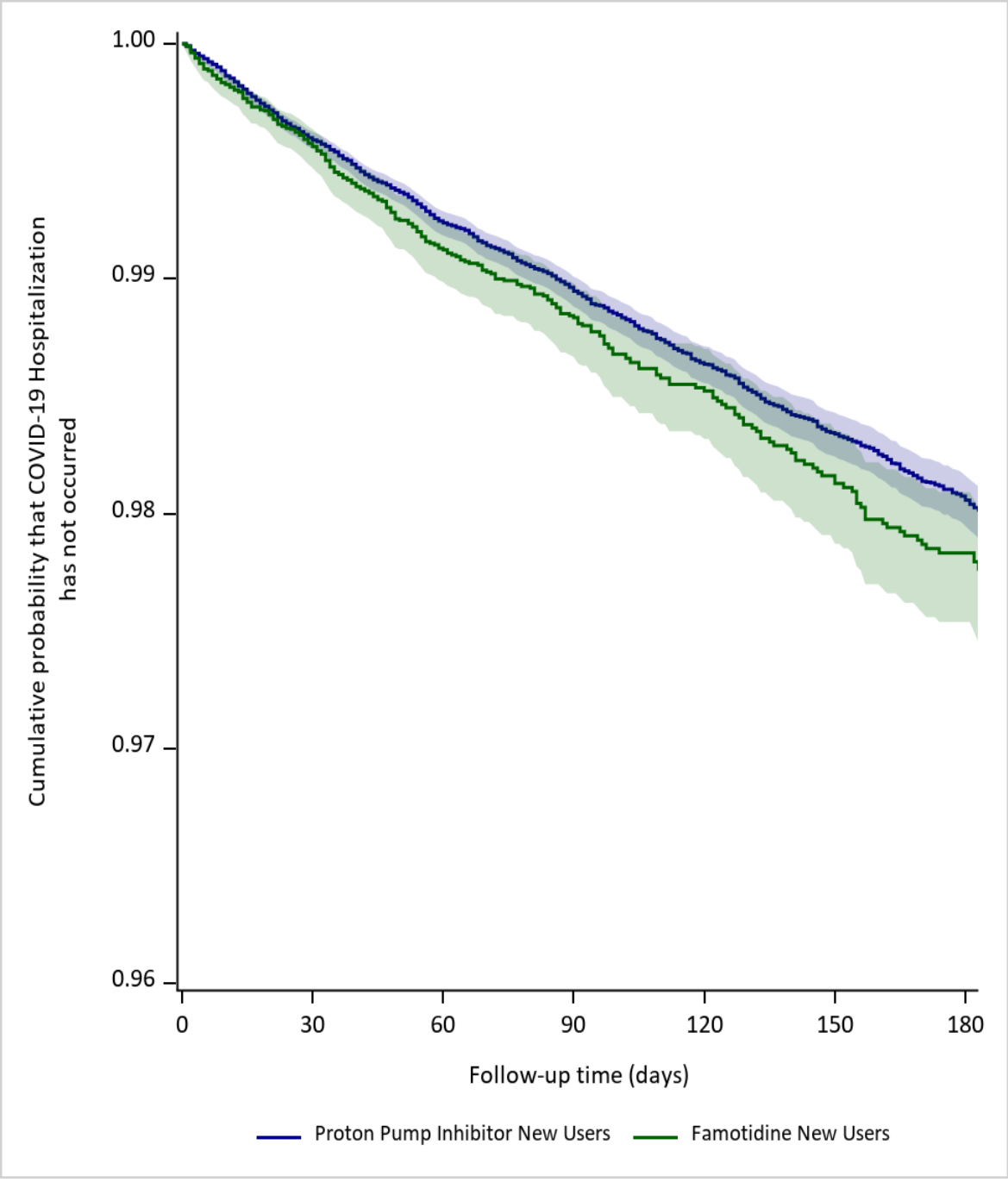


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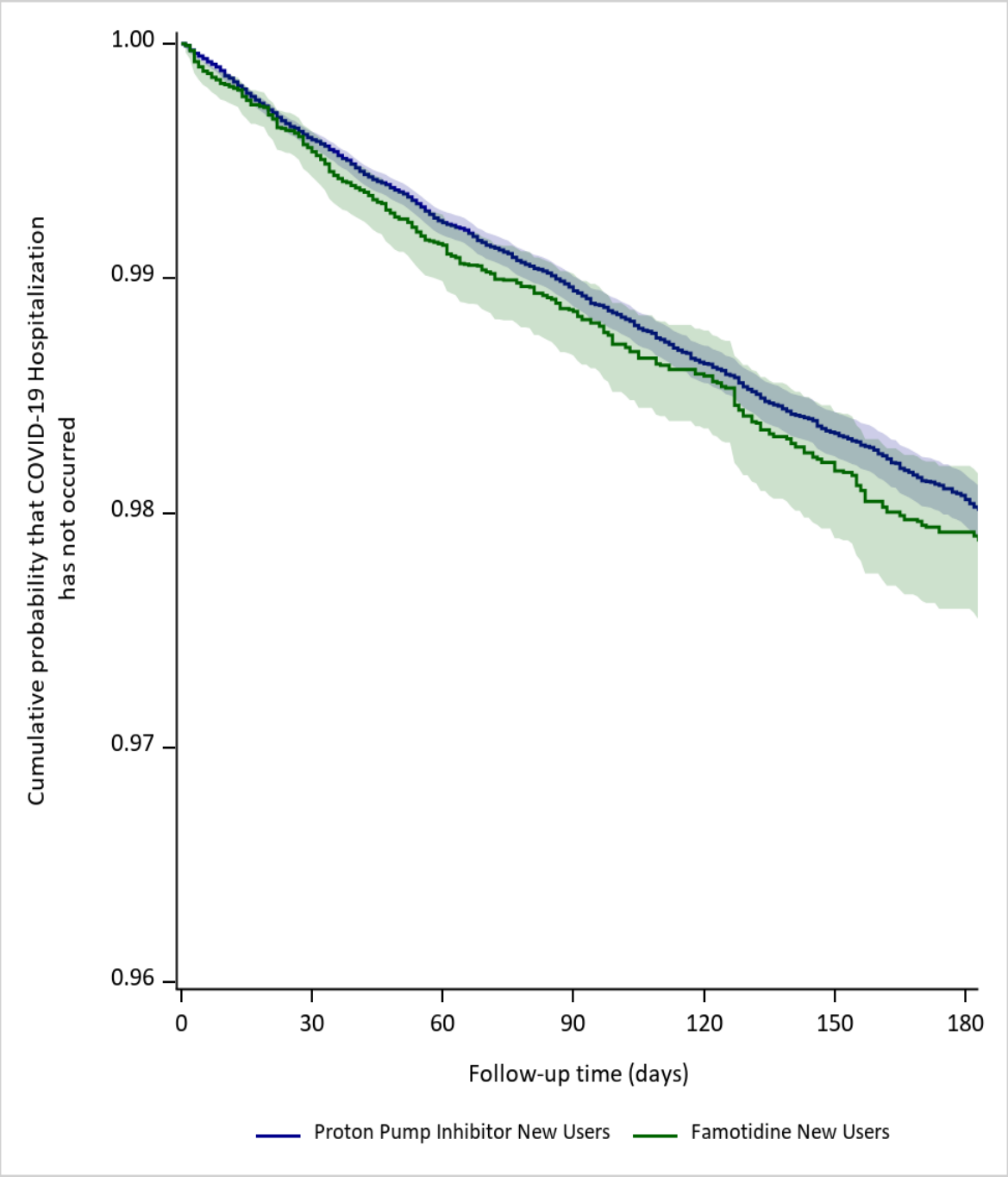


Figure 16g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

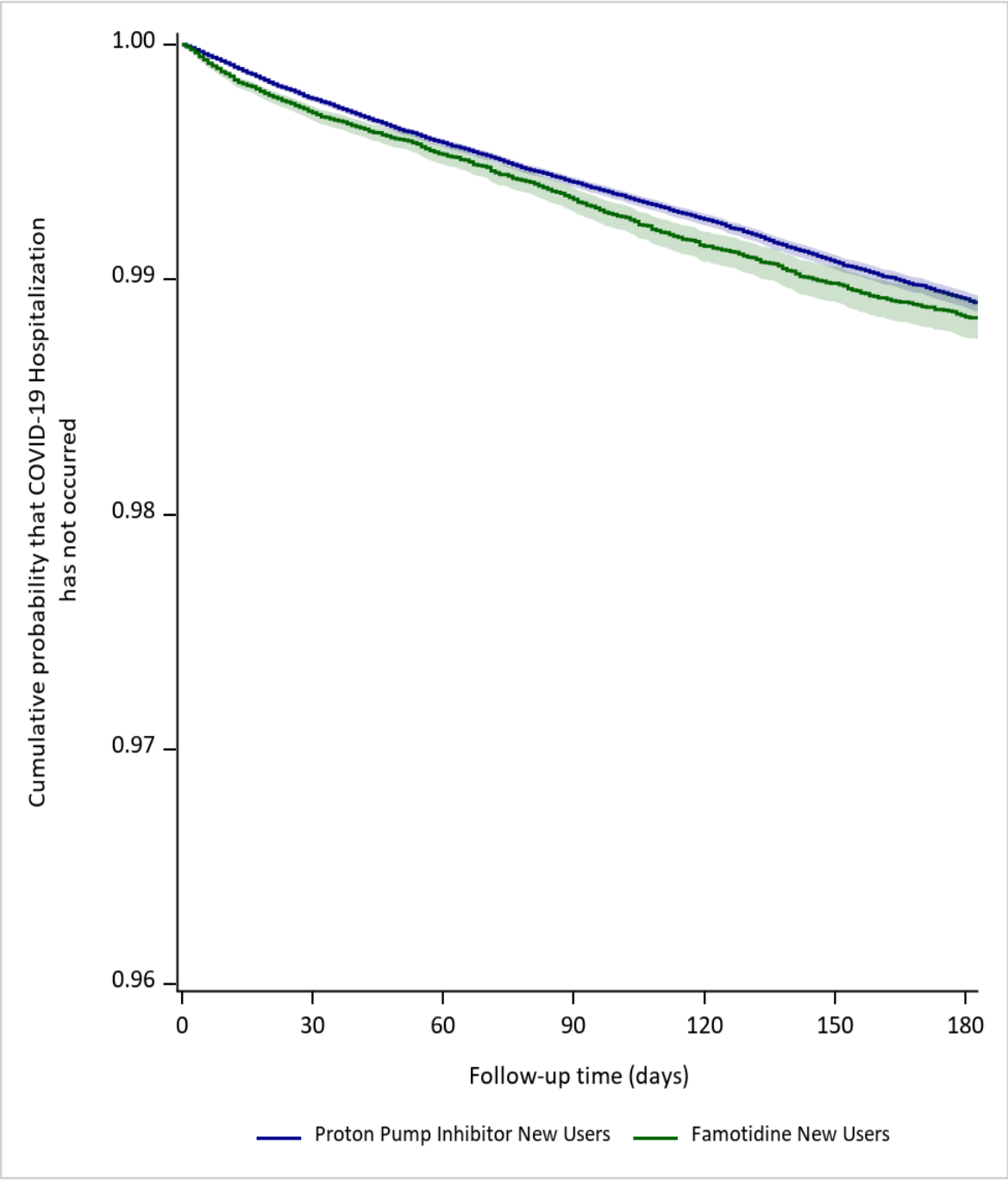


Figure 16h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

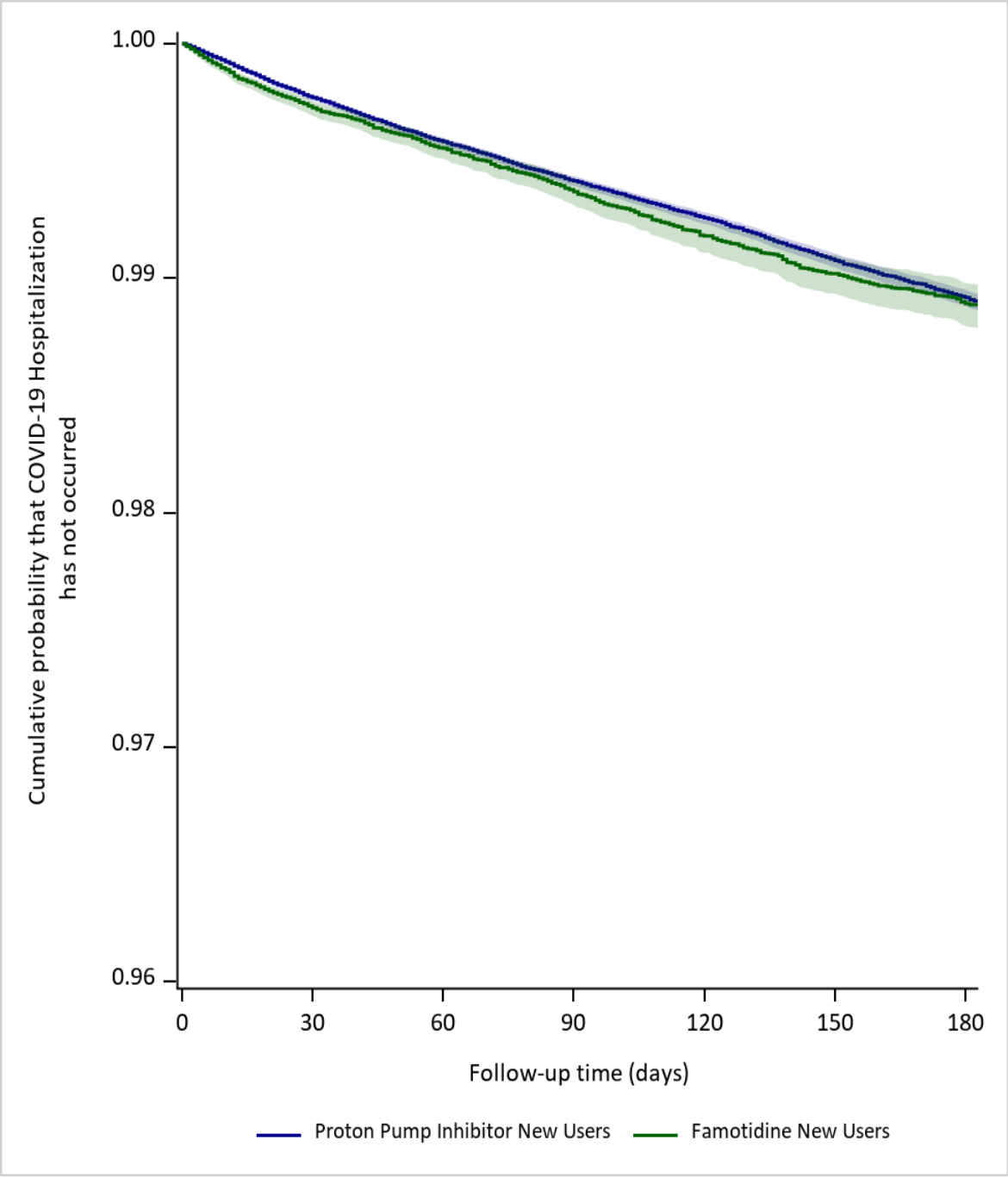


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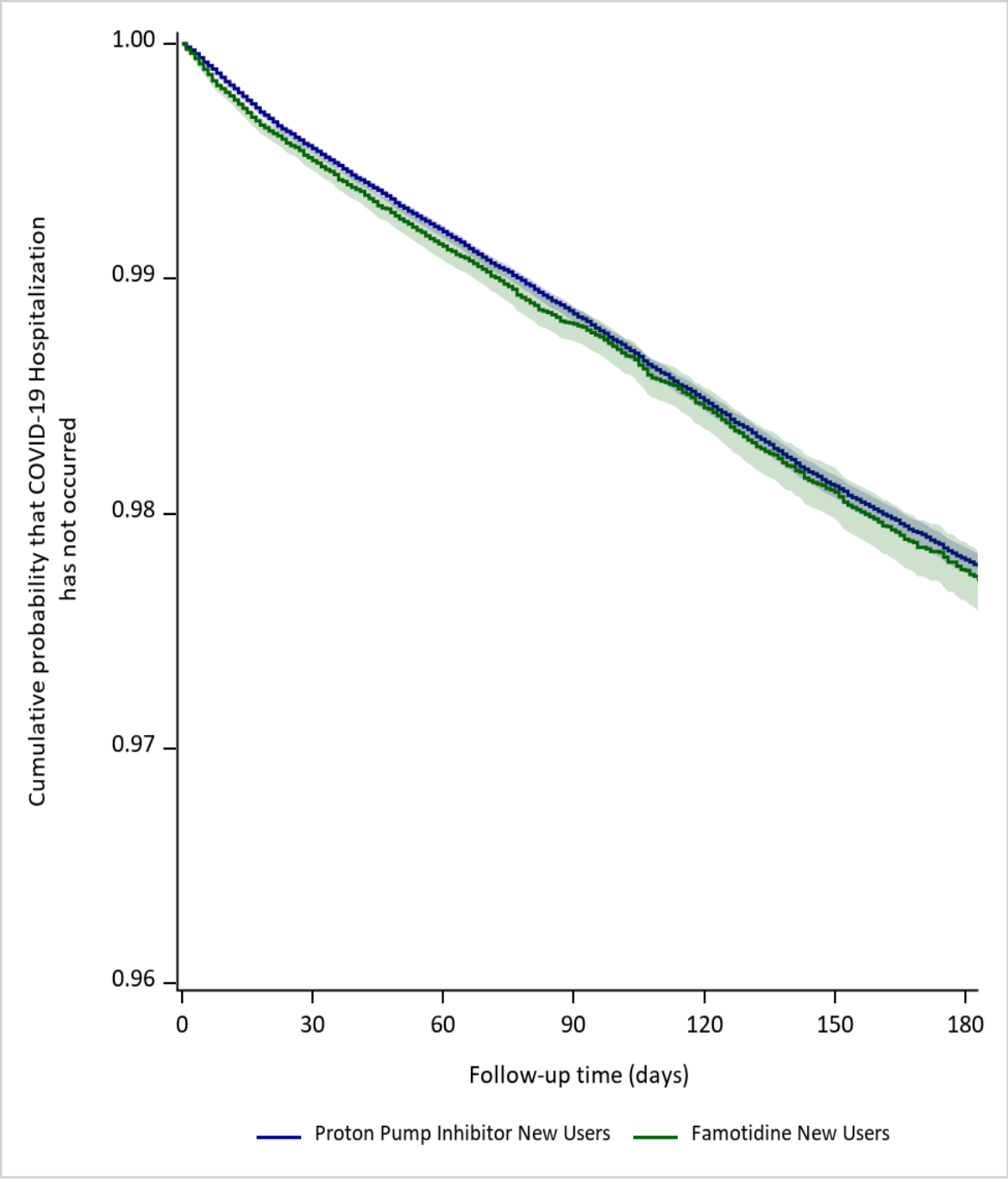


Figure 16j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

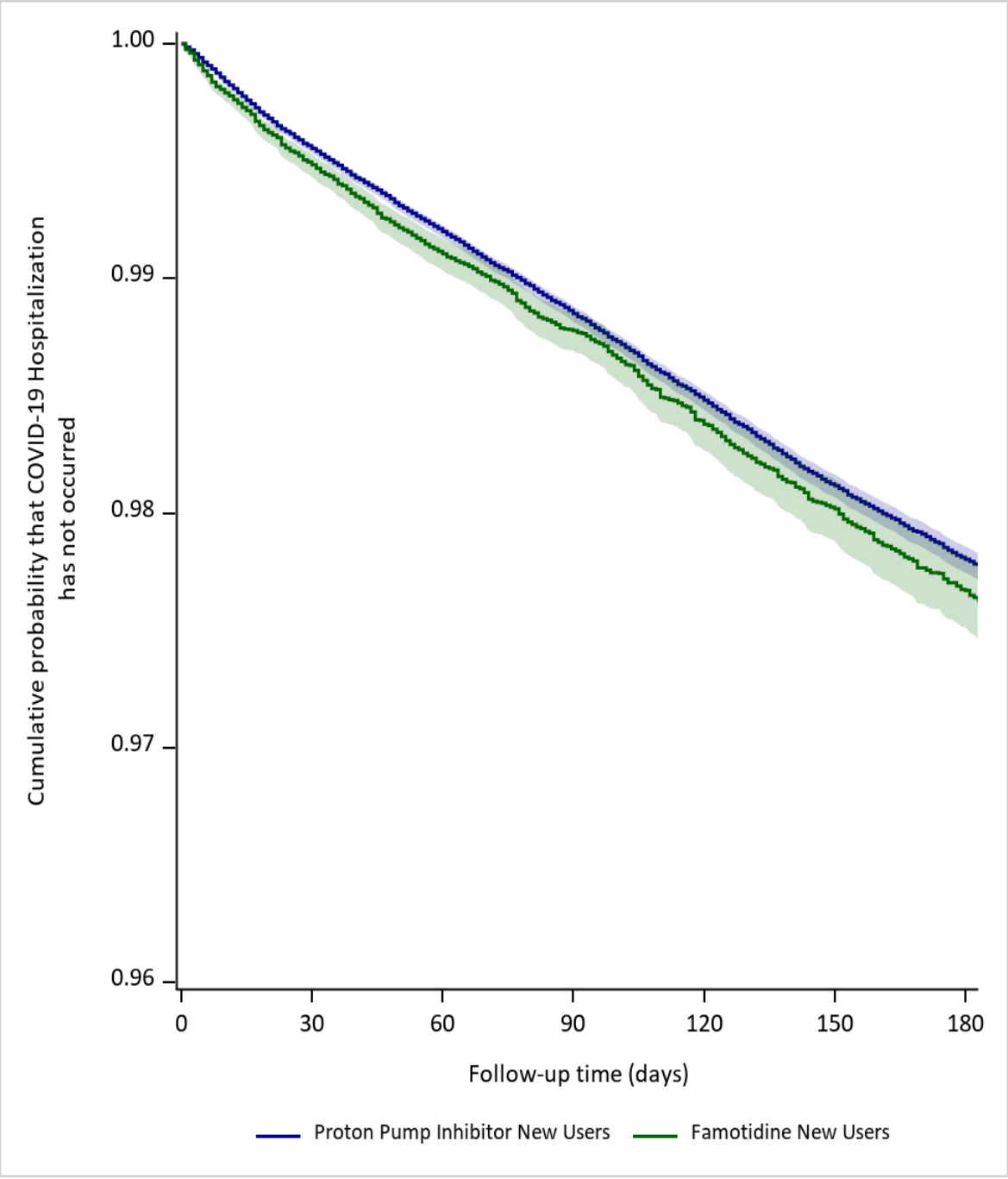


Figure 17a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

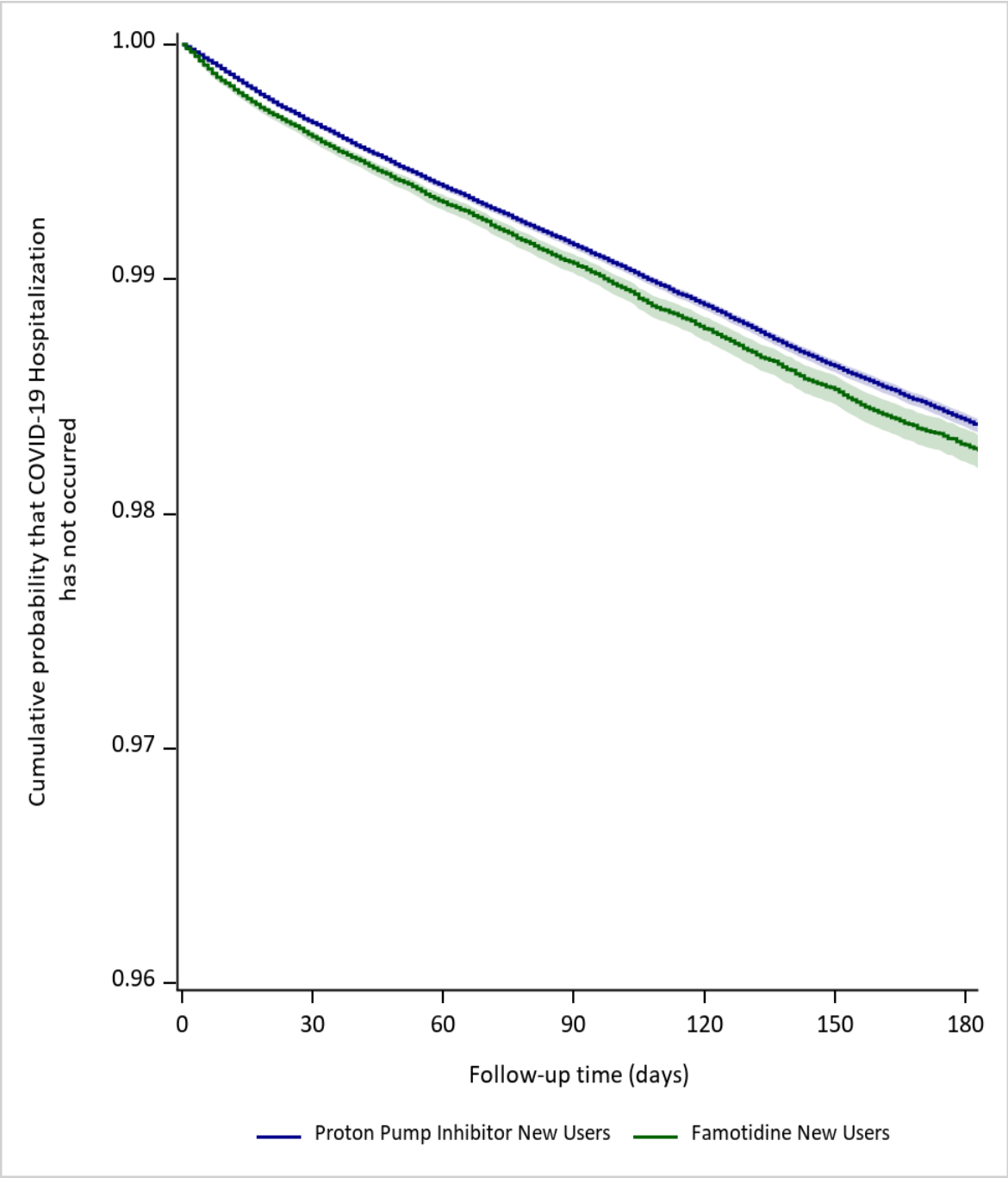


Figure 17b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

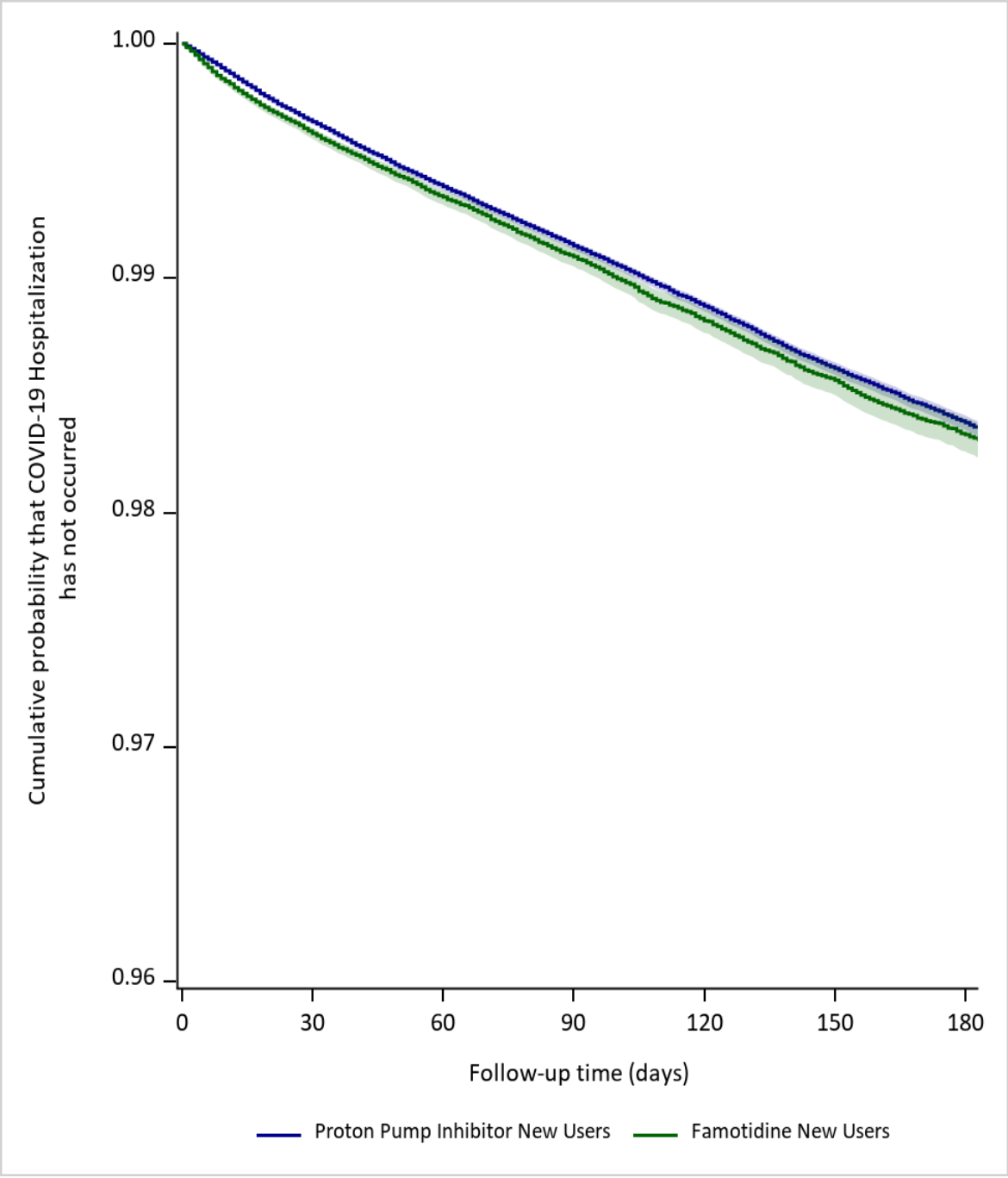


Figure 17c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

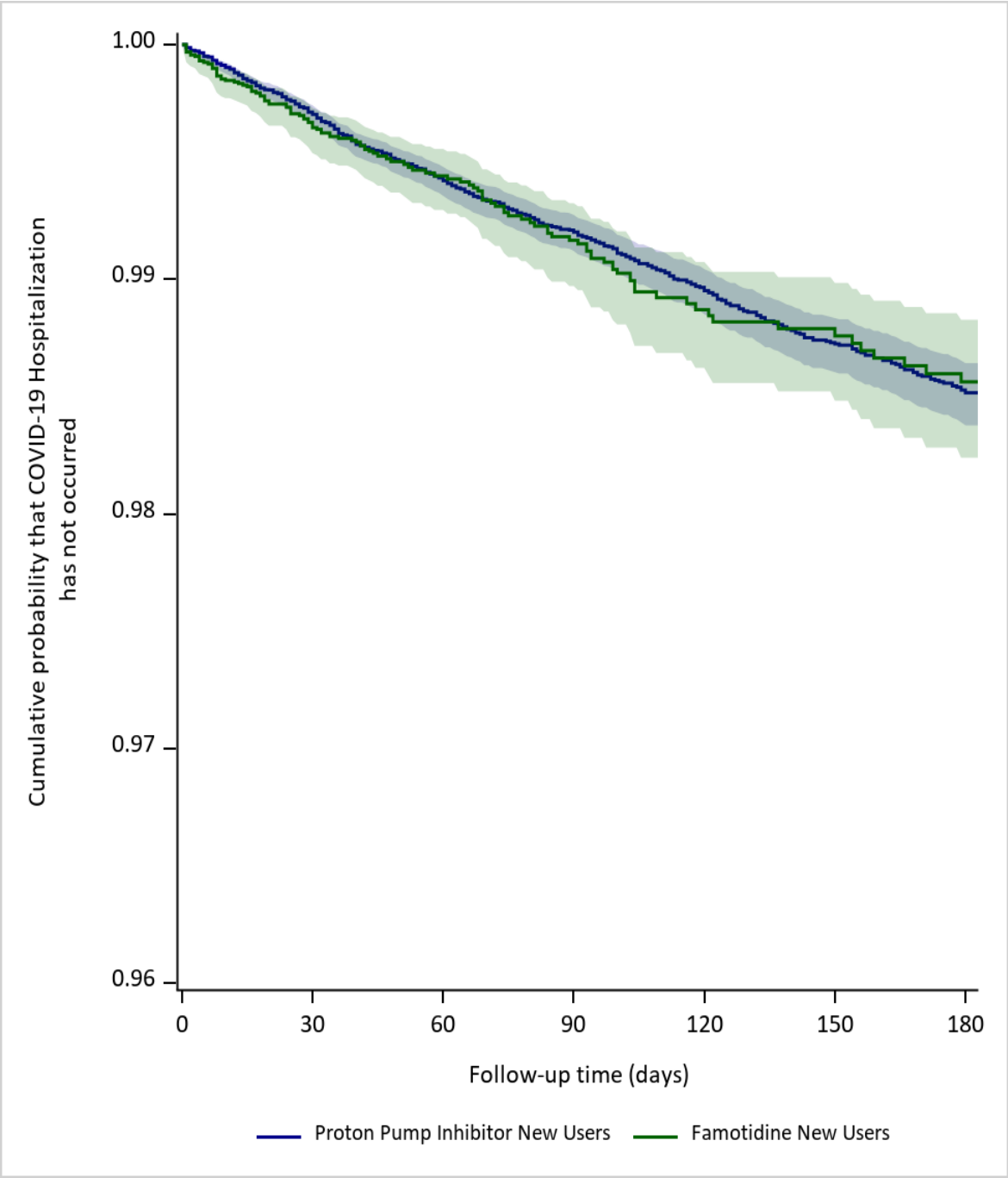


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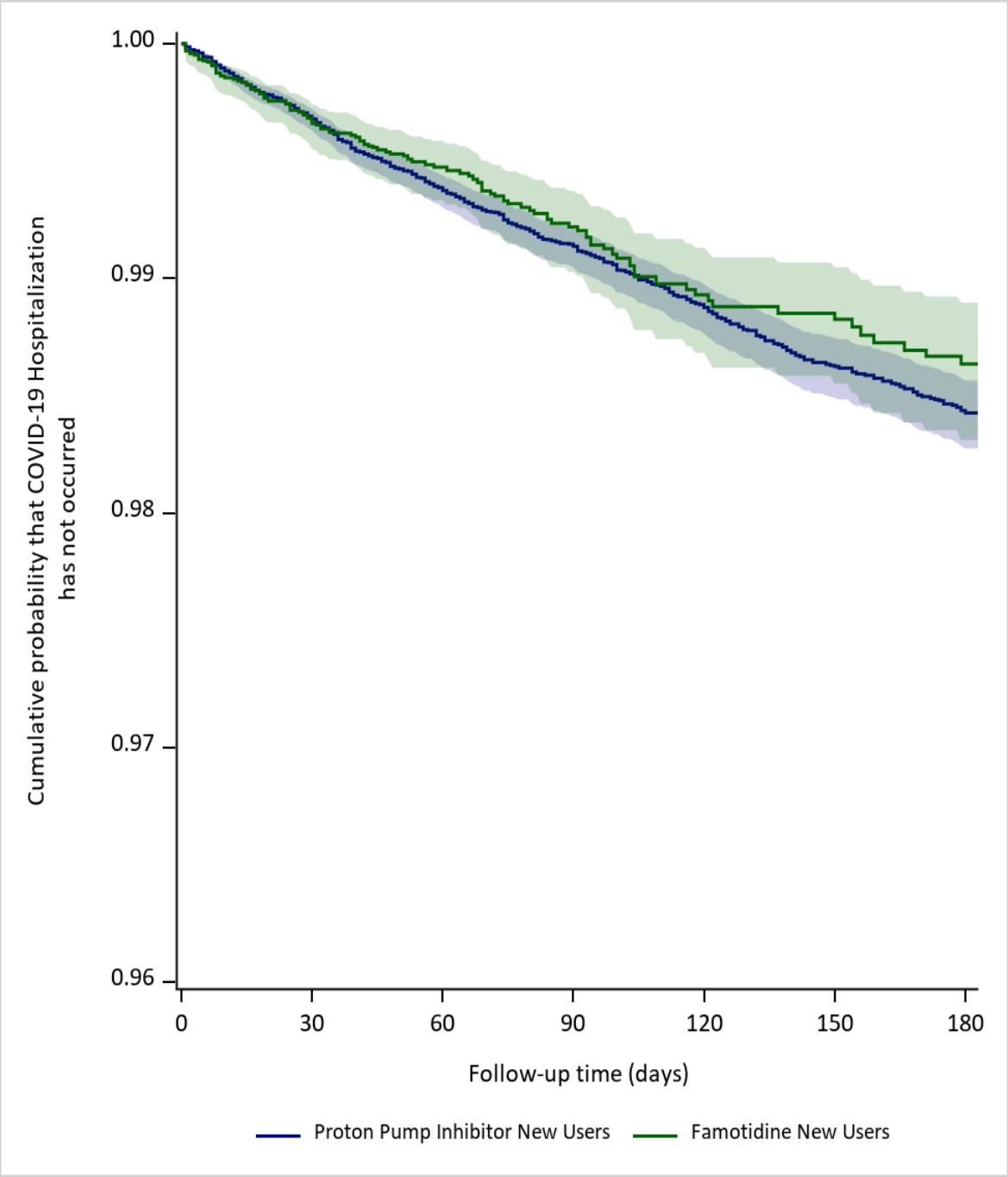


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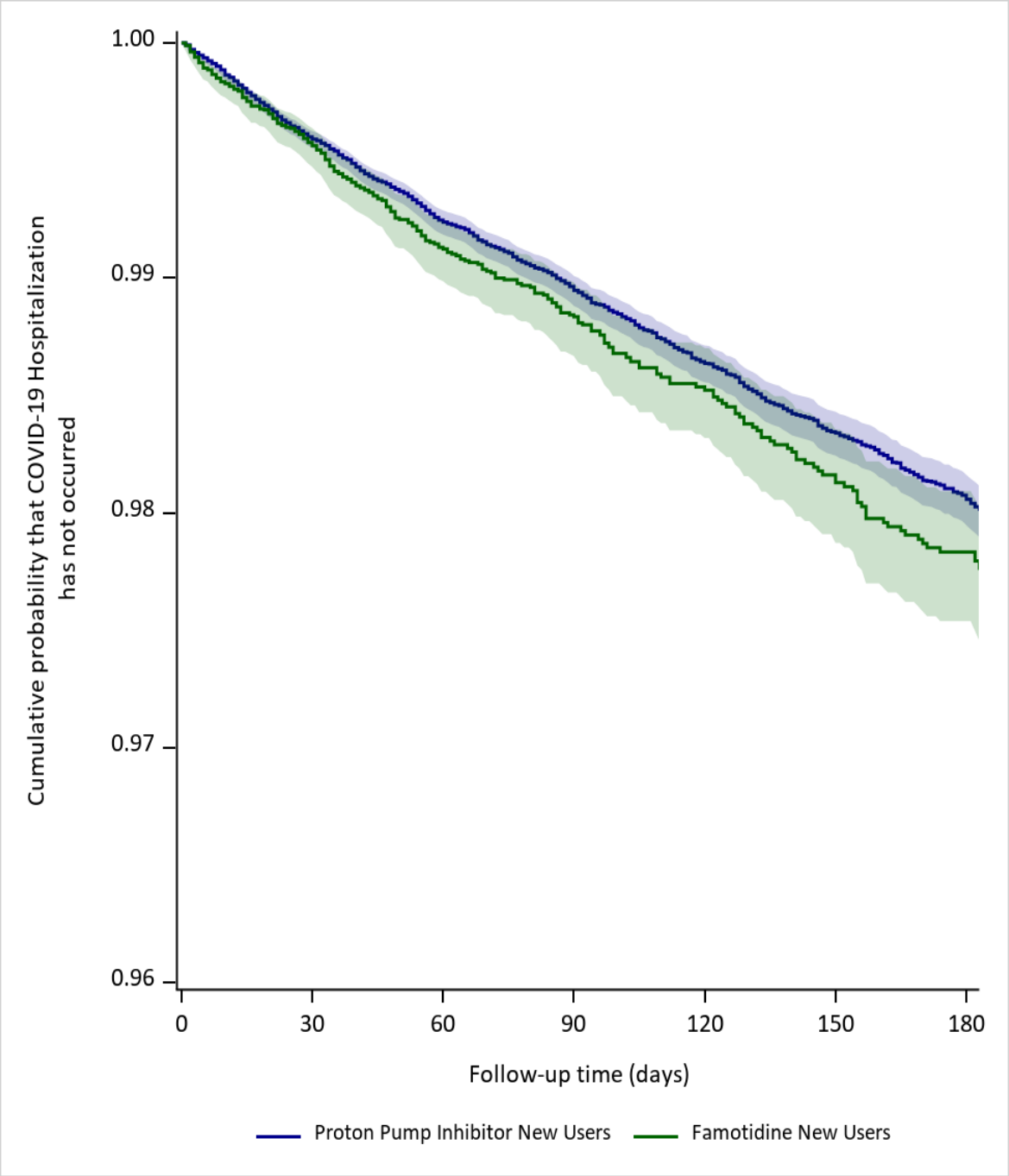


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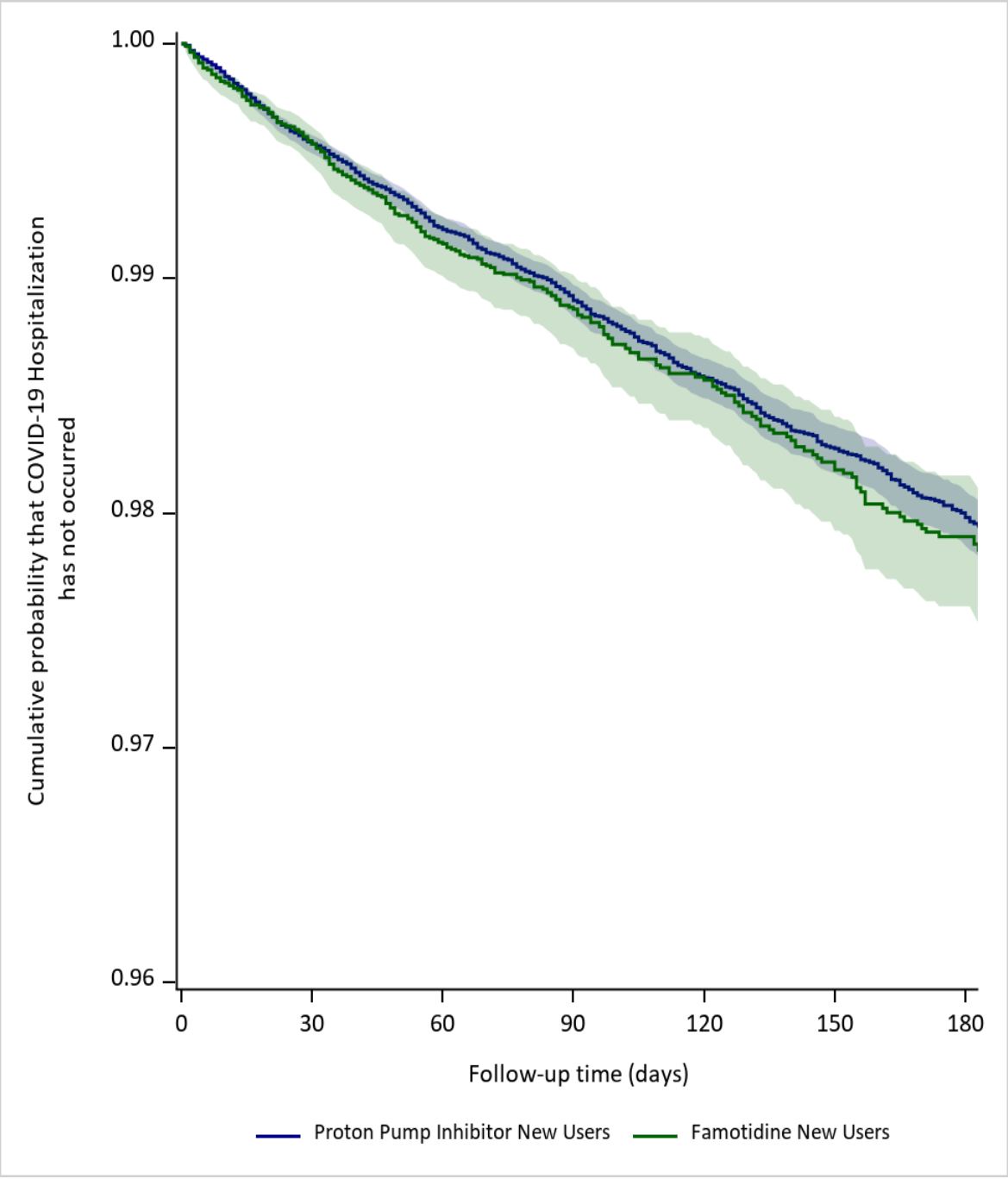


Figure 17g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

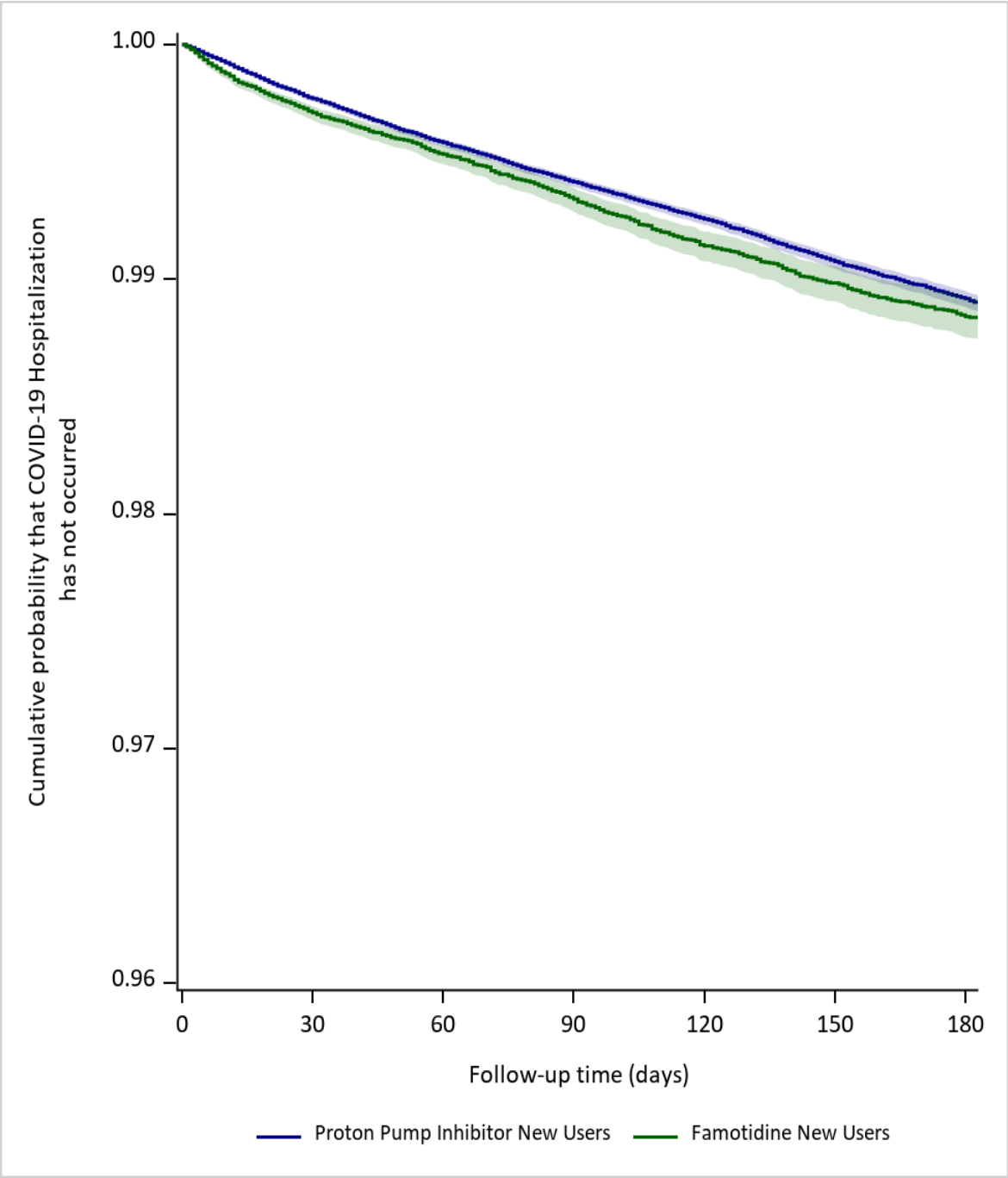


Figure 17h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

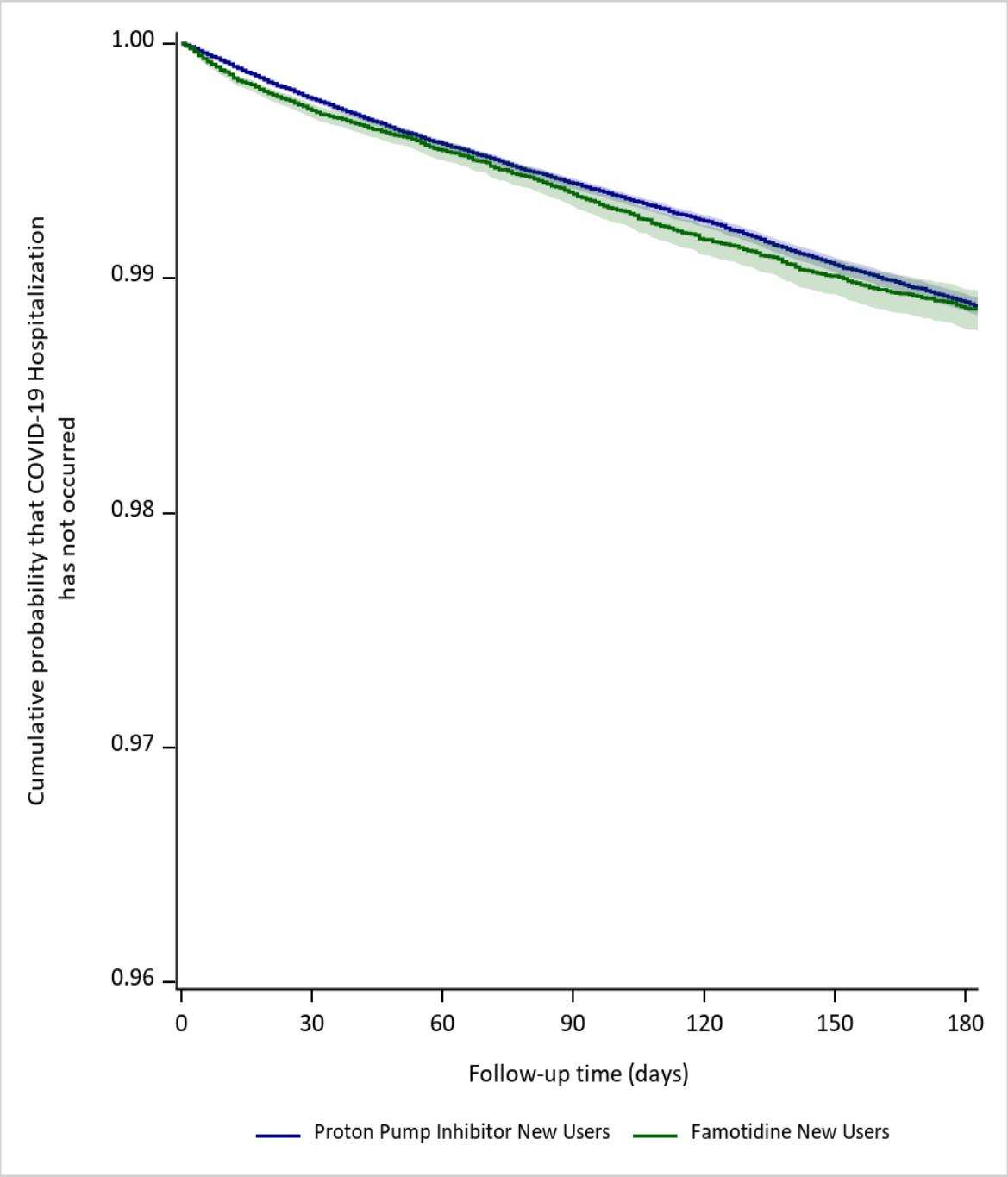


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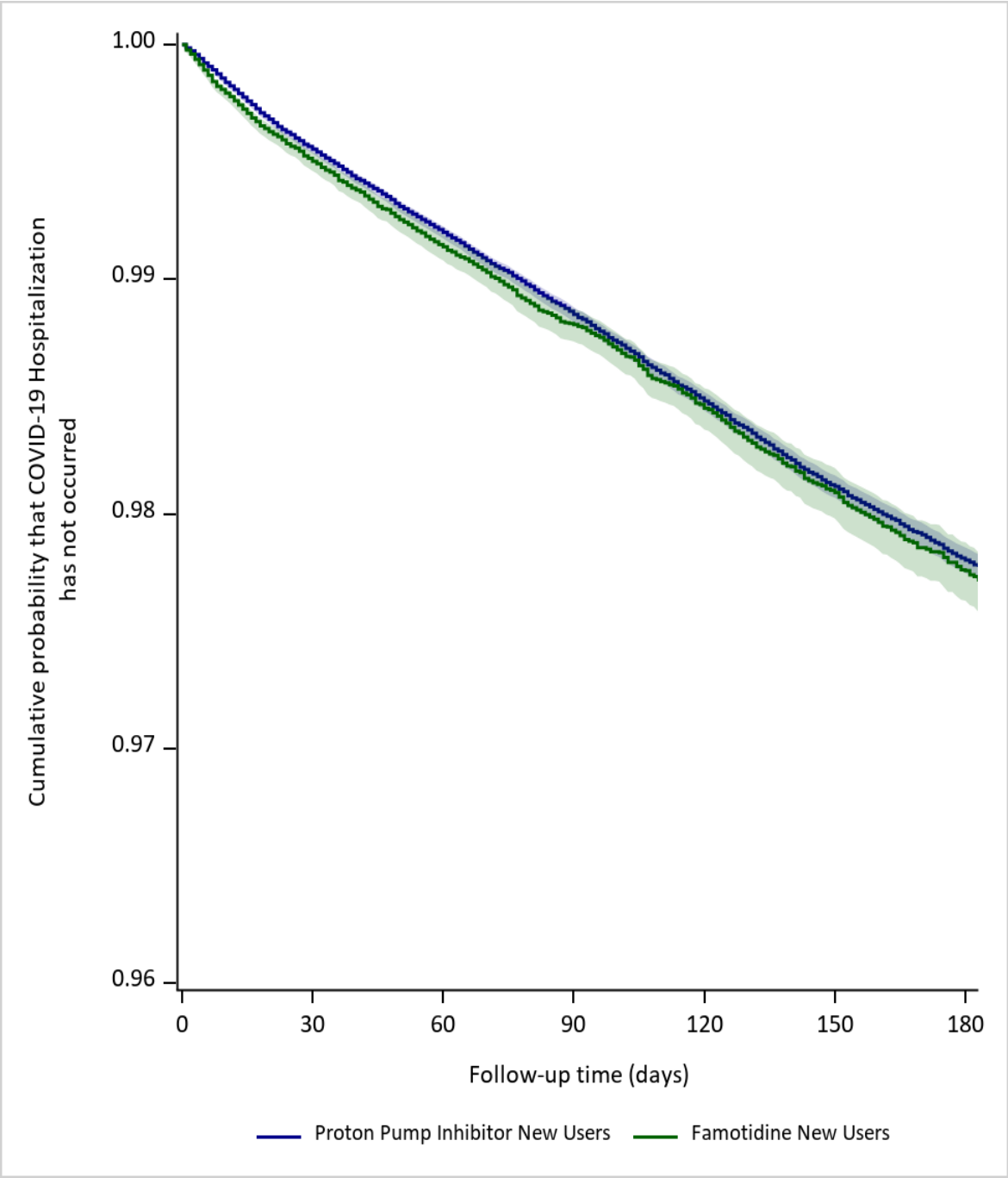


Figure 17j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

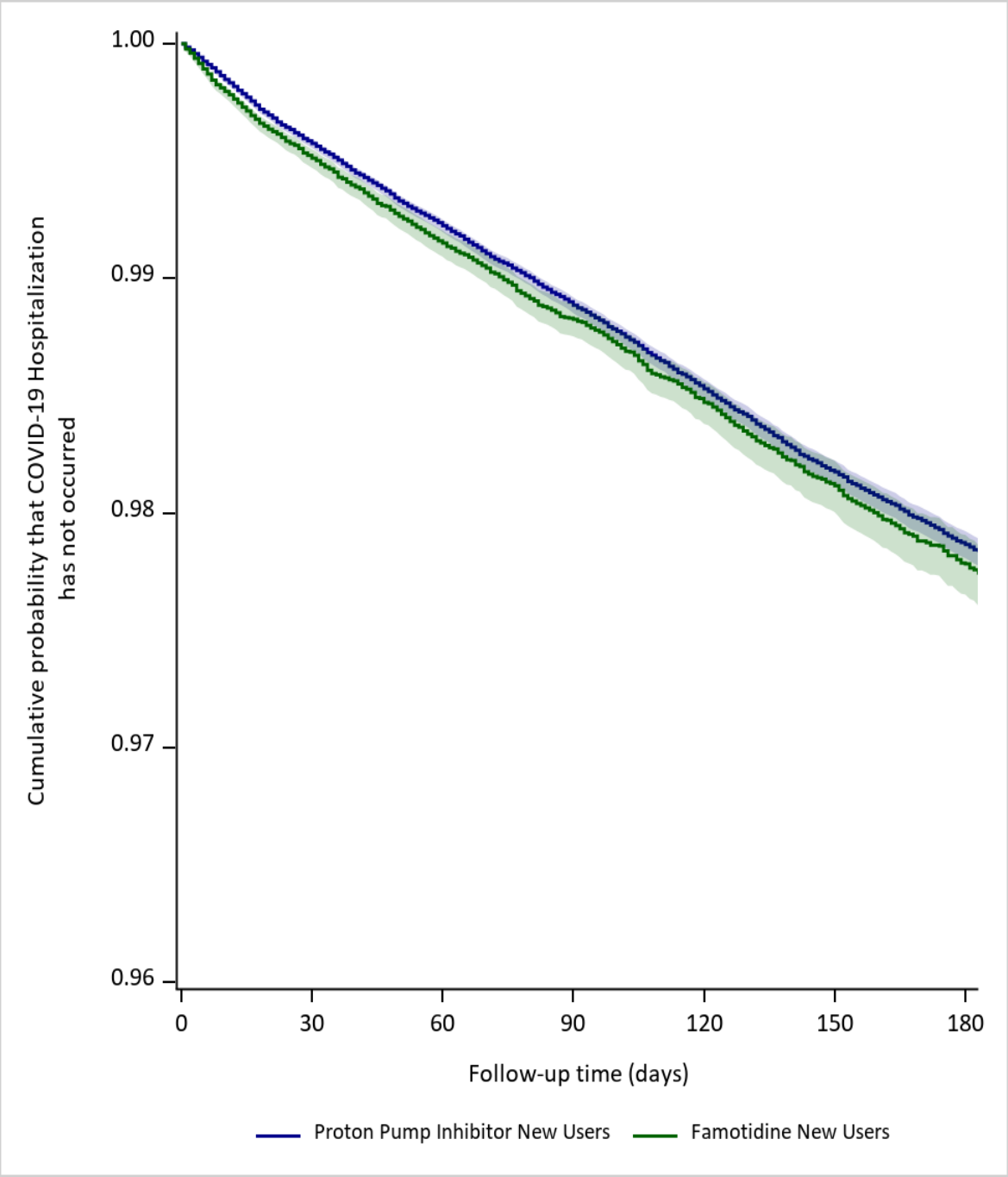


Figure 18a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

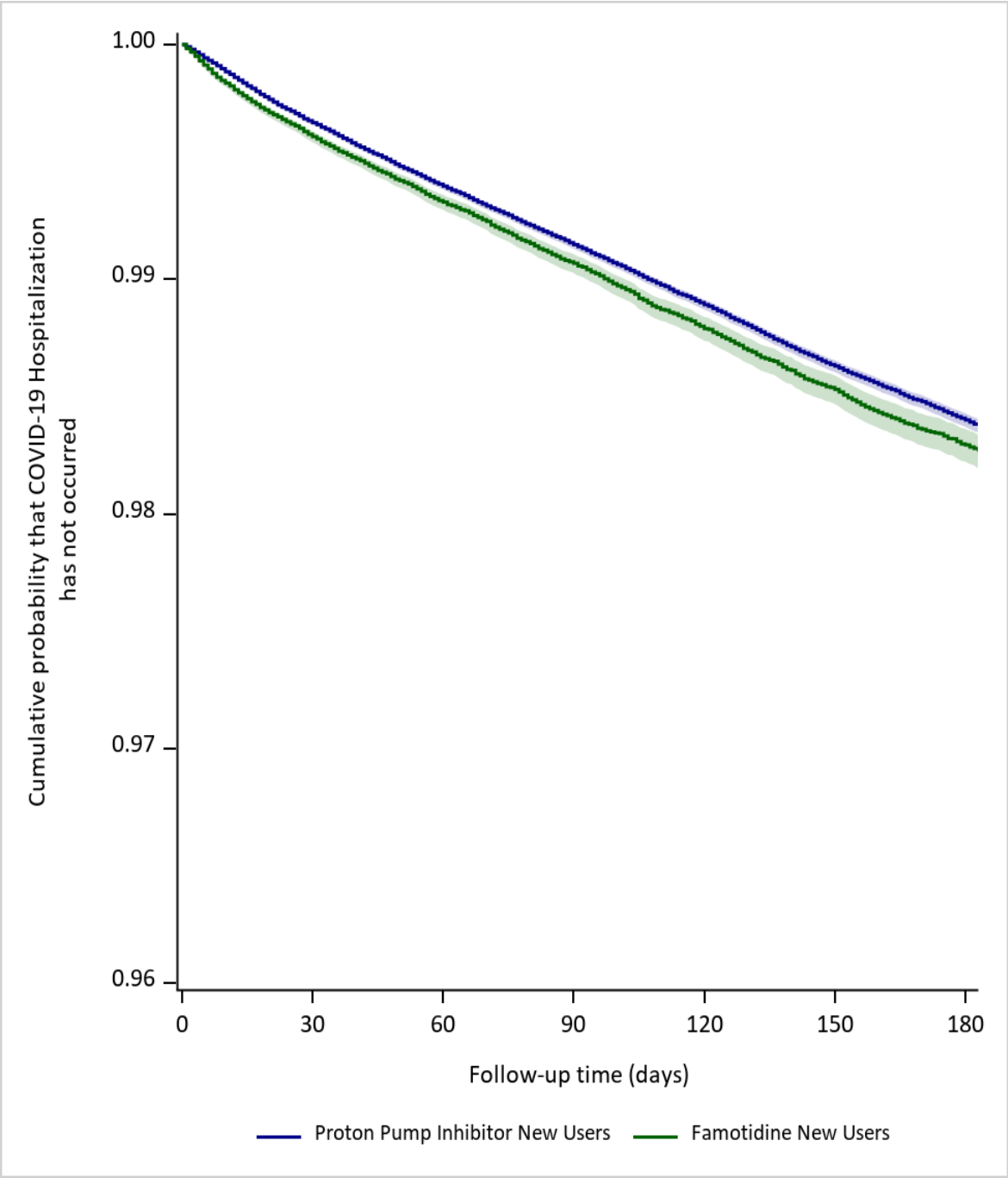


Figure 18b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

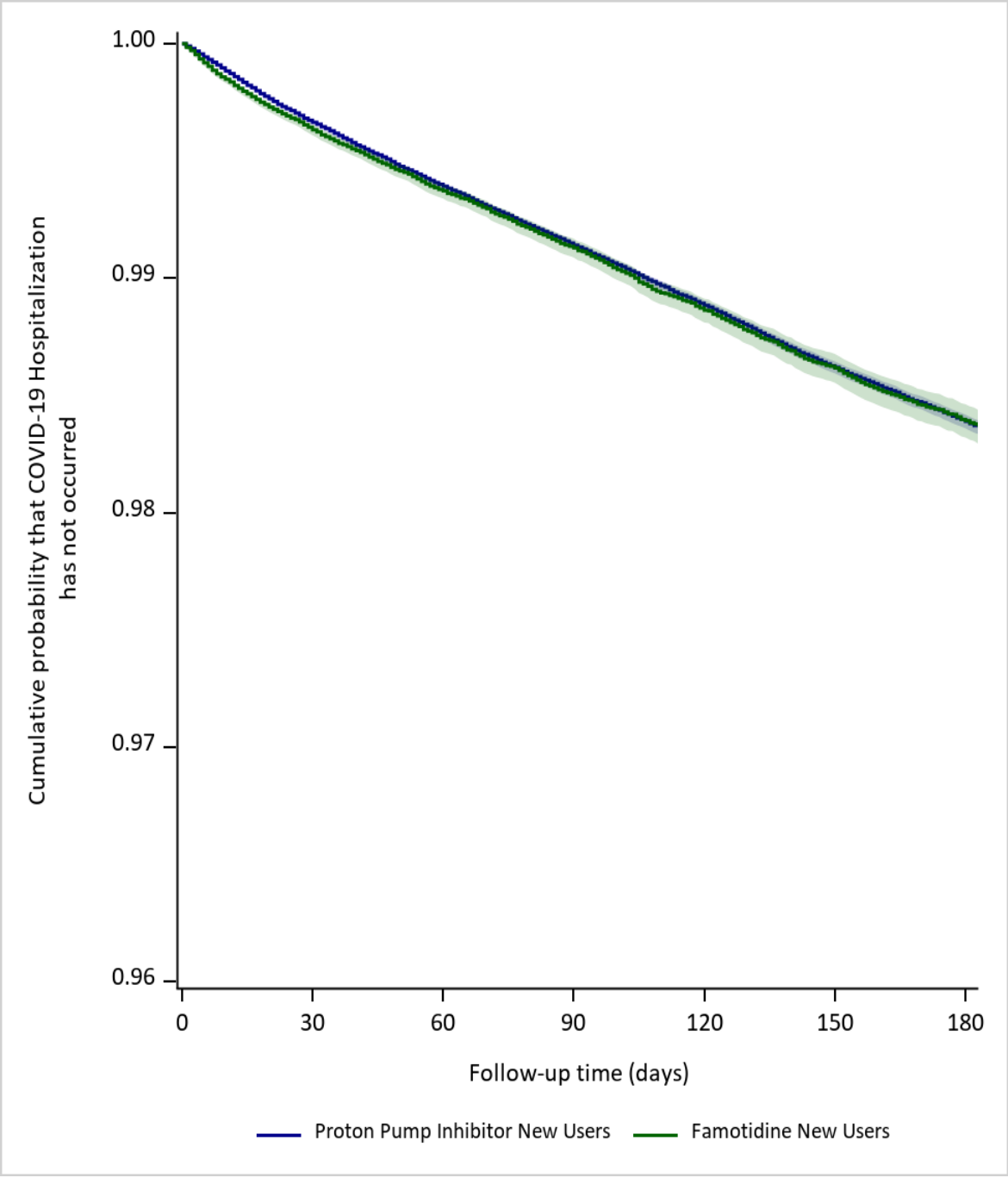


Figure 18c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

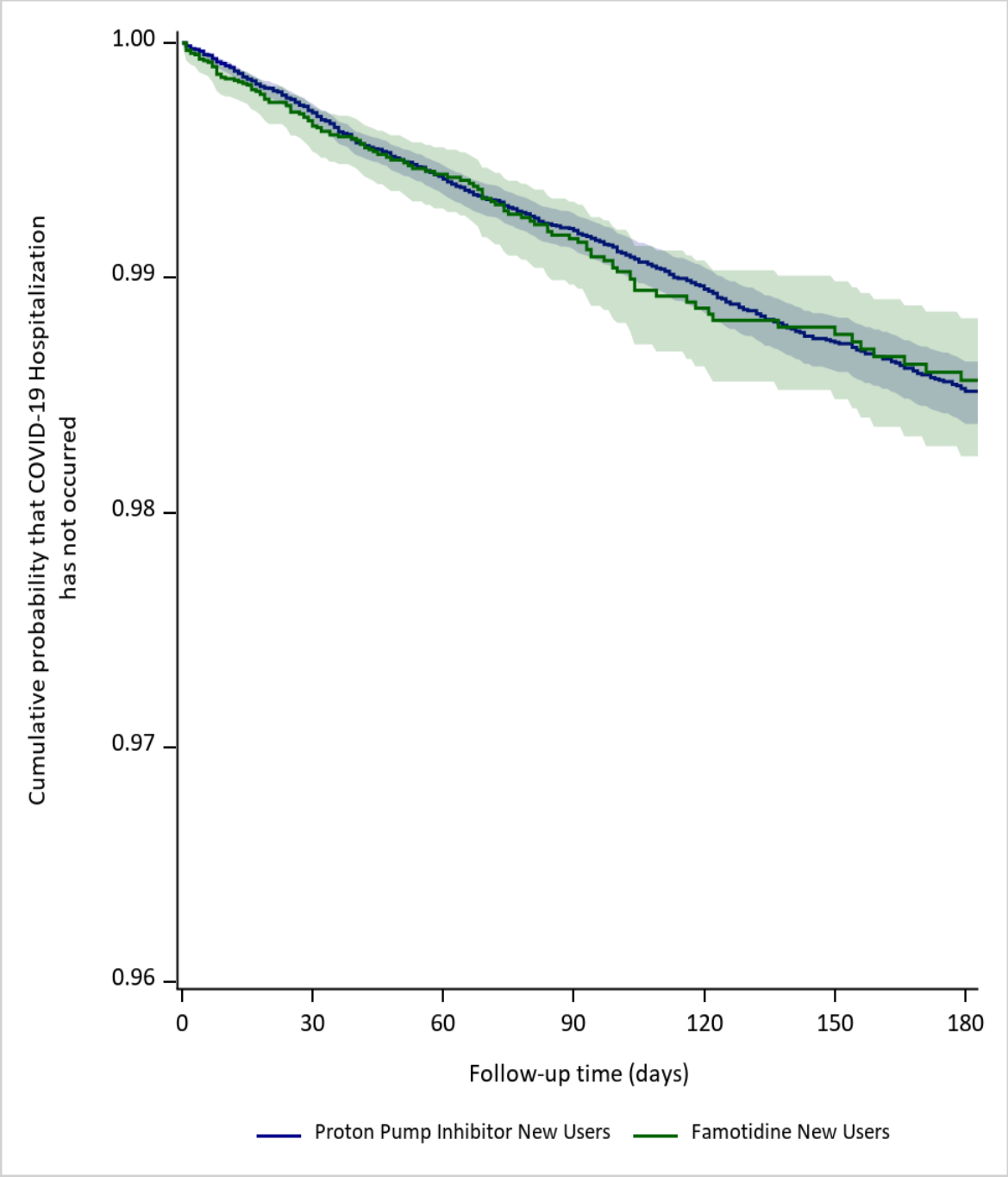


Figure 18d. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

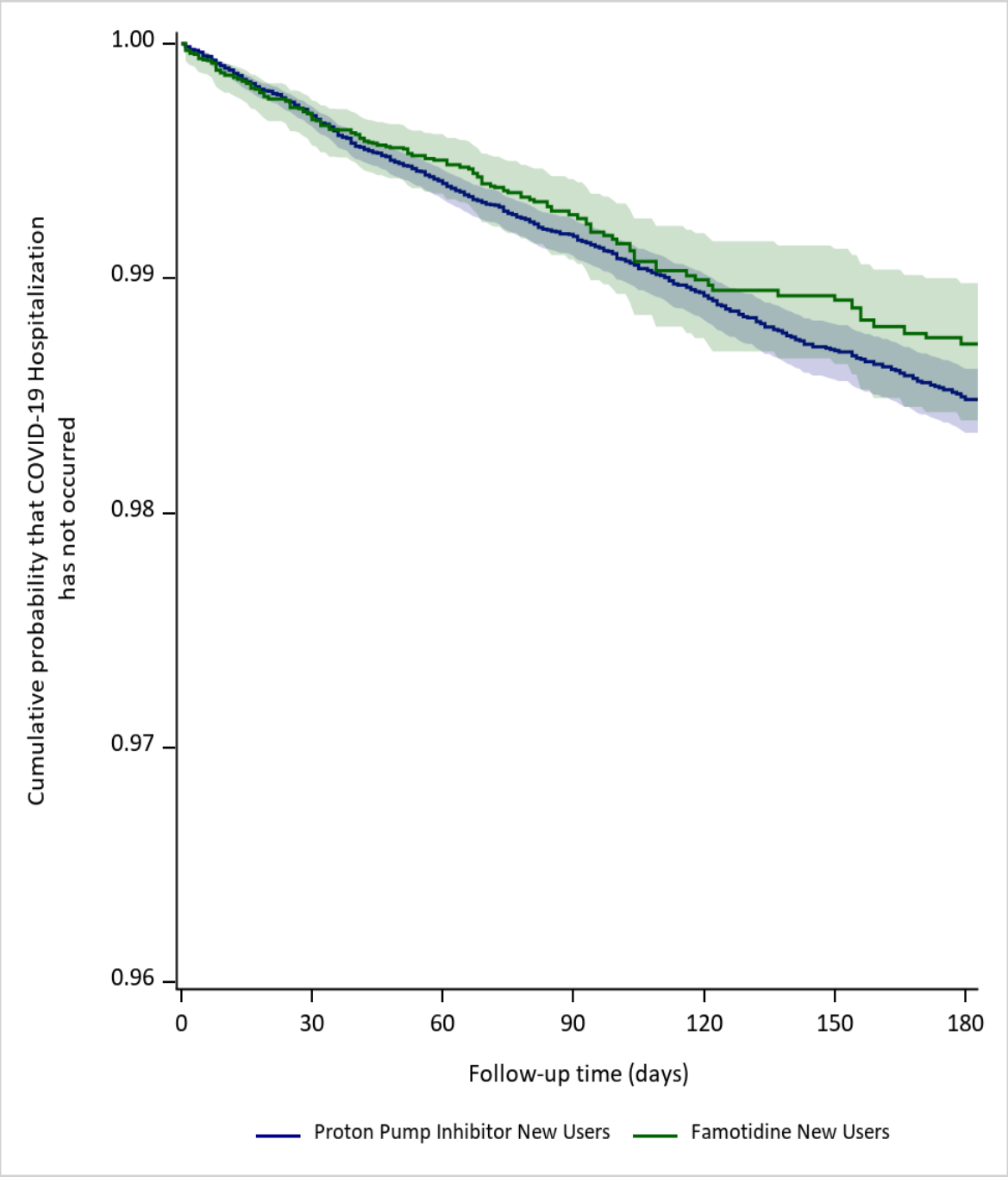


Figure 18e. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

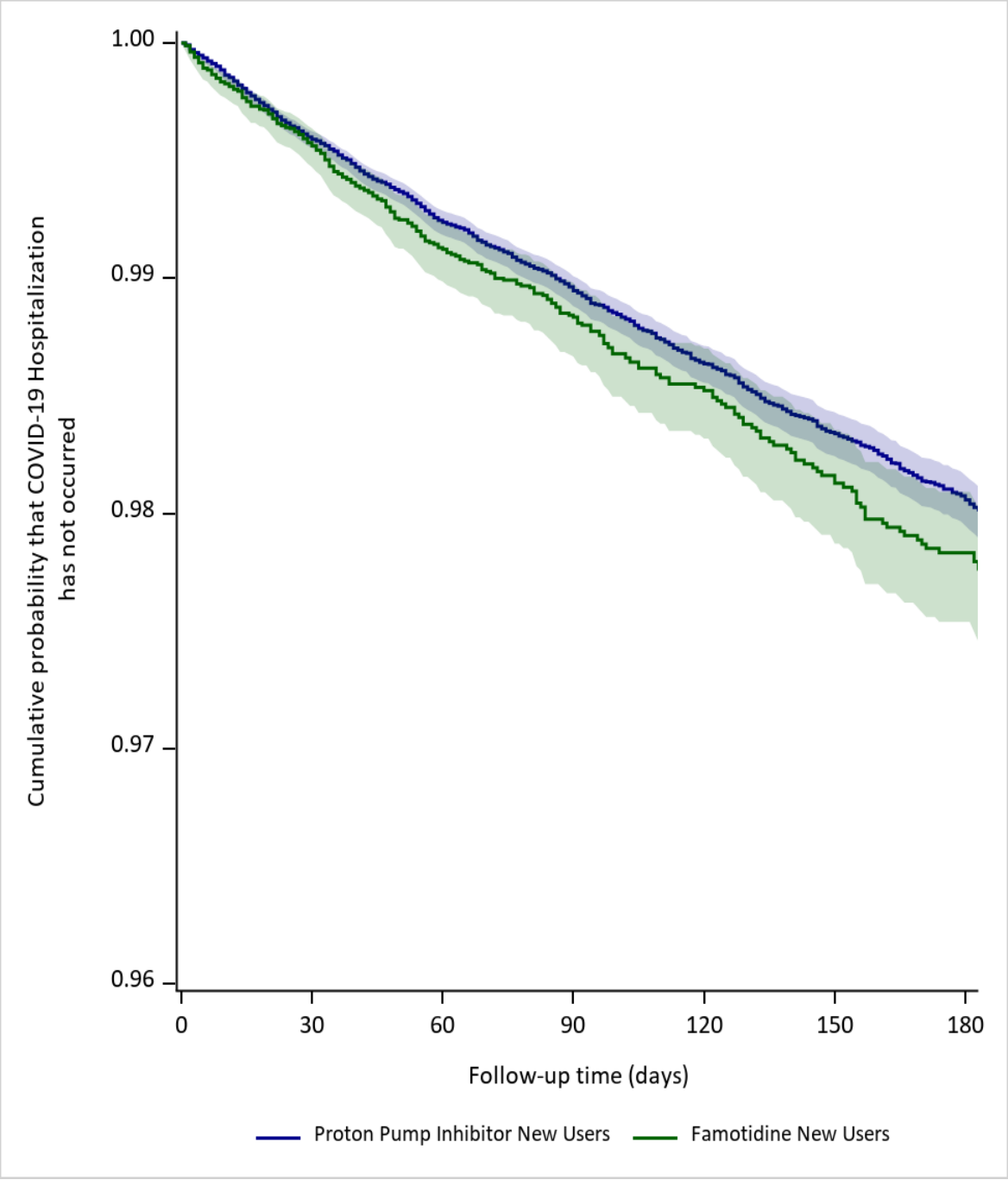


Figure 18f. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

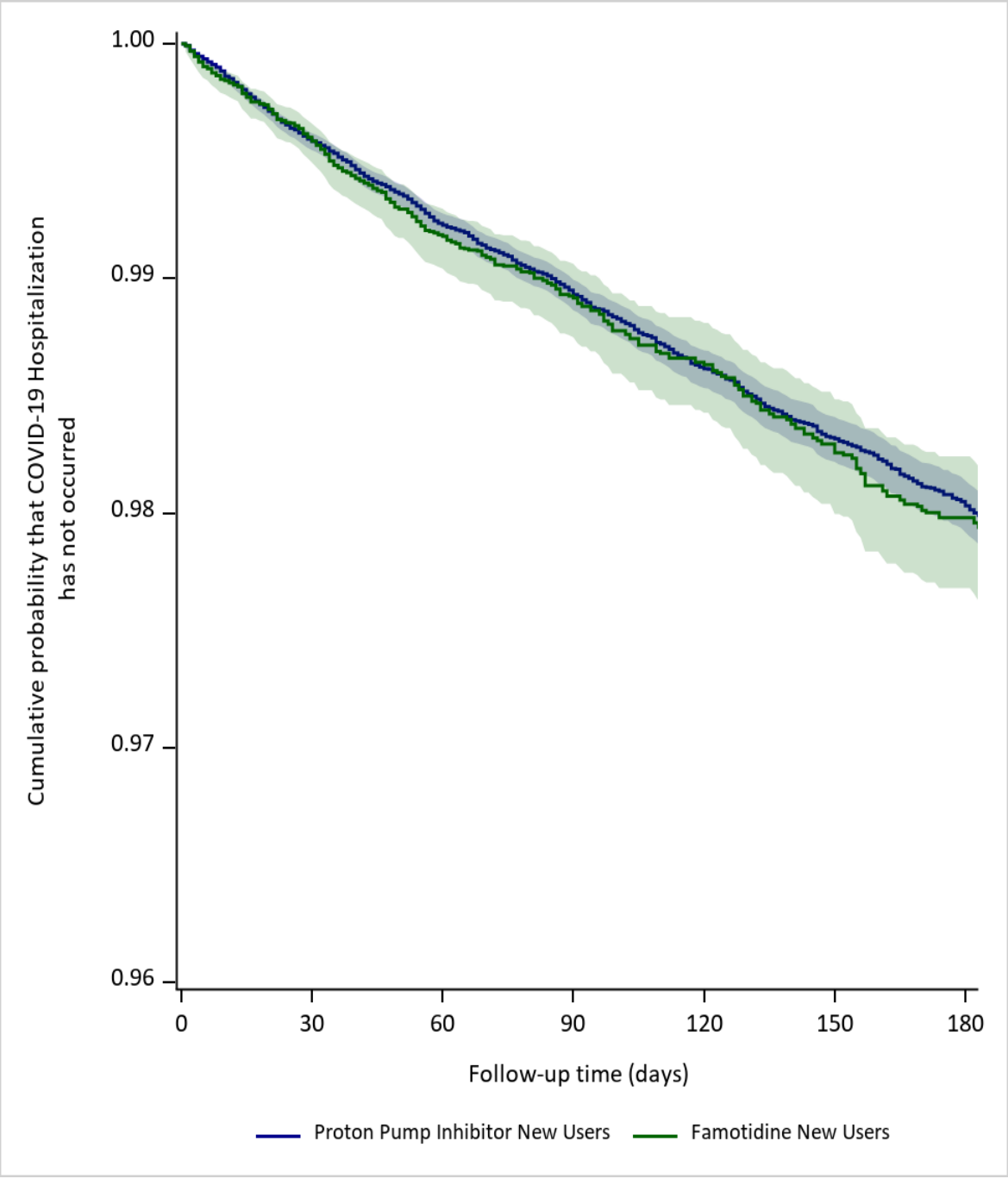


Figure 18g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

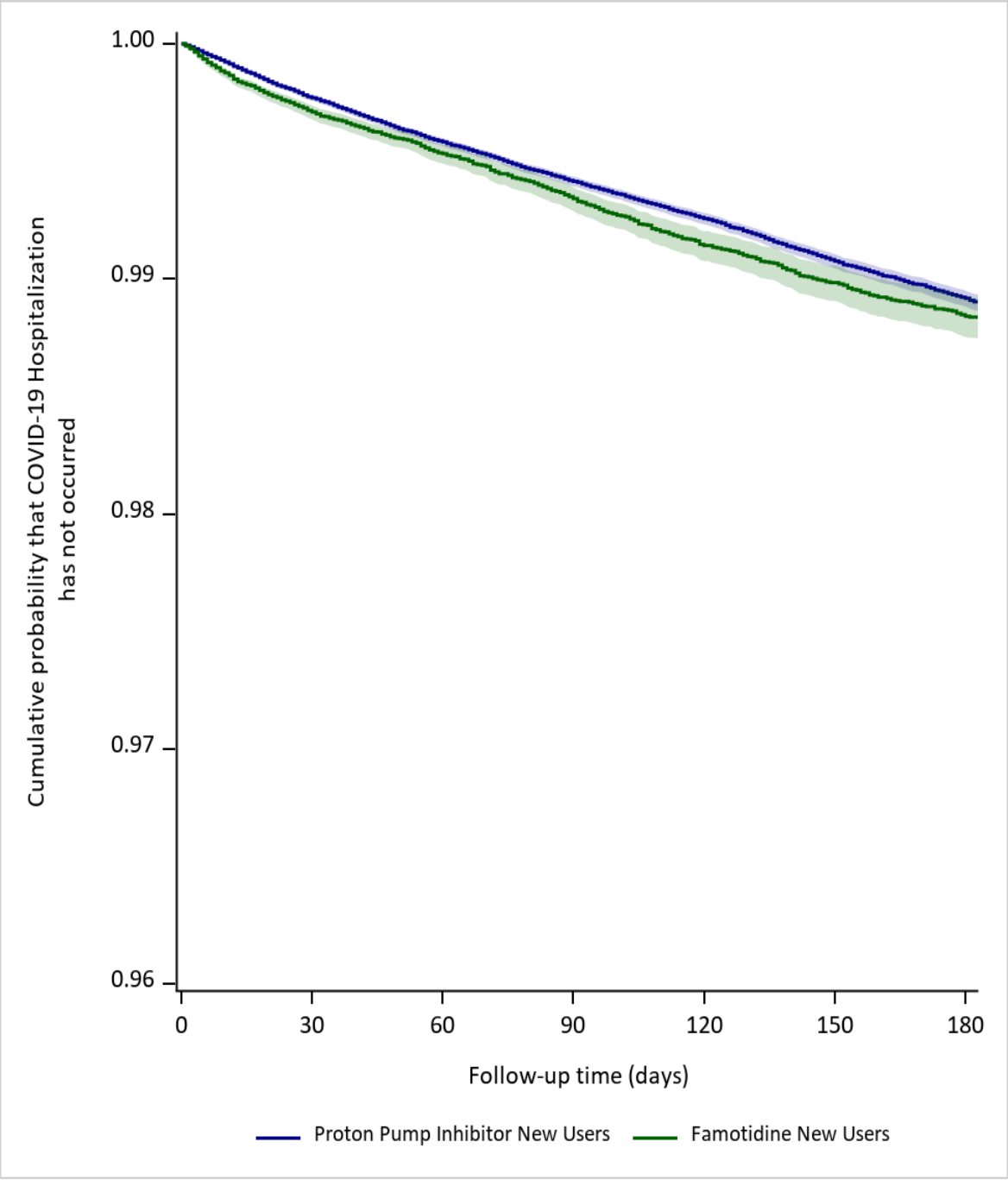


Figure 18h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

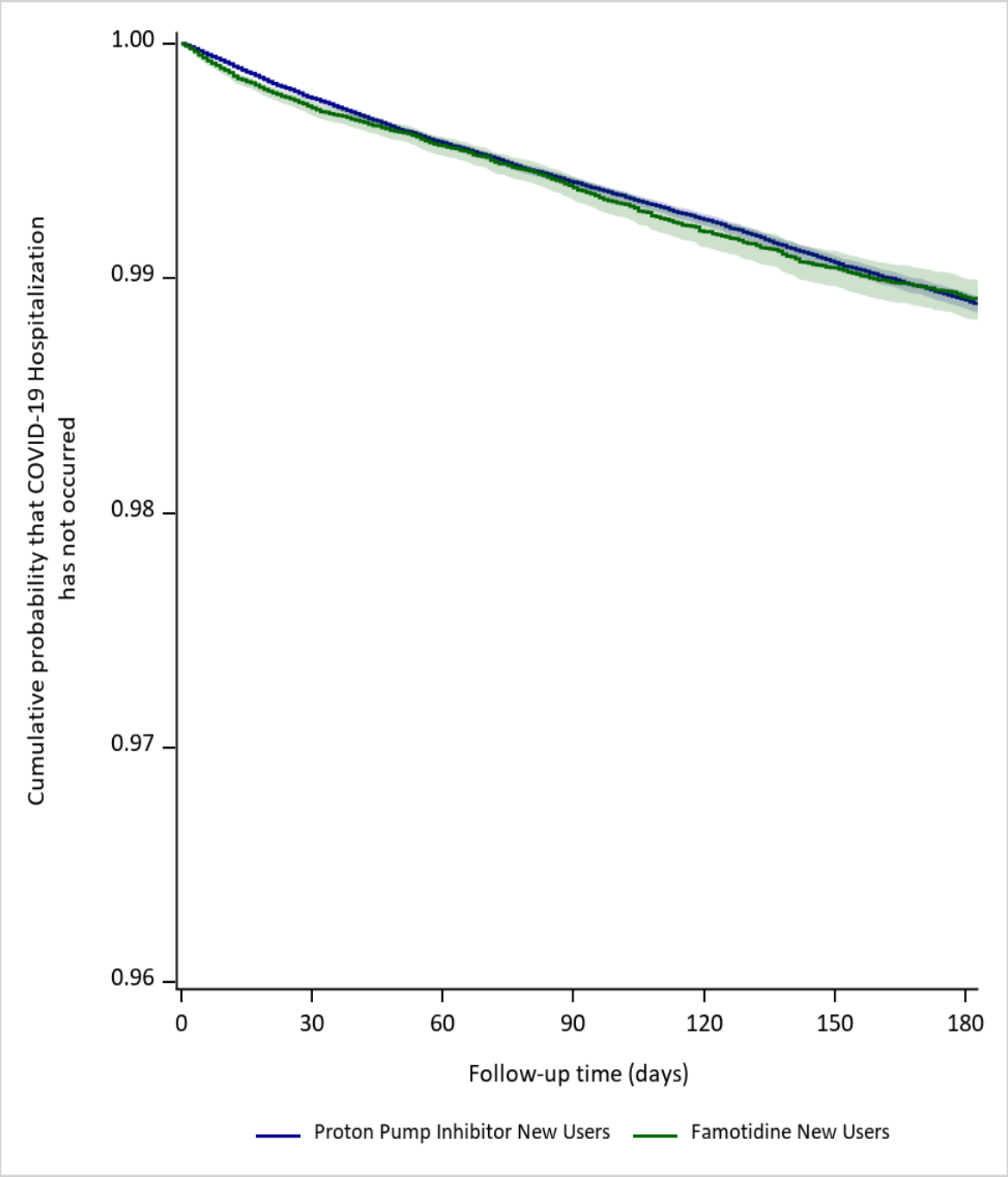


Figure 18i. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

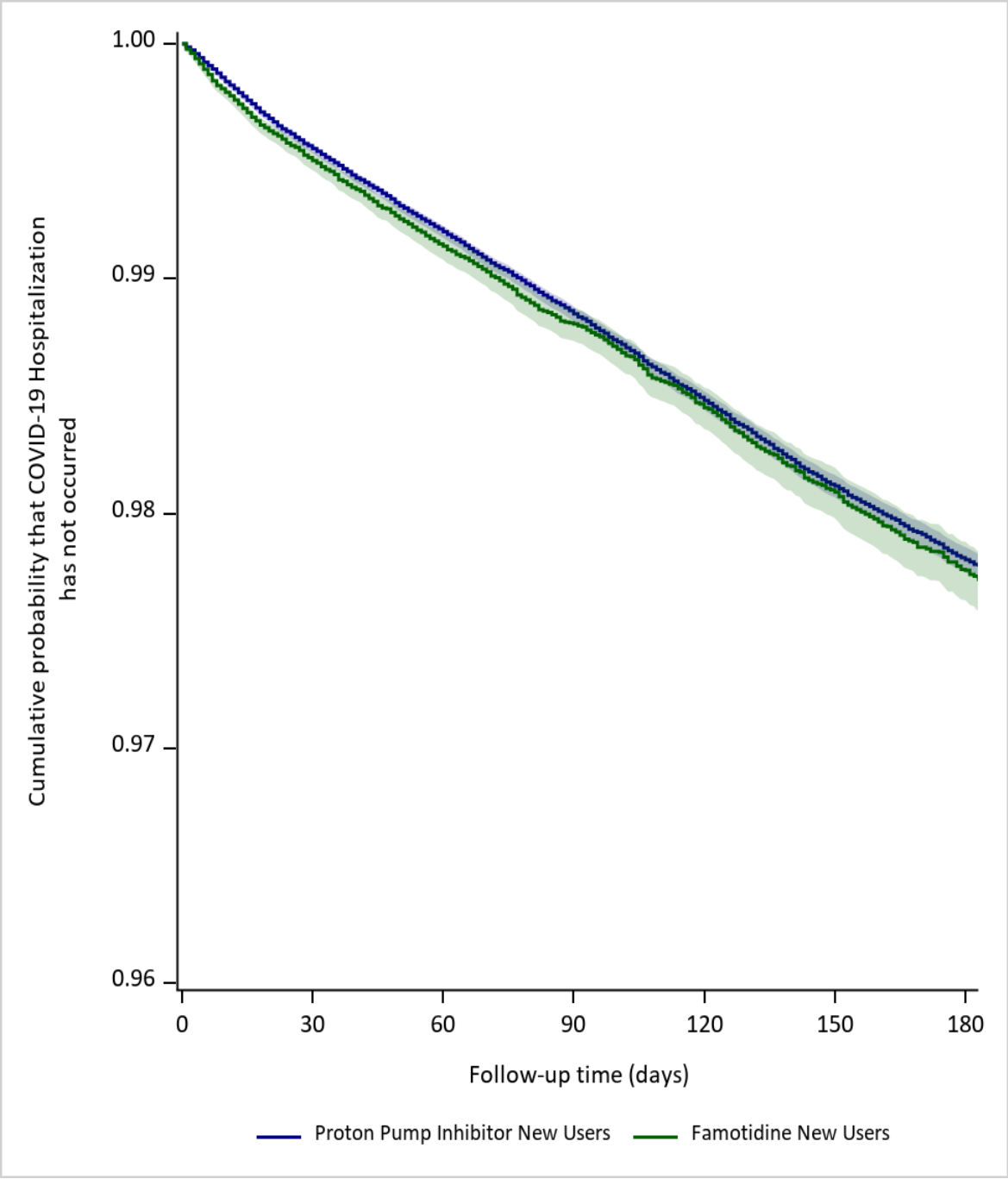


Figure 18j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of COVID-19 Hospitalization Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

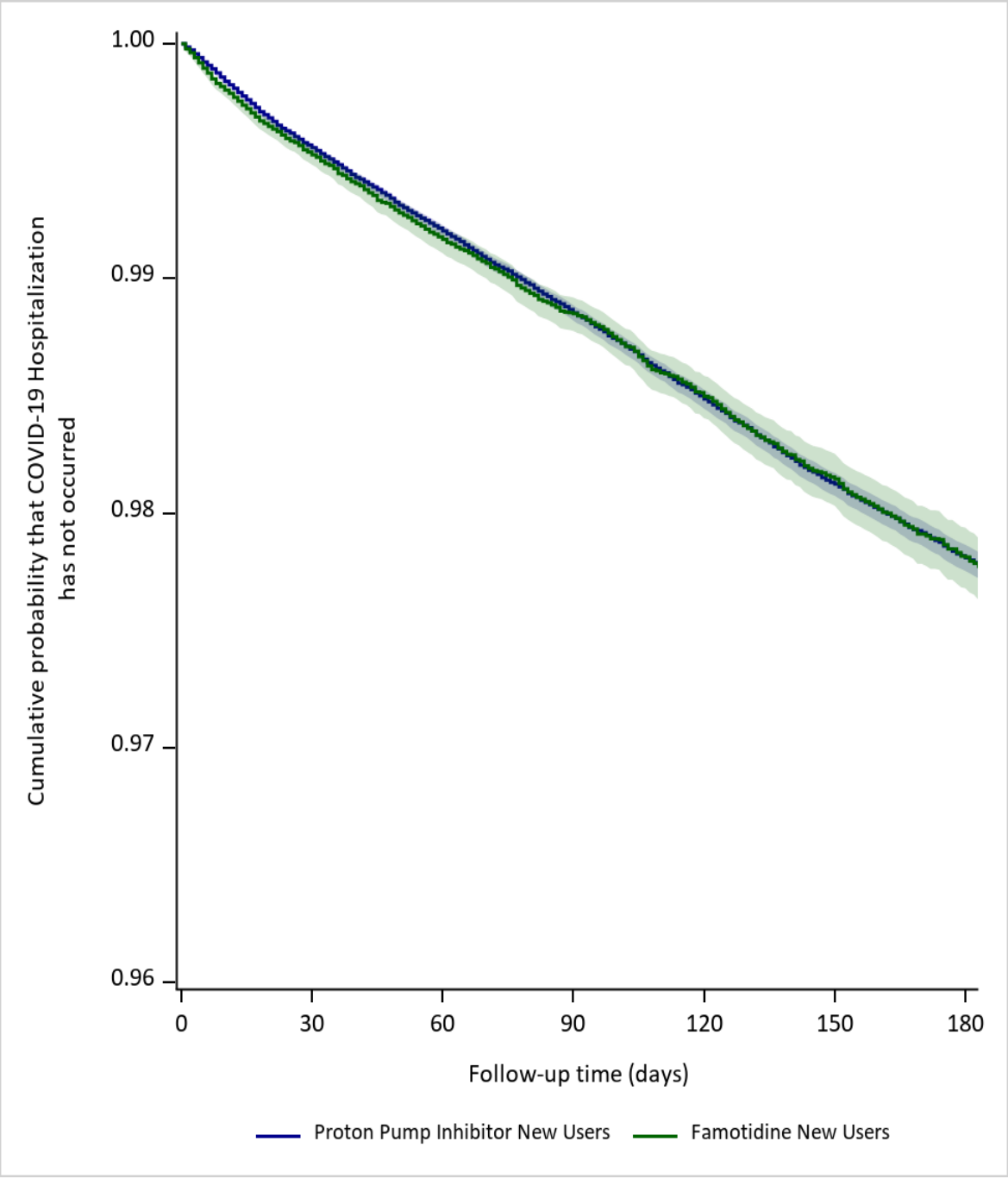


Figure 19a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

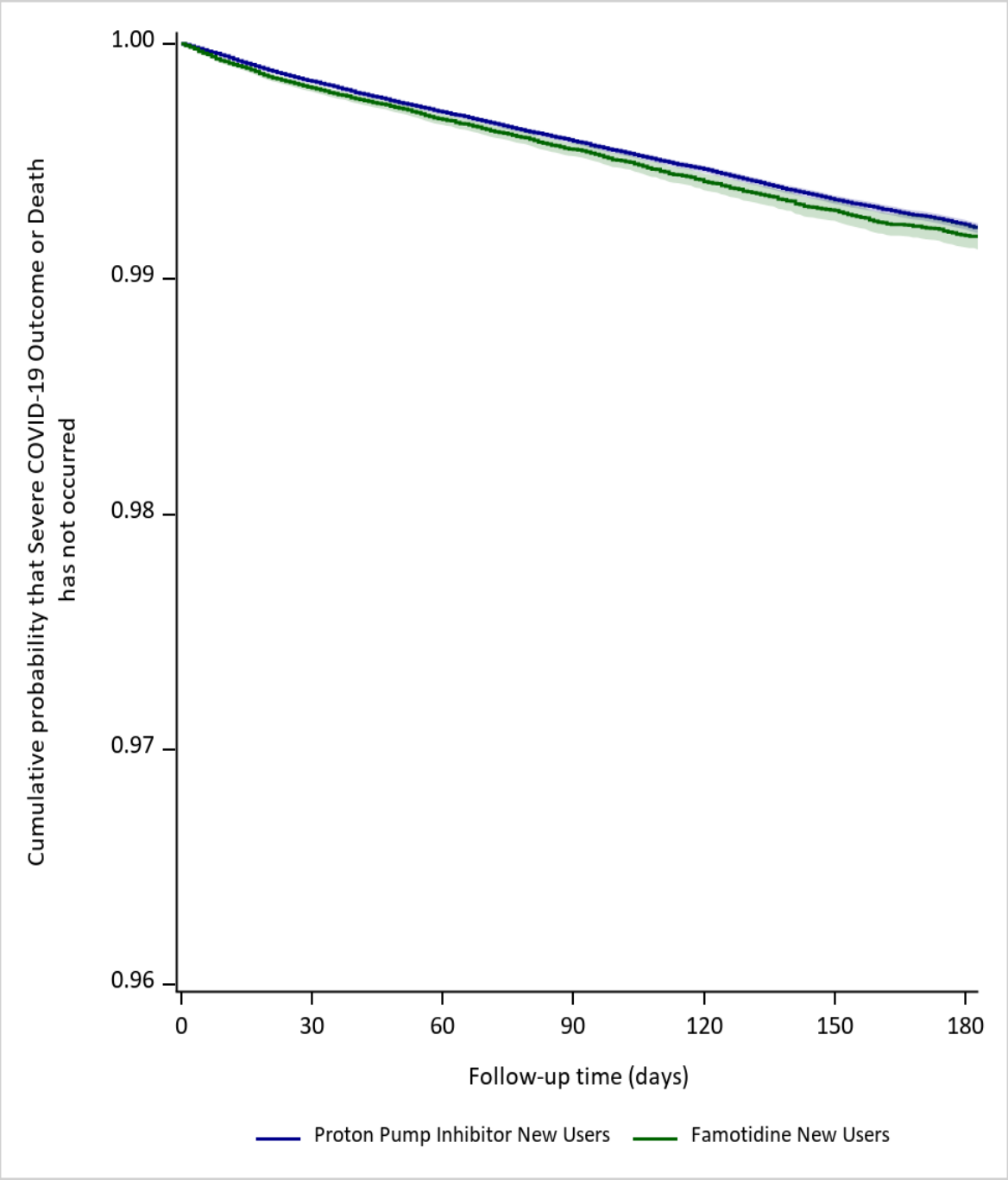


Figure 19b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

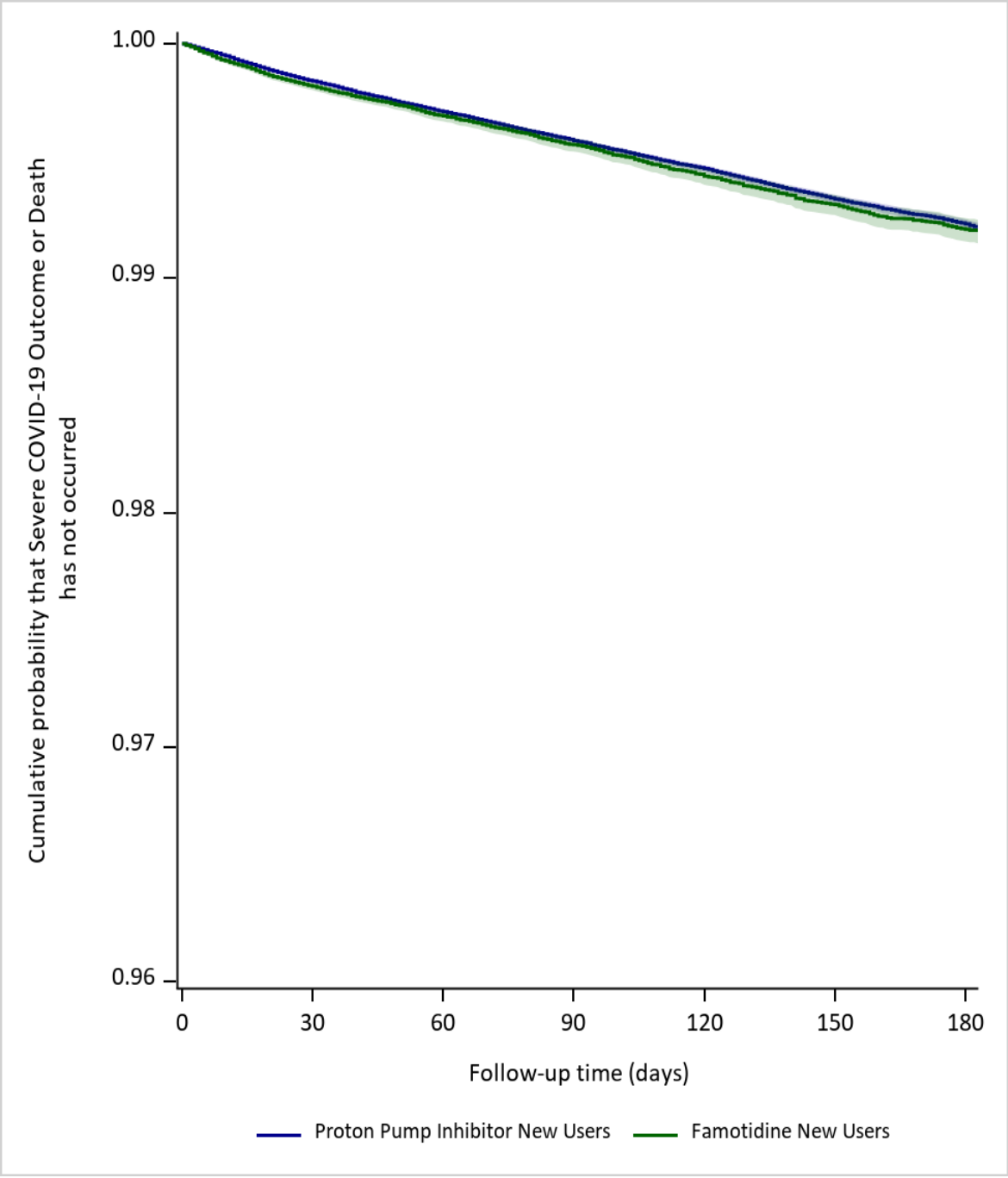


Figure 19c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

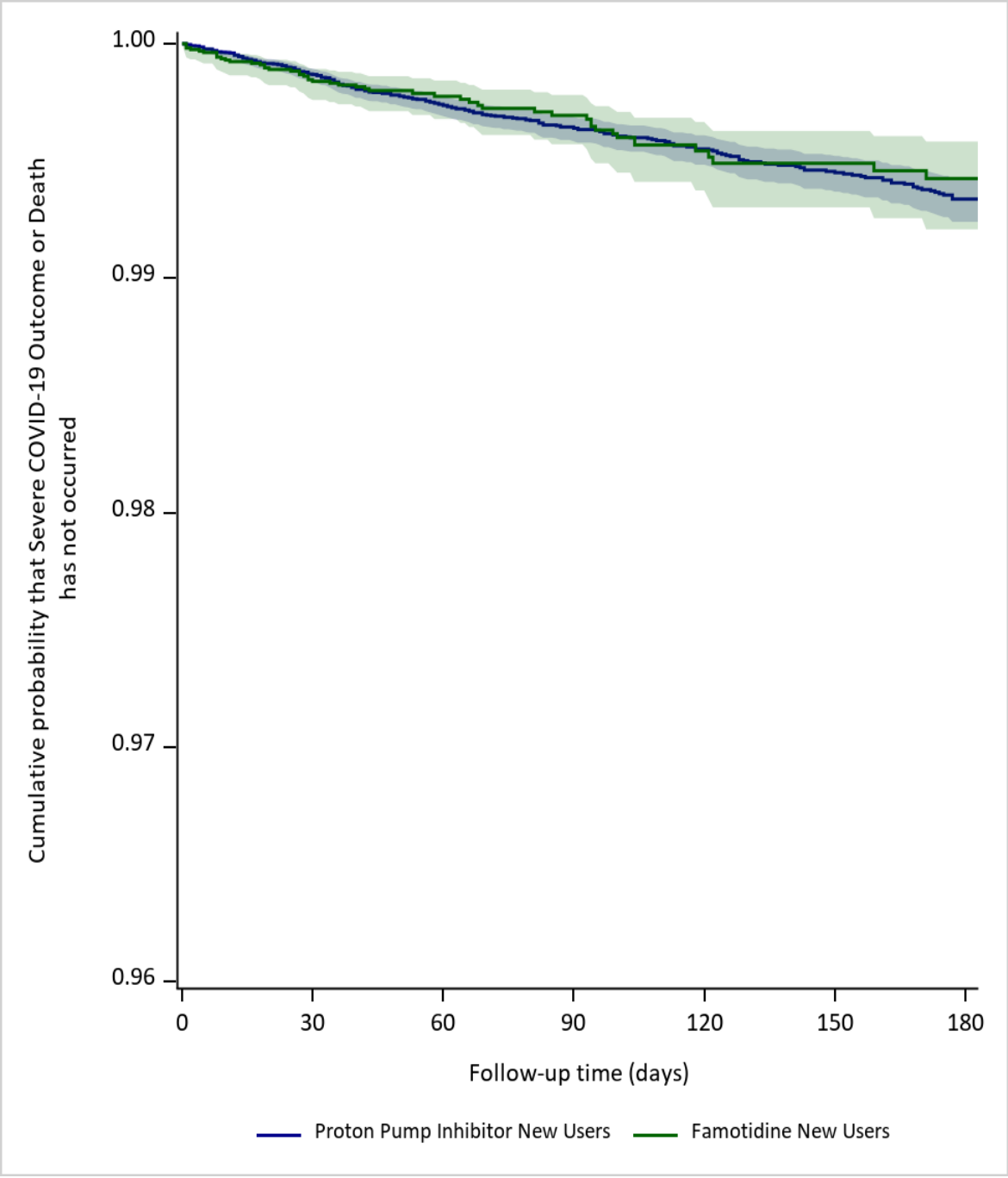


Figure 19d. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

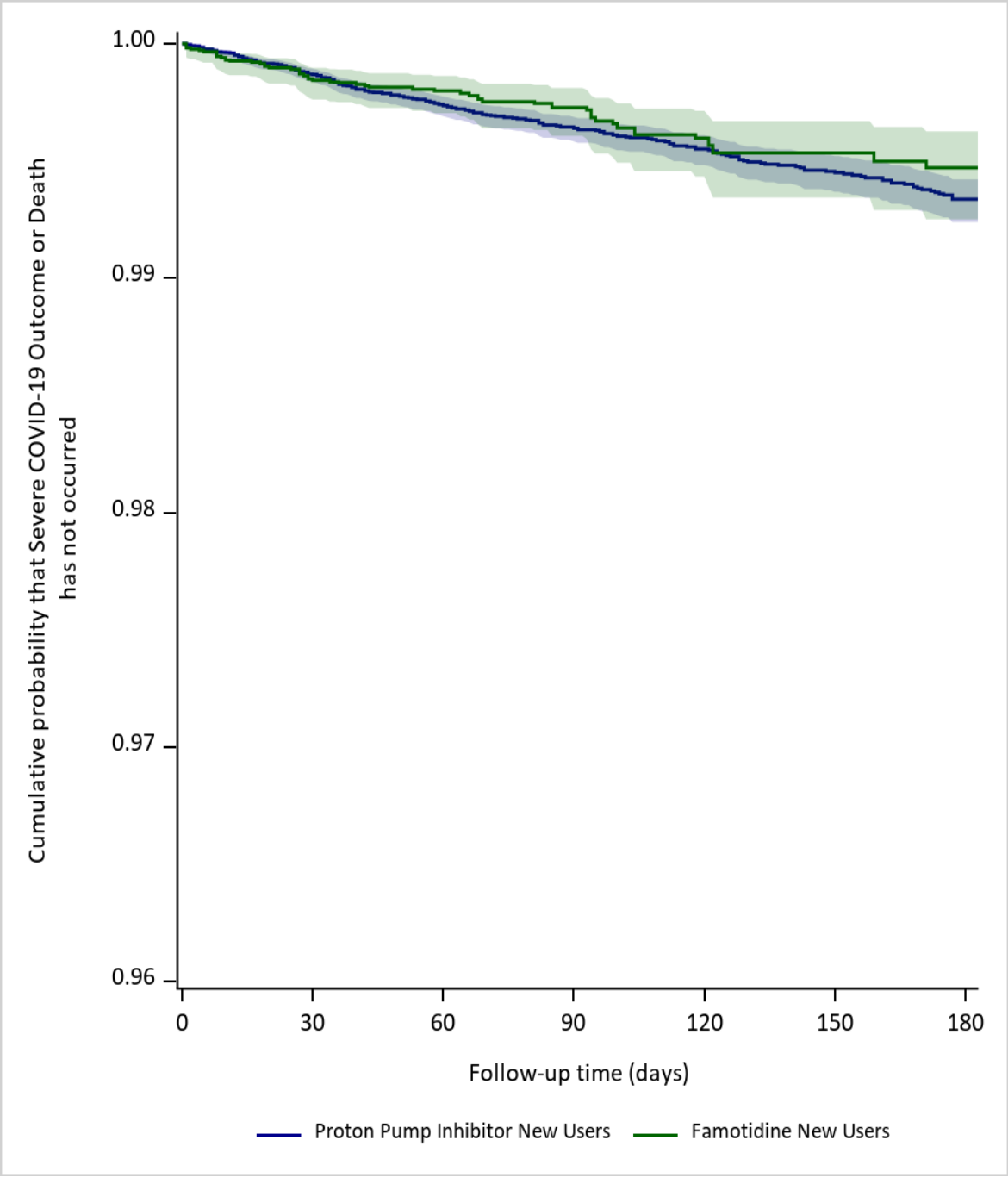


Figure 19e. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

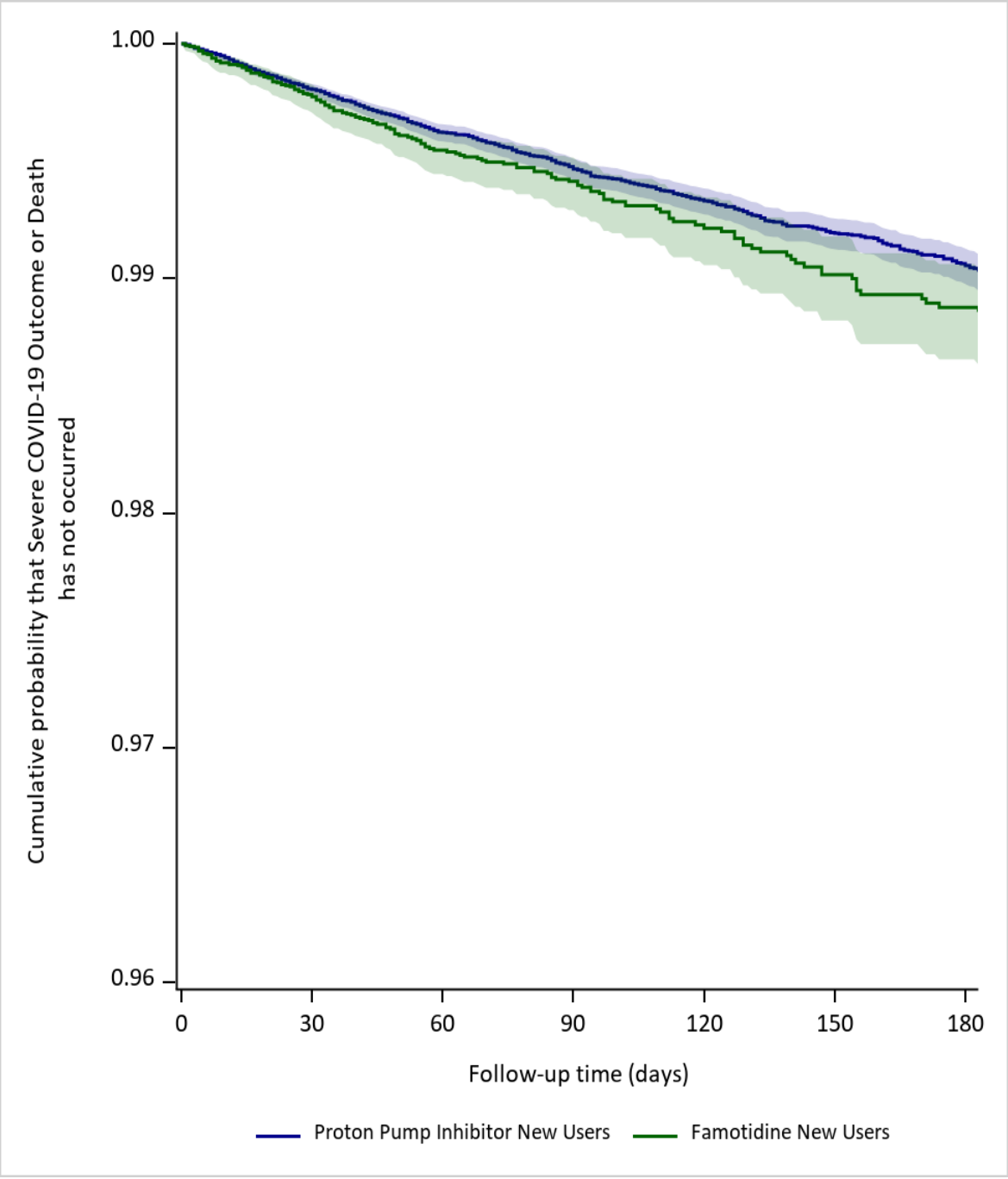


Figure 19f. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

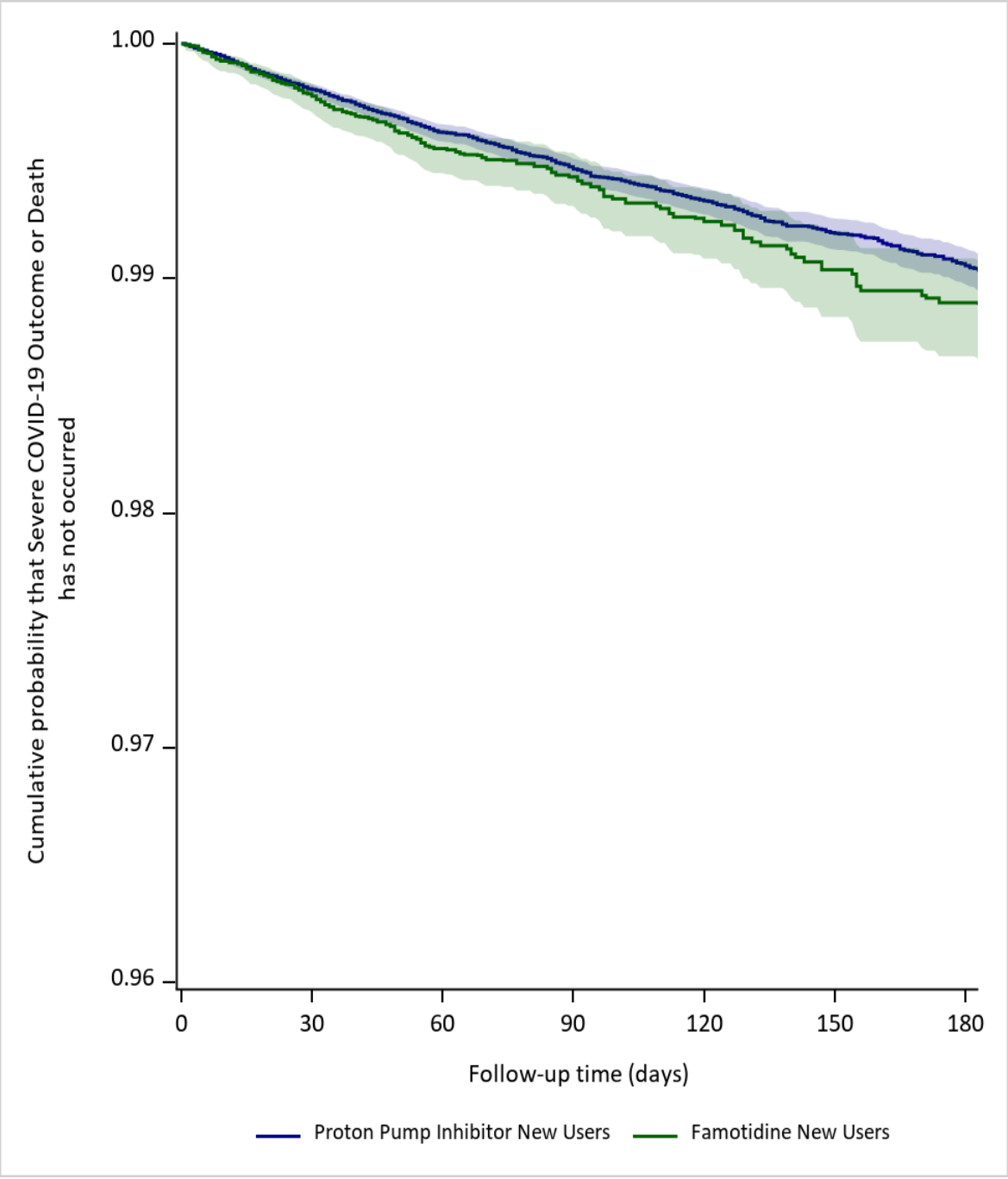


Figure 19g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

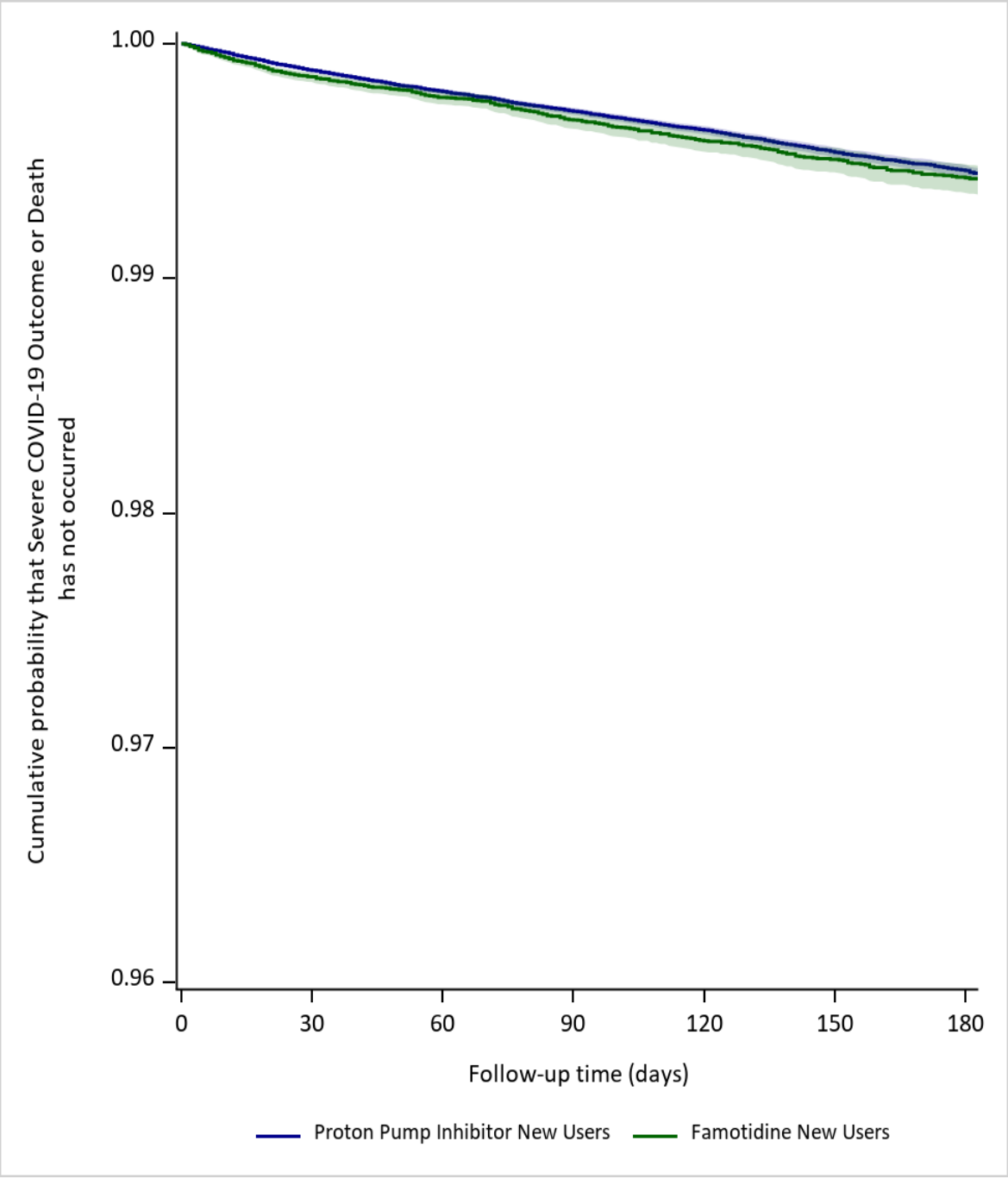


Figure 19h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

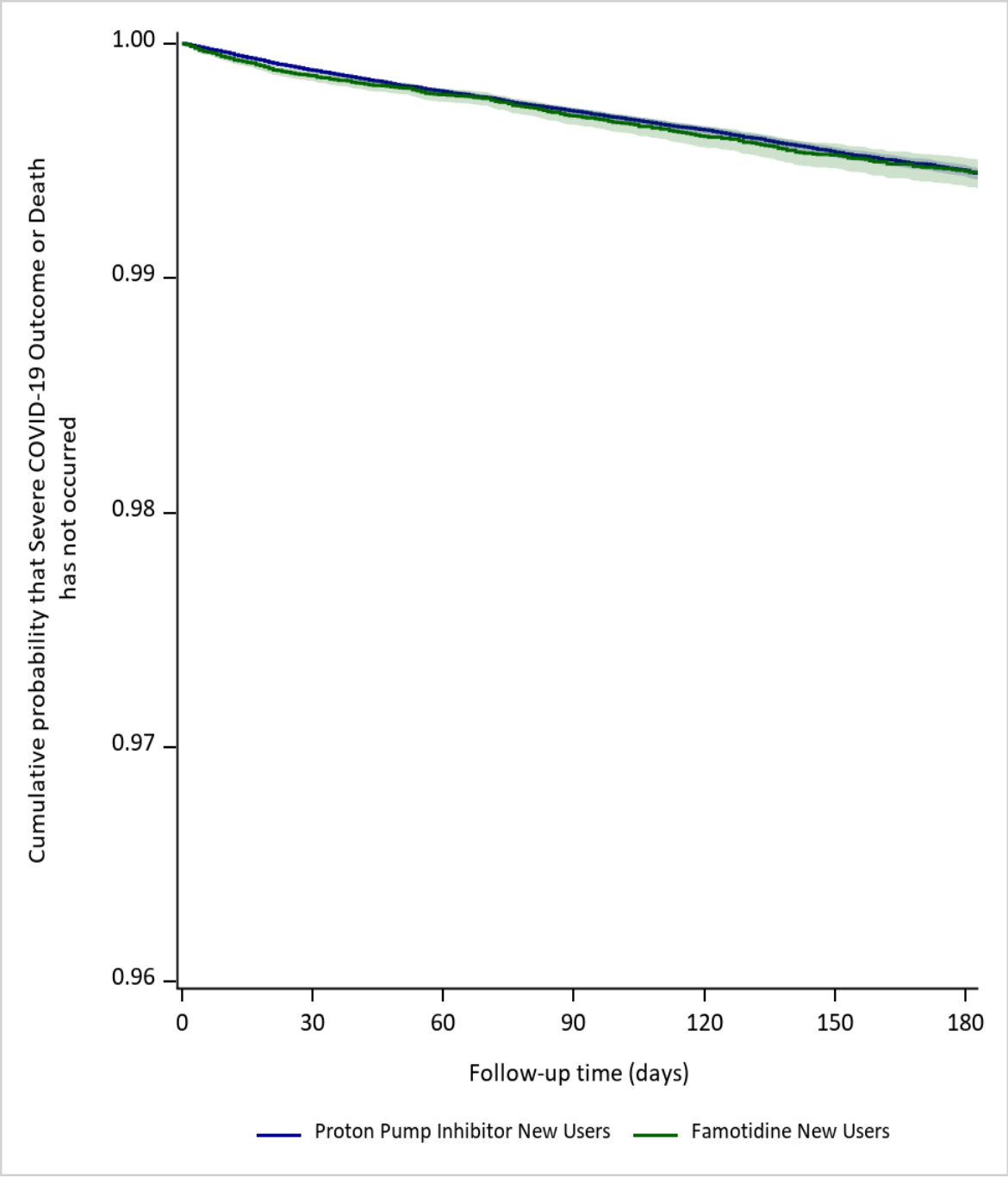


Figure 19i. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

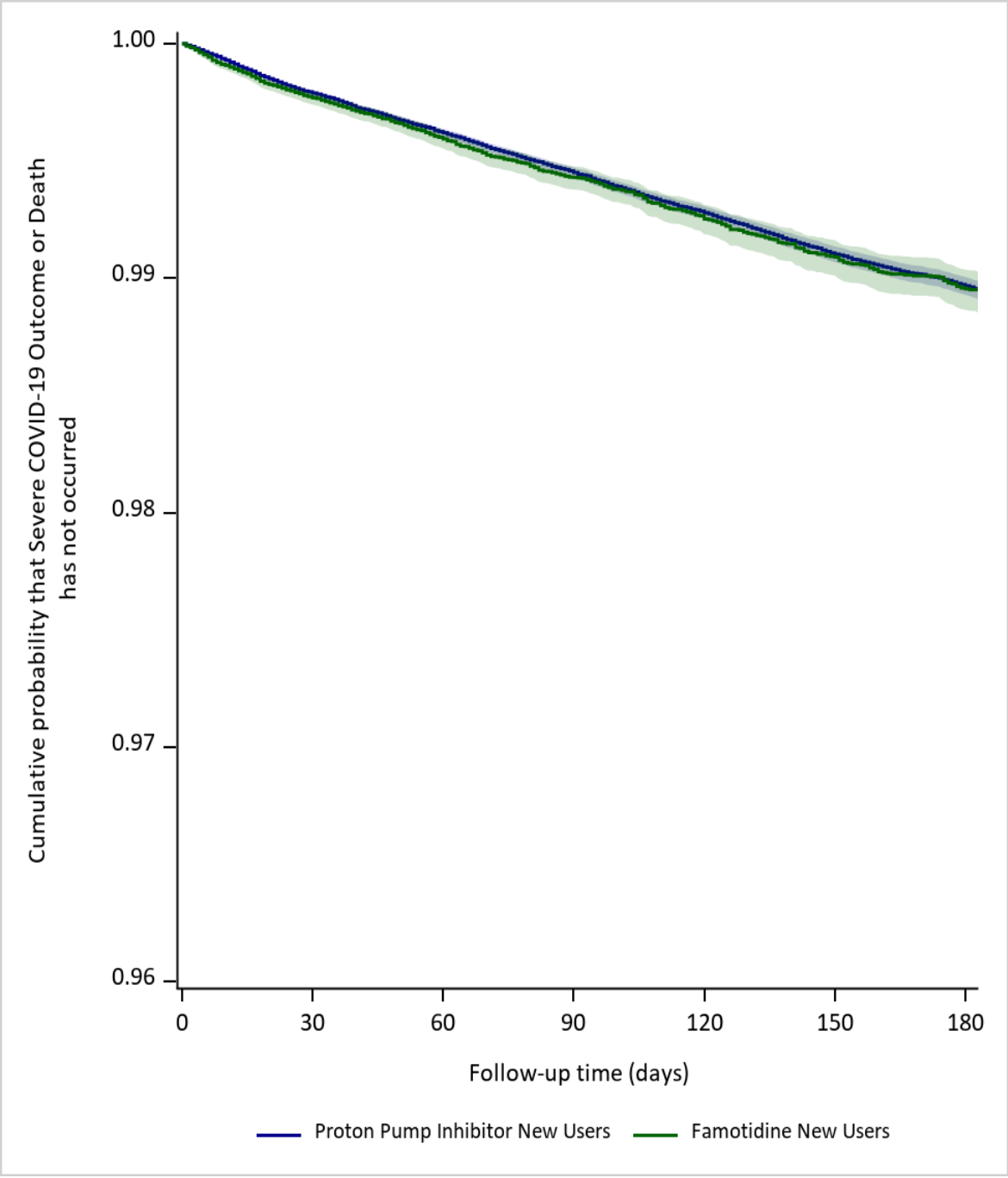


Figure 19j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

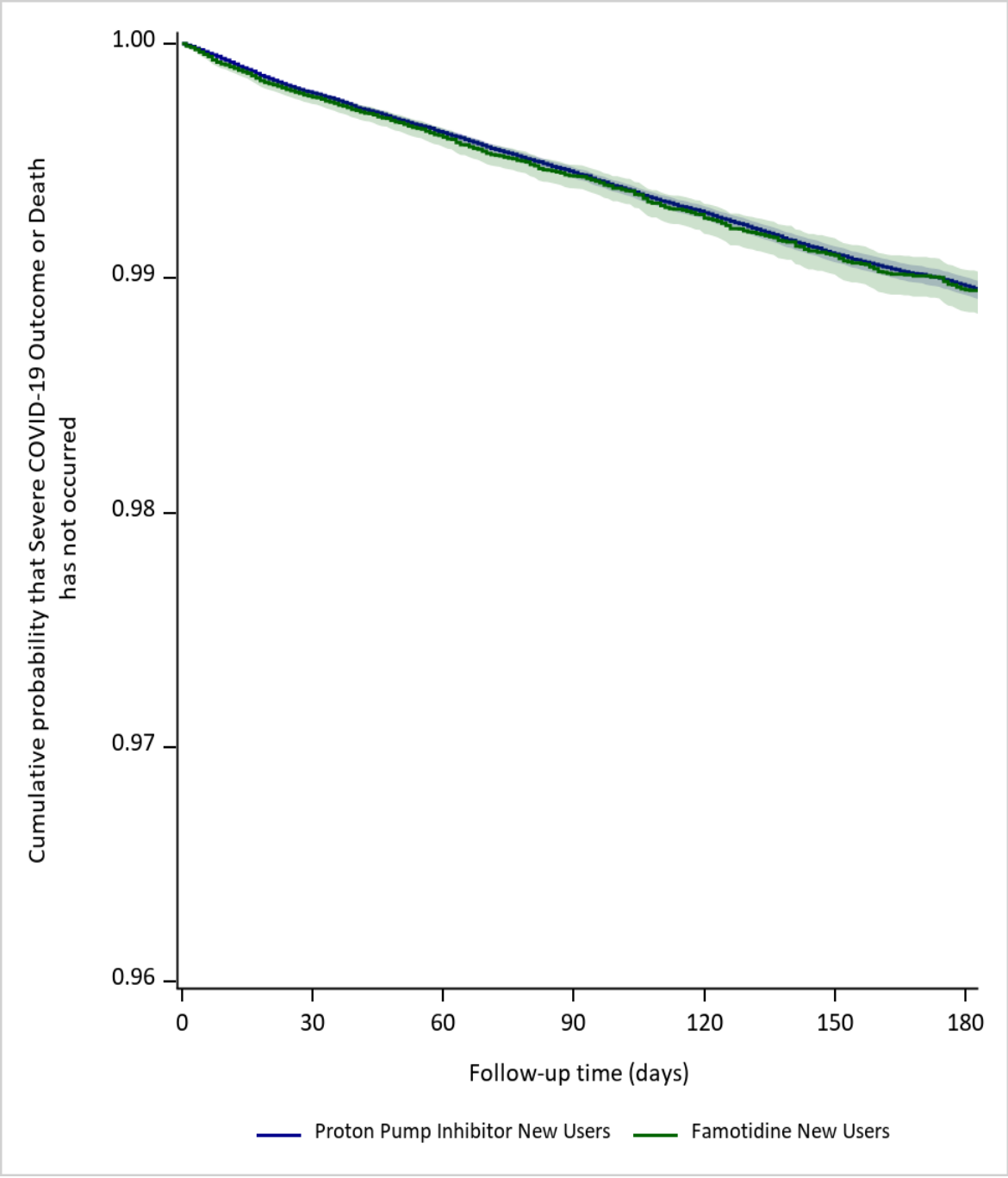


Figure 20a. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

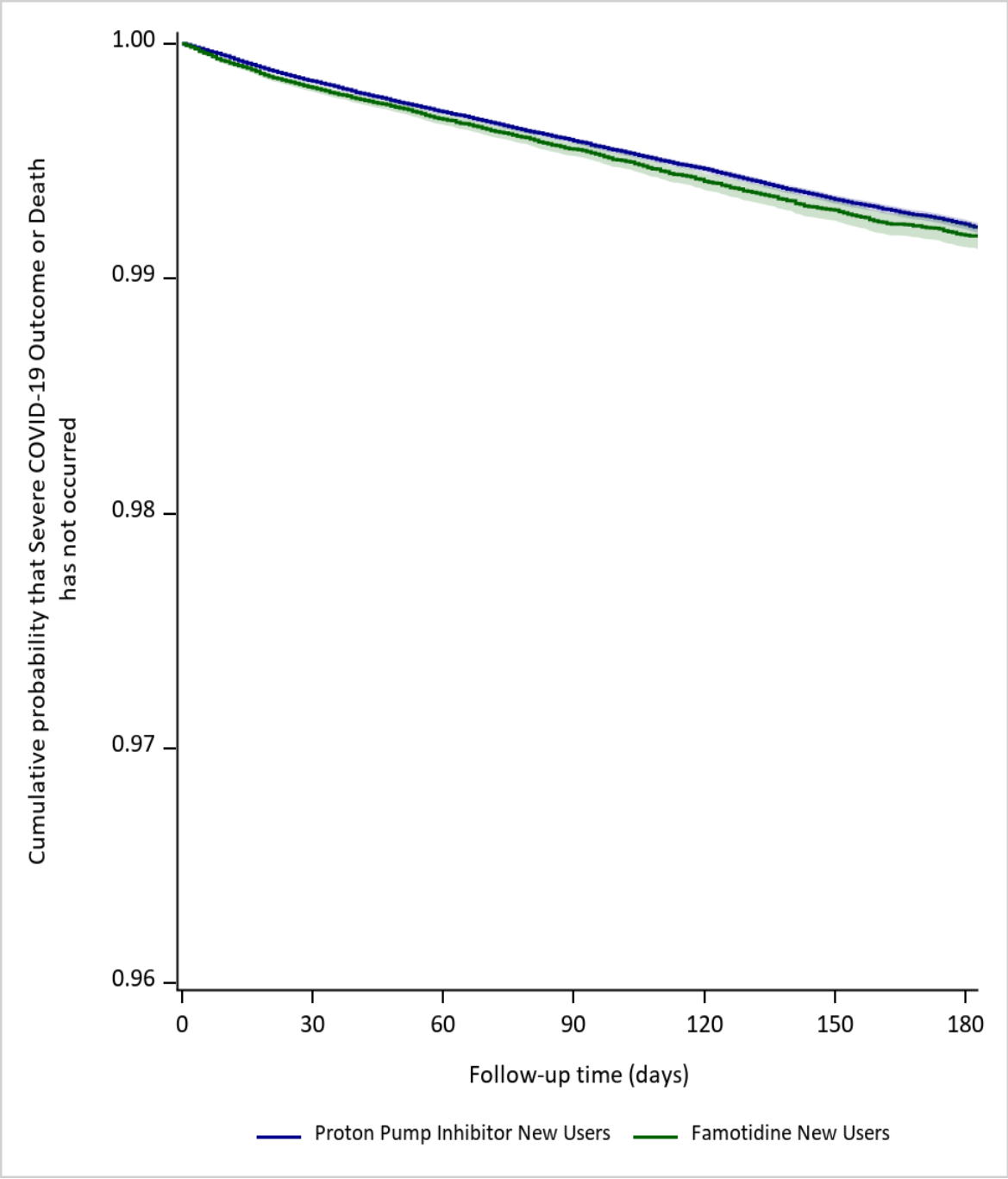


Figure 20b. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023

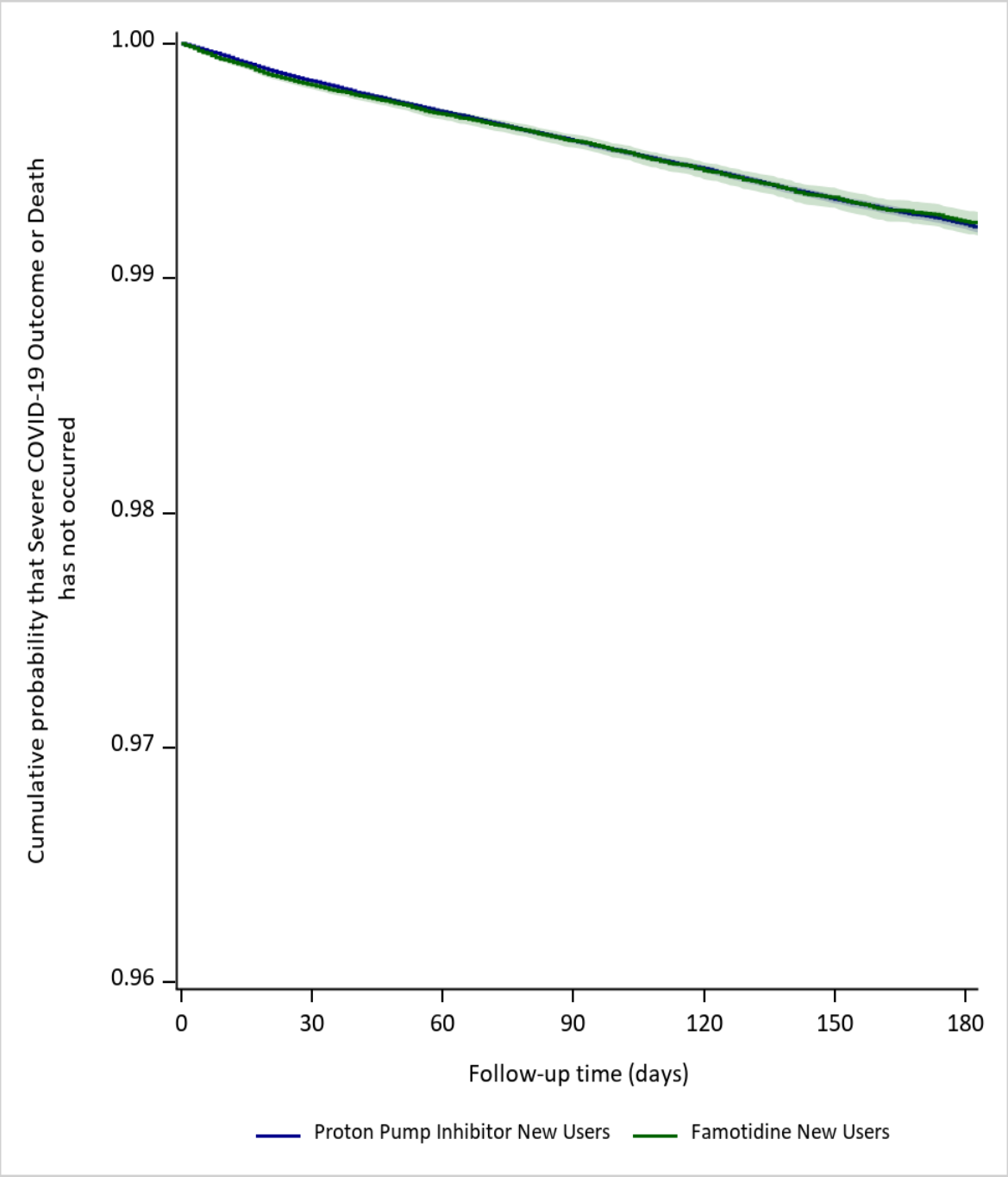


Figure 20c. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

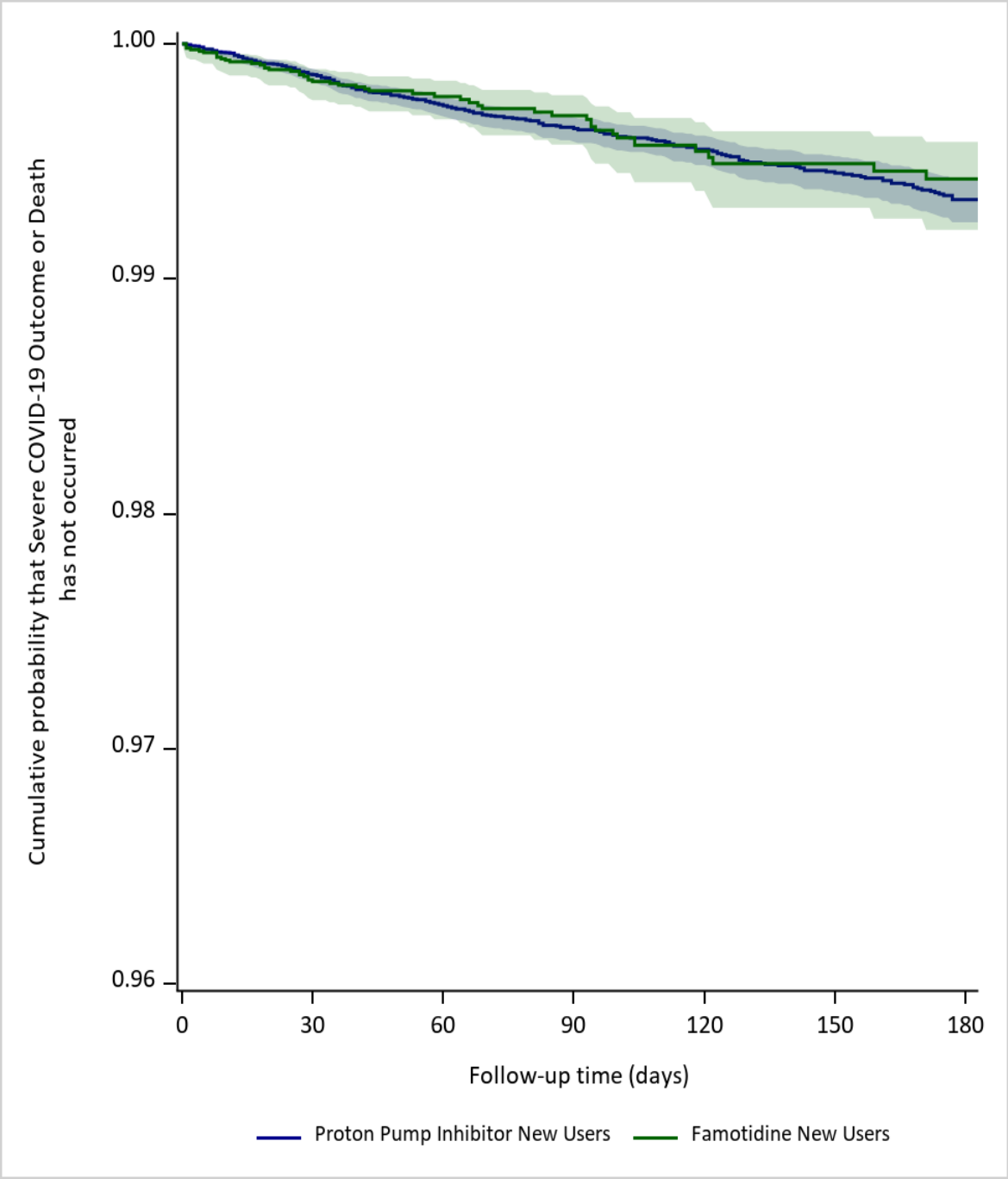


Figure 20d. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 18-49 years

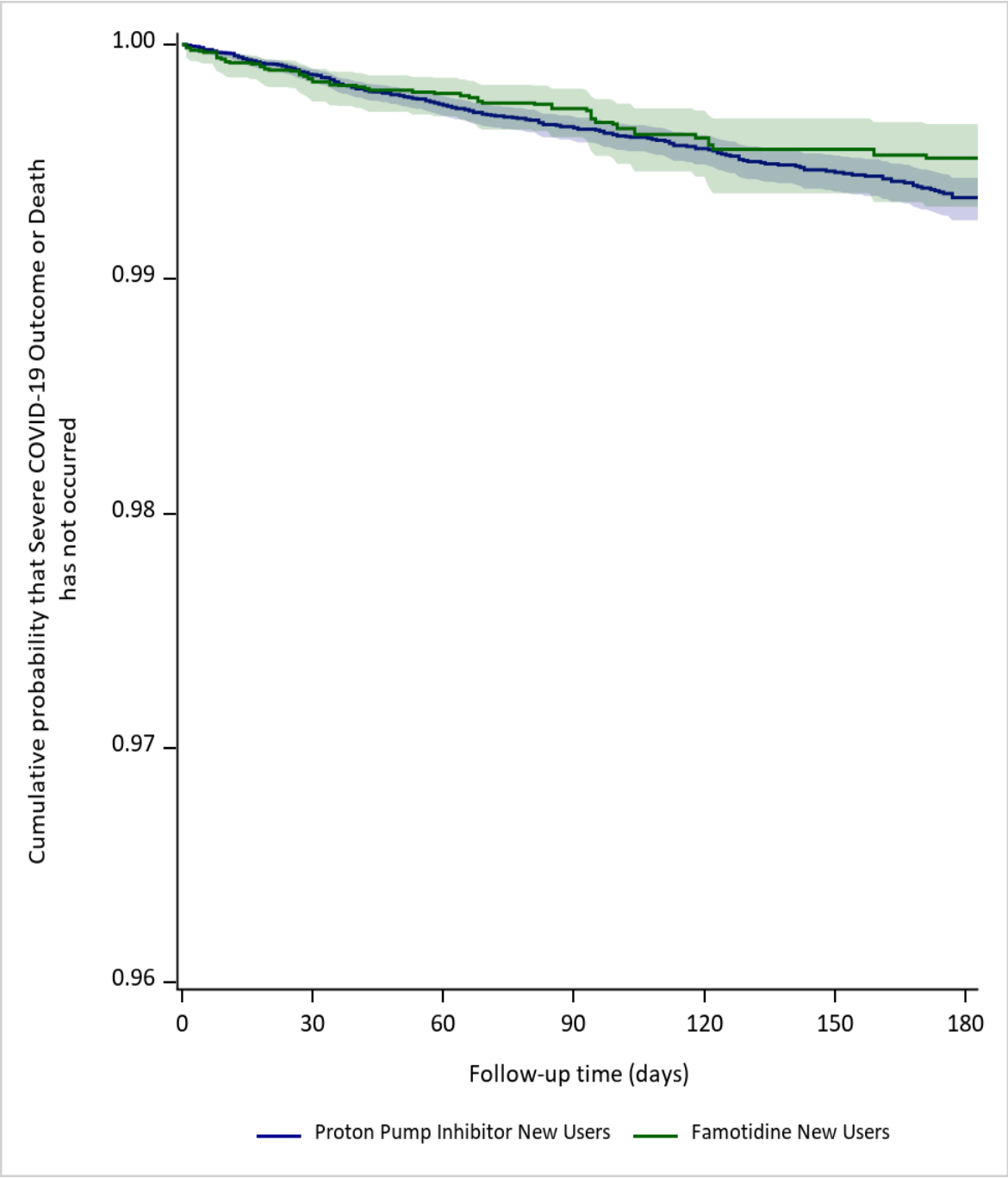


Figure 20e. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

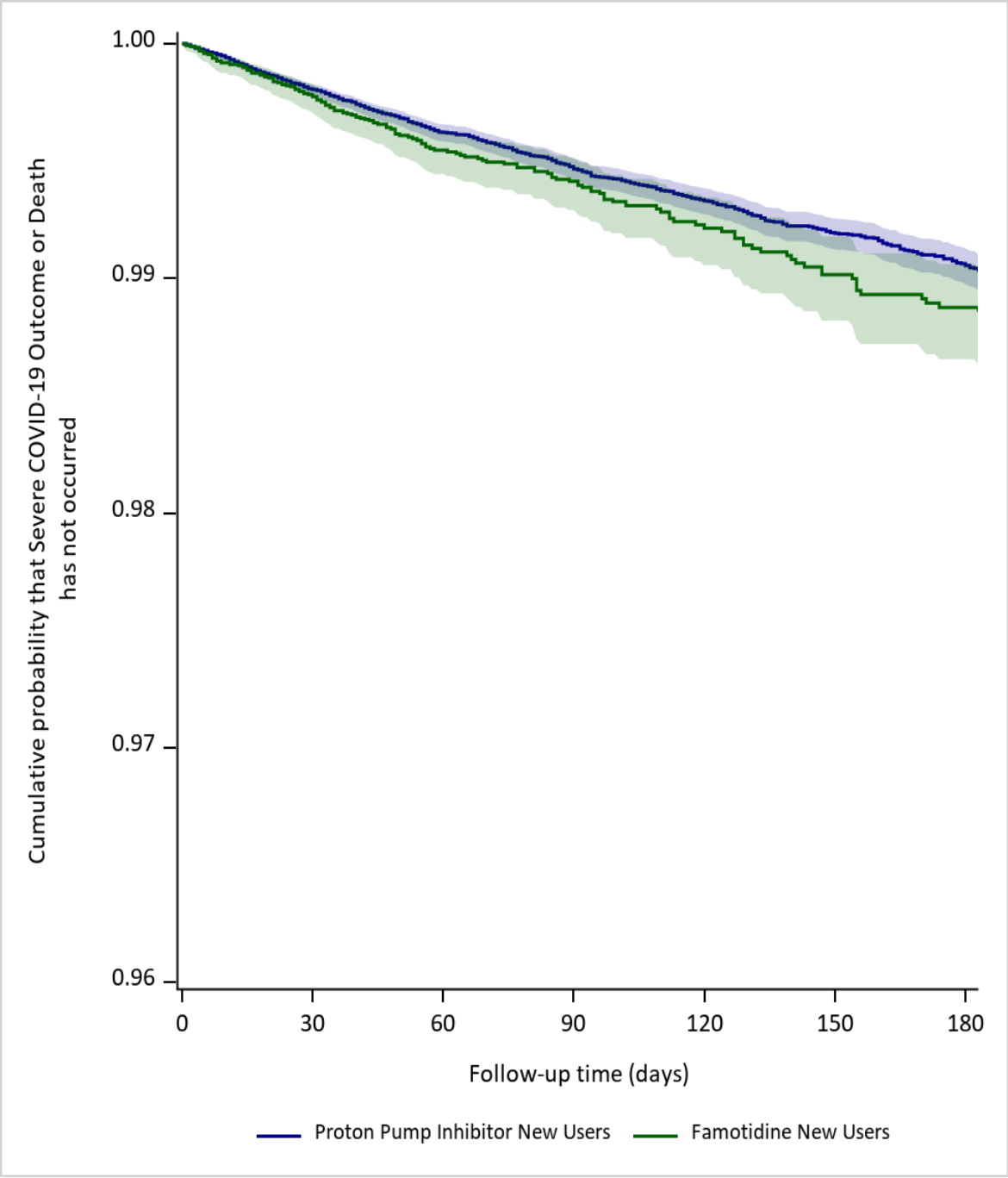


Figure 20f. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 50-64 years

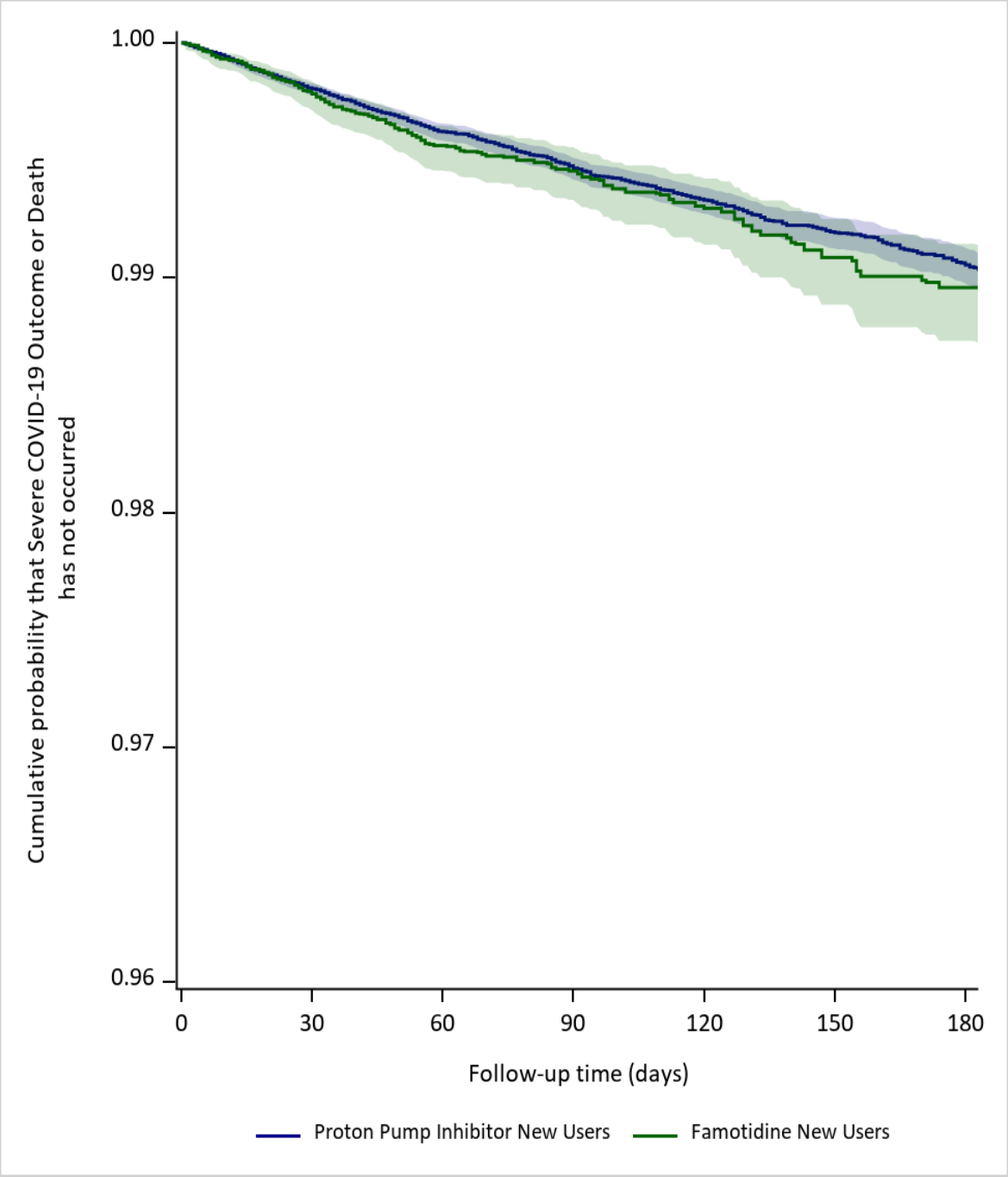


Figure 20g. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

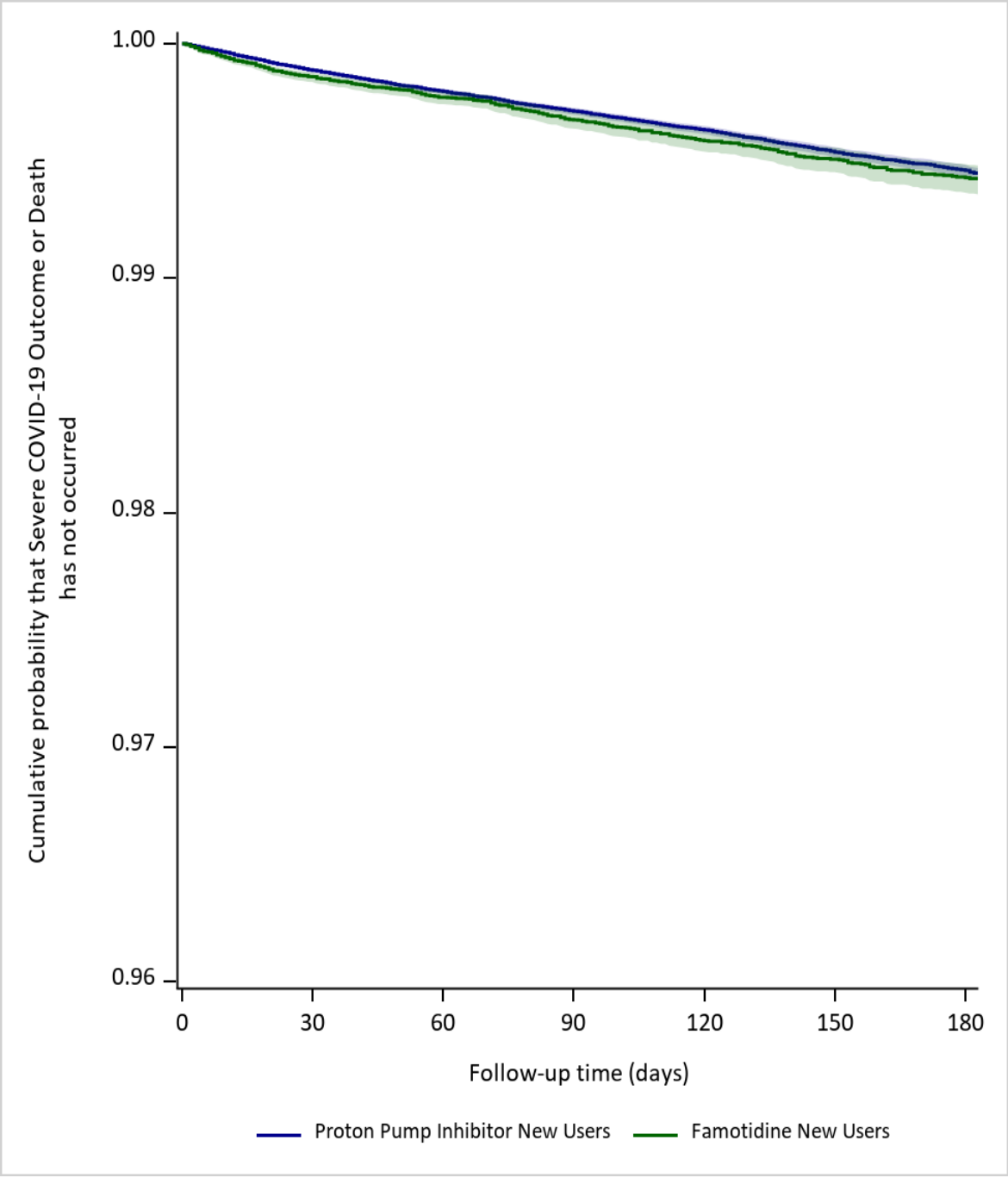


Figure 20h. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: 65-74 years

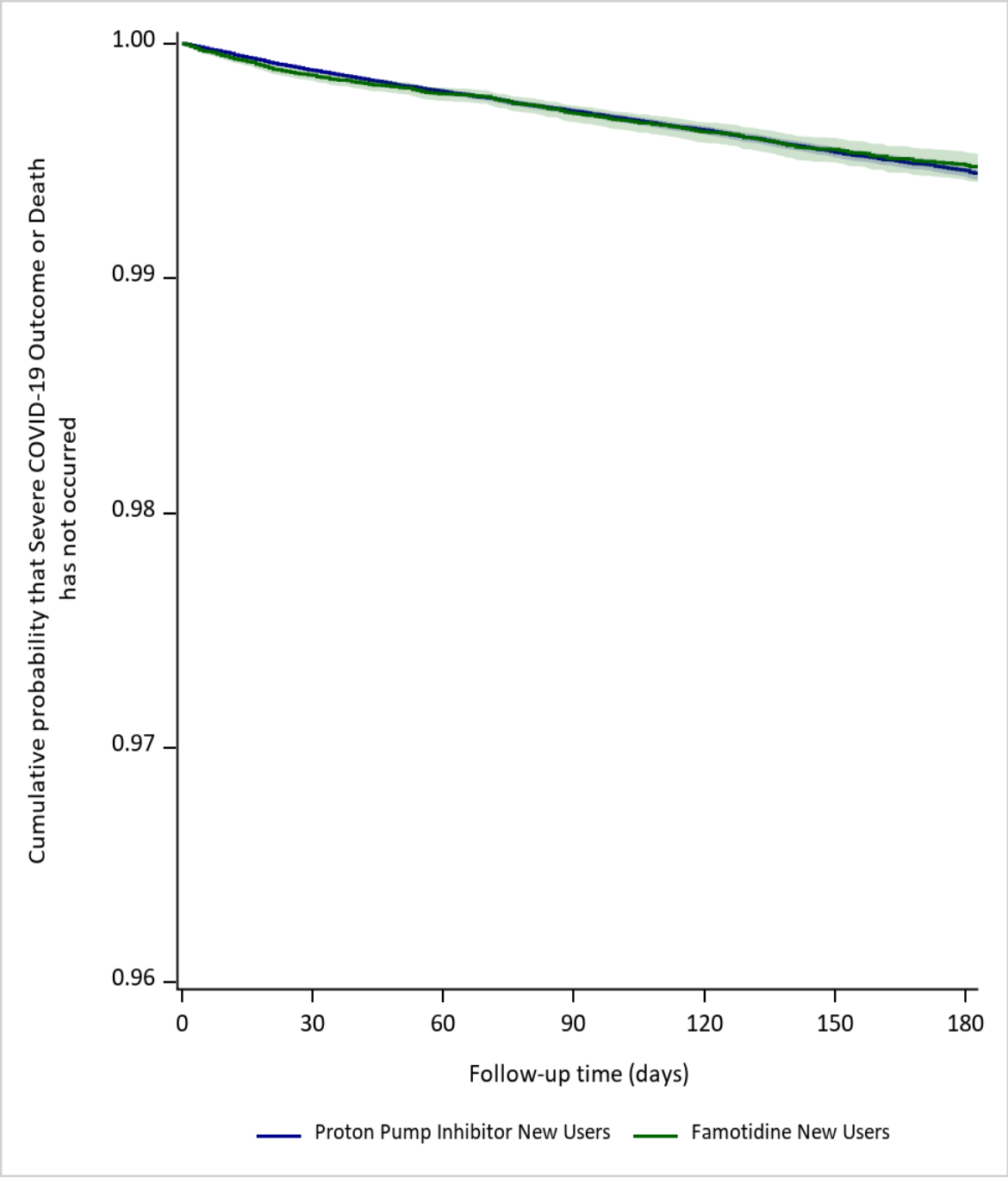


Figure 20i. Unadjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Whole Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years

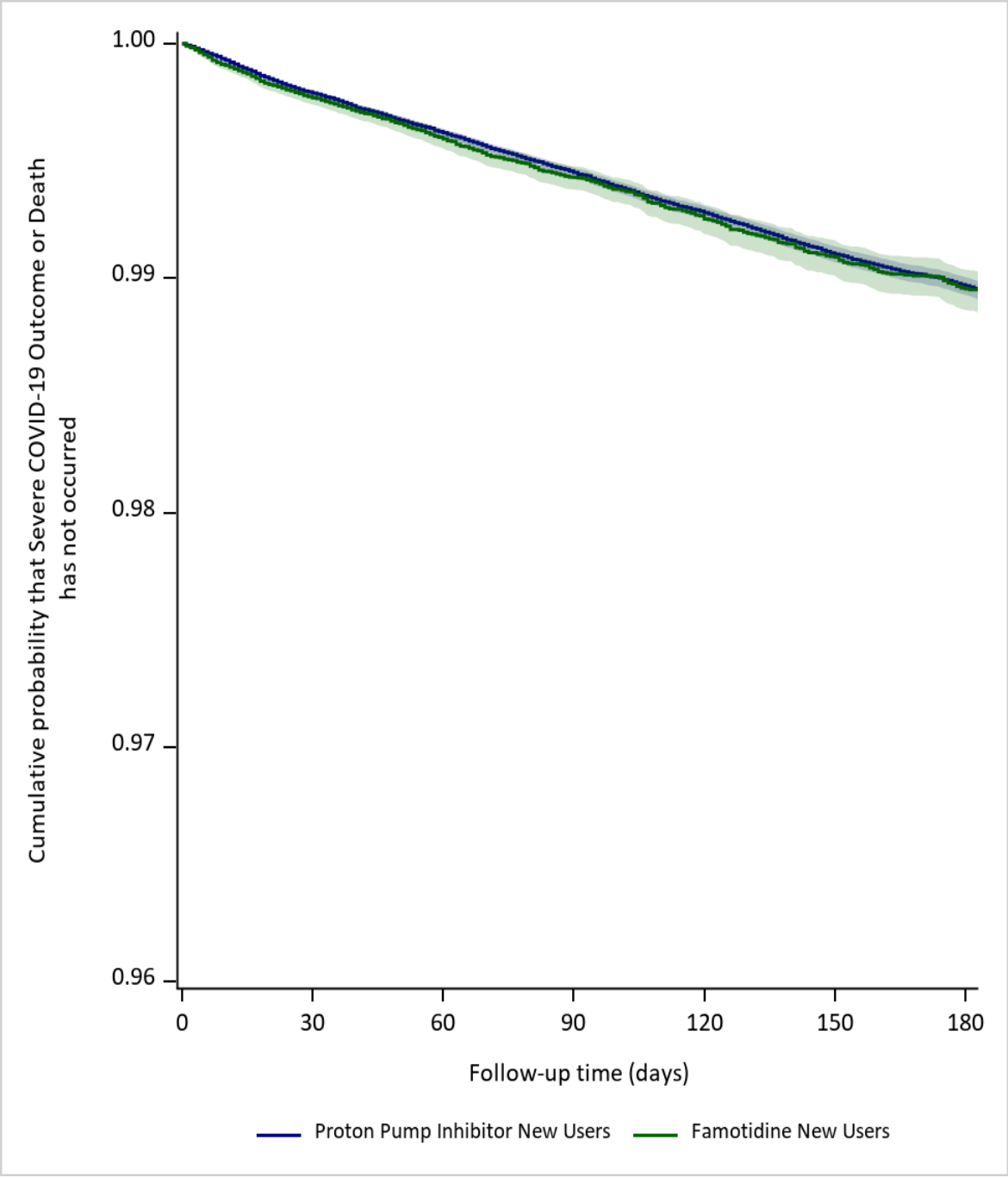
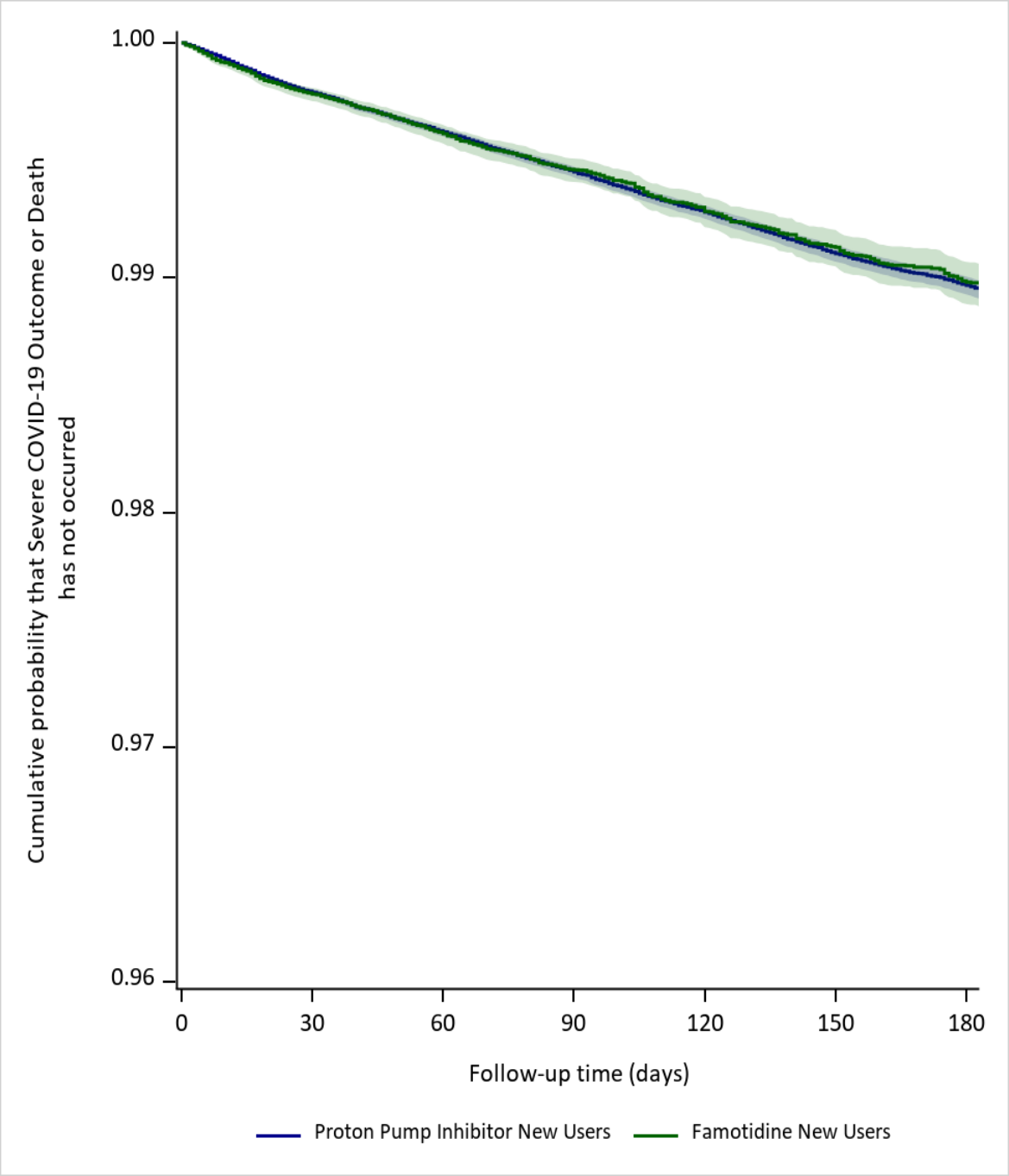


Figure 20j. Adjusted Kaplan-Meier Estimate and 95% Confidence Interval of Severe COVID-19 Outcome or Death Not Occurring among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation from the Weighted Population in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, Age Group: ≥ 75 years



Appendix A. Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date

Masked DP ID	DP Start Date	DP End Date[1]
DP01	01/01/2010	06/30/2023

[1]End Date represents the earliest of: (1) query end date, or (2) last day of the most recent month for which all of a Data Partner's data tables (enrollment, dispensing, etc.) have at least 80% of the record count relative to the prior month.

Appendix B. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.057
DP01	K92	DX	10	Often	0.051
DP01	99308	PX	CPT	Any	0.049
DP01	99309	PX	CPT	Any	0.045
DP01	99308	PX	CPT	Often	0.038
DP01	D62	DX	10	Any	0.034
DP01	99309	PX	CPT	Often	0.033
DP01	D50	DX	10	Any	0.032
DP01	99223	PX	CPT	Any	0.031
DP01	K92	DX	10	Frequent	0.031
DP01	99222	PX	CPT	Any	0.031
DP01	731	PX	CPT	Any	0.030
DP01	D64	DX	10	Often	0.030
DP01	F03	DX	10	Any	0.029
DP01	99232	PX	CPT	Any	0.029
DP01	G0471	PX	HCPCS	Any	0.027
DP01	30233N1	PX	10	Any	0.027
DP01	D50	DX	10	Often	0.026
DP01	D64	DX	10	Any	0.026
DP01	D64	DX	10	Frequent	0.026
DP01	R26	DX	10	Any	0.025
DP01	99285	PX	CPT	Any	0.025
DP01	99307	PX	CPT	Any	0.025
DP01	P9603	PX	HCPCS	Any	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	A0428	PX	HCPCS	Any	0.024
DP01	99233	PX	CPT	Any	0.024
DP01	F03	DX	10	Often	0.024
DP01	D62	DX	10	Often	0.024
DP01	93010	PX	CPT	Any	0.023
DP01	R41	DX	10	Any	0.023
DP01	B35	DX	10	Any	0.023
DP01	N18	DX	10	Any	0.022
DP01	Q0092	PX	HCPCS	Any	0.021
DP01	R41	DX	10	Often	0.021
DP01	99308	PX	CPT	Frequent	0.021

Appendix B. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	M62	DX	10	Any	0.021
DP01	R11	DX	10	Any	0.021
DP01	M62	DX	10	Often	0.020
DP01	99223	PX	CPT	Often	0.020
DP01	R26	DX	10	Often	0.019
DP01	K21	DX	10	Any	0.019
DP01	G0471	PX	HCPCS	Often	0.019
DP01	0DJ08ZZ	PX	10	Any	0.019
DP01	99222	PX	CPT	Frequent	0.019
DP01	11721	PX	CPT	Any	0.019
DP01	Z79	DX	10	Any	0.018
DP01	93010	PX	CPT	Frequent	0.018
DP01	R41	DX	10	Frequent	0.018
DP01	Z79	DX	10	Often	0.018
DP01	99309	PX	CPT	Frequent	0.018
DP01	R27	DX	10	Any	0.018
DP01	M62	DX	10	Frequent	0.017
DP01	71045	PX	CPT	Any	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	N17	DX	10	Any	0.017
DP01	G93	DX	10	Any	0.017
DP01	R10	DX	10	Any	0.017
DP01	R11	DX	10	Often	0.017
DP01	K29	DX	10	Any	0.016
DP01	99306	PX	CPT	Any	0.016
DP01	F02	DX	10	Any	0.016
DP01	I69	DX	10	Any	0.016
DP01	R13	DX	10	Any	0.016
DP01	F03	DX	10	Frequent	0.016
DP01	P9603	PX	HCPCS	Often	0.016
DP01	99307	PX	CPT	Often	0.015
DP01	D50	DX	10	Frequent	0.015
DP01	R26	DX	10	Frequent	0.015
DP01	Z74	DX	10	Frequent	0.015
DP01	99305	PX	CPT	Any	0.015
DP01	D62	DX	10	Frequent	0.015

Appendix B. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	74177	PX	CPT	Any	0.015
DP01	Z79	DX	10	Frequent	0.015
DP01	R0070	PX	HCPCS	Any	0.015
DP01	43235	PX	CPT	Any	0.015
DP01	R06	DX	10	Any	0.015
DP01	99310	PX	CPT	Any	0.015
DP01	Z87	DX	10	Any	0.015
DP01	Z74	DX	10	Any	0.015
DP01	K21	DX	10	Often	0.014
DP01	74176	PX	CPT	Any	0.014
DP01	G93	DX	10	Often	0.014
DP01	99285	PX	CPT	Often	0.014
DP01	99291	PX	CPT	Any	0.014
DP01	N18	DX	10	Often	0.014
DP01	R27	DX	10	Often	0.013
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.013
DP01	I69	DX	10	Often	0.013
DP01	K31	DX	10	Any	0.013
DP01	A0428	PX	HCPCS	Frequent	0.013
DP01	97535	PX	CPT	Frequent	0.013
DP01	97535	PX	CPT	Often	0.013
DP01	K25	DX	10	Any	0.013
DP01	K29	DX	10	Often	0.013
DP01	83970	PX	CPT	Any	0.012
DP01	R11	DX	10	Frequent	0.012
DP01	R10	DX	10	Often	0.012
DP01	N17	DX	10	Often	0.012
DP01	A0425	PX	HCPCS	Frequent	0.012

Appendix C. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99309	PX	CPT	Any	0.052
DP01	K31	DX	10	Any	0.051
DP01	99308	PX	CPT	Any	0.044
DP01	K31	DX	10	Often	0.036
DP01	731	PX	CPT	Any	0.034
DP01	Z94	DX	10	Any	0.031
DP01	88305	PX	CPT	Any	0.030
DP01	99309	PX	CPT	Often	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	R11	DX	10	Often	0.030
DP01	K92	DX	10	Often	0.030
DP01	A0428	PX	HCPCS	Any	0.030
DP01	G0471	PX	HCPCS	Any	0.030
DP01	R11	DX	10	Any	0.028
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.027
DP01	C58	RX	CLASS	Any	0.027
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.027
DP01	K92	DX	10	Any	0.027
DP01	R11	DX	10	Frequent	0.026
DP01	99308	PX	CPT	Often	0.026
DP01	Z74	DX	10	Any	0.026
DP01	N18	DX	10	Any	0.025
DP01	Z93	DX	10	Any	0.025
DP01	I10	DX	10	Any	0.025
DP01	Z99	DX	10	Any	0.025
DP01	Z20	DX	10	Frequent	0.025
DP01	K29	DX	10	Any	0.024
DP01	74176	PX	CPT	Any	0.024
DP01	R10	DX	10	Often	0.024
DP01	84100	PX	CPT	Any	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	A0425	PX	HCPCS	Any	0.023
DP01	P9603	PX	HCPCS	Any	0.023
DP01	K31	DX	10	Frequent	0.023
DP01	A0428	PX	HCPCS	Frequent	0.022
DP01	L89	DX	10	Any	0.022

Appendix C. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	G0471	PX	HCPCS	Often	0.022
DP01	A0429	PX	HCPCS	Any	0.022
DP01	R10	DX	10	Any	0.022
DP01	74177	PX	CPT	Any	0.021
DP01	K92	DX	10	Frequent	0.021
DP01	Z23	DX	10	Frequent	0.021
DP01	5A1D70Z	PX	10	Often	0.021
DP01	Z94	DX	10	Often	0.021
DP01	R10	DX	10	Frequent	0.021
DP01	R19	DX	10	Any	0.020
DP01	87340	PX	CPT	Any	0.020
DP01	84100	PX	CPT	Often	0.020
DP01	90935	PX	CPT	Any	0.020
DP01	Z74	DX	10	Frequent	0.020
DP01	I10	DX	10	Often	0.020
DP01	E11	DX	10	Any	0.019
DP01	Z99	DX	10	Often	0.019
DP01	83735	PX	CPT	Frequent	0.019
DP01	D64	DX	10	Often	0.019
DP01	G89	DX	10	Any	0.019
DP01	D50	DX	10	Any	0.018
DP01	Q0092	PX	HCPCS	Any	0.018
DP01	G40	DX	10	Often	0.018
DP01	J96	DX	10	Frequent	0.018
DP01	99223	PX	CPT	Frequent	0.018
DP01	E11	DX	10	Often	0.018
DP01	43239	PX	CPT	Any	0.018
DP01	D64	DX	10	Frequent	0.018
DP01	I50	DX	10	Any	0.018
DP01	G40	DX	10	Frequent	0.018
DP01	96376	PX	CPT	Any	0.018
DP01	E87	DX	10	Often	0.018
DP01	Z20	DX	10	Often	0.018
DP01	Z23	DX	10	Any	0.017
DP01	87086	PX	CPT	Frequent	0.017
DP01	N17	DX	10	Any	0.017

Appendix C. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Often	0.017
DP01	K20	DX	10	Any	0.017
DP01	0TY00Z0	PX	10	Any	0.017
DP01	85025	PX	CPT	Frequent	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	3E0G76Z	PX	10	Any	0.017
DP01	90935	PX	CPT	Often	0.017
DP01	J2405	PX	HCPCS	Any	0.017
DP01	30233N1	PX	10	Any	0.017
DP01	G89	DX	10	Often	0.017
DP01	G40	DX	10	Any	0.017
DP01	F79	DX	10	Any	0.016
DP01	T86	DX	10	Any	0.016
DP01	C58	RX	CLASS	Often	0.016
DP01	I16	DX	10	Often	0.016
DP01	I25	DX	10	Any	0.016
DP01	71045	PX	CPT	Frequent	0.016
DP01	Q9967	PX	HCPCS	Any	0.016
DP01	88312	PX	CPT	Any	0.016
DP01	K21	DX	10	Frequent	0.016
DP01	Z90	DX	10	Any	0.016
DP01	99222	PX	CPT	Any	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	93306	PX	CPT	Any	0.016
DP01	Z93	DX	10	Often	0.015
DP01	0DB58ZX	PX	10	Any	0.015
DP01	D84	DX	10	Any	0.015
DP01	99306	PX	CPT	Any	0.015

Appendix D. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99308	PX	CPT	Any	0.074
DP01	99309	PX	CPT	Any	0.073
DP01	K92	DX	10	Any	0.056
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.048
DP01	G0471	PX	HCPCS	Any	0.045
DP01	99309	PX	CPT	Often	0.044
DP01	A0428	PX	HCPCS	Any	0.044
DP01	99307	PX	CPT	Any	0.042
DP01	N18	DX	10	Any	0.040
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.038
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.037
DP01	M62	DX	10	Often	0.034
DP01	R26	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.032
DP01	A0428	PX	HCPCS	Frequent	0.031
DP01	B35	DX	10	Any	0.031
DP01	D62	DX	10	Any	0.031
DP01	99309	PX	CPT	Frequent	0.030
DP01	K92	DX	10	Frequent	0.030
DP01	Z74	DX	10	Frequent	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	Z74	DX	10	Often	0.030
DP01	R11	DX	10	Any	0.030
DP01	P9603	PX	HCPCS	Any	0.030
DP01	99306	PX	CPT	Any	0.029
DP01	M62	DX	10	Frequent	0.028
DP01	99305	PX	CPT	Any	0.028
DP01	99310	PX	CPT	Any	0.027
DP01	R11	DX	10	Often	0.027
DP01	M62	DX	10	Any	0.027
DP01	G0471	PX	HCPCS	Often	0.027
DP01	R10	DX	10	Any	0.027
DP01	K31	DX	10	Any	0.027
DP01	99307	PX	CPT	Often	0.027
DP01	R26	DX	10	Often	0.026

Appendix D. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K29	DX	10	Any	0.026
DP01	A0425	PX	HCPCS	Often	0.026
DP01	R11	DX	10	Frequent	0.025
DP01	R27	DX	10	Any	0.025
DP01	R41	DX	10	Often	0.025
DP01	0DB68ZX	PX	10	Any	0.025
DP01	R41	DX	10	Any	0.024
DP01	J96	DX	10	Often	0.024
DP01	J96	DX	10	Frequent	0.024
DP01	Z74	DX	10	Any	0.023
DP01	R41	DX	10	Frequent	0.023
DP01	30233N1	PX	10	Any	0.023
DP01	R10	DX	10	Often	0.023
DP01	I69	DX	10	Any	0.022
DP01	Q0092	PX	HCPCS	Any	0.022
DP01	R26	DX	10	Frequent	0.022
DP01	99308	PX	CPT	Frequent	0.022
DP01	G93	DX	10	Any	0.022
DP01	L89	DX	10	Any	0.022
DP01	I12	DX	10	Any	0.022
DP01	G93	DX	10	Often	0.022
DP01	0DJ08ZZ	PX	10	Any	0.021
DP01	R27	DX	10	Often	0.021
DP01	N18	DX	10	Often	0.021
DP01	11721	PX	CPT	Any	0.020
DP01	Z99	DX	10	Often	0.020
DP01	74177	PX	CPT	Any	0.020
DP01	99310	PX	CPT	Often	0.020
DP01	Z99	DX	10	Any	0.020
DP01	Z94	DX	10	Any	0.020
DP01	N18	DX	10	Frequent	0.020
DP01	99232	PX	CPT	Frequent	0.019
DP01	74176	PX	CPT	Any	0.019
DP01	I69	DX	10	Often	0.019
DP01	J96	DX	10	Any	0.019
DP01	P9603	PX	HCPCS	Often	0.019

Appendix D. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99307	PX	CPT	Frequent	0.018
DP01	D62	DX	10	Often	0.018
DP01	D64	DX	10	Often	0.018
DP01	G40	DX	10	Any	0.018
DP01	97535	PX	CPT	Often	0.018
DP01	83970	PX	CPT	Any	0.018
DP01	71045	PX	CPT	Frequent	0.018
DP01	84100	PX	CPT	Any	0.018
DP01	D63	DX	10	Any	0.017
DP01	N25	DX	10	Any	0.017
DP01	G40	DX	10	Frequent	0.017
DP01	G40	DX	10	Often	0.017
DP01	R27	DX	10	Frequent	0.017
DP01	K29	DX	10	Often	0.017
DP01	R18	DX	10	Any	0.017
DP01	97535	PX	CPT	Any	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	P9604	PX	HCPCS	Any	0.016
DP01	97530	PX	CPT	Any	0.016
DP01	99285	PX	CPT	Any	0.016
DP01	D64	DX	10	Frequent	0.016
DP01	99306	PX	CPT	Frequent	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	R0070	PX	HCPCS	Any	0.016
DP01	Z20	DX	10	Frequent	0.016
DP01	Z99	DX	10	Frequent	0.016
DP01	D50	DX	10	Any	0.016
DP01	A0429	PX	HCPCS	Any	0.016

Appendix E. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.054
DP01	99308	PX	CPT	Any	0.053
DP01	99309	PX	CPT	Any	0.051
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.044
DP01	99309	PX	CPT	Often	0.039
DP01	K92	DX	10	Frequent	0.033
DP01	A0428	PX	HCPCS	Any	0.032
DP01	N18	DX	10	Any	0.030
DP01	D50	DX	10	Any	0.029
DP01	G0471	PX	HCPCS	Any	0.029
DP01	D50	DX	10	Often	0.029
DP01	N18	DX	10	Often	0.029
DP01	D64	DX	10	Often	0.028
DP01	D62	DX	10	Any	0.027
DP01	P9603	PX	HCPCS	Any	0.026
DP01	731	PX	CPT	Any	0.026
DP01	F03	DX	10	Any	0.025
DP01	D64	DX	10	Any	0.025
DP01	Q0092	PX	HCPCS	Any	0.024
DP01	R41	DX	10	Any	0.024
DP01	99308	PX	CPT	Frequent	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	G93	DX	10	Any	0.023
DP01	D64	DX	10	Frequent	0.023
DP01	R41	DX	10	Often	0.023
DP01	R26	DX	10	Any	0.023
DP01	99285	PX	CPT	Any	0.023
DP01	F03	DX	10	Often	0.023
DP01	30233N1	PX	10	Any	0.022
DP01	99222	PX	CPT	Any	0.022
DP01	D62	DX	10	Often	0.022
DP01	99306	PX	CPT	Any	0.021
DP01	G93	DX	10	Often	0.021
DP01	R13	DX	10	Any	0.021
DP01	I69	DX	10	Any	0.020

Appendix E. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Any	0.020
DP01	R27	DX	10	Any	0.020
DP01	G0471	PX	HCPCS	Often	0.020
DP01	99309	PX	CPT	Frequent	0.020
DP01	R11	DX	10	Any	0.020
DP01	M62	DX	10	Any	0.019
DP01	99305	PX	CPT	Any	0.019
DP01	R41	DX	10	Frequent	0.019
DP01	A0428	PX	HCPCS	Frequent	0.019
DP01	0DJ08ZZ	PX	10	Any	0.019
DP01	99232	PX	CPT	Any	0.018
DP01	99310	PX	CPT	Any	0.018
DP01	Z79	DX	10	Any	0.018
DP01	G93	DX	10	Frequent	0.018
DP01	P9603	PX	HCPCS	Often	0.017
DP01	R0070	PX	HCPCS	Any	0.017
DP01	B35	DX	10	Any	0.017
DP01	Z74	DX	10	Any	0.017
DP01	K21	DX	10	Any	0.017
DP01	93010	PX	CPT	Any	0.017
DP01	Z79	DX	10	Often	0.017
DP01	I12	DX	10	Any	0.017
DP01	I69	DX	10	Often	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	A0425	PX	HCPCS	Frequent	0.016
DP01	83970	PX	CPT	Any	0.016
DP01	11721	PX	CPT	Any	0.016
DP01	I63	DX	10	Any	0.016
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.016
DP01	M62	DX	10	Often	0.016
DP01	R27	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	43235	PX	CPT	Any	0.015
DP01	M62	DX	10	Frequent	0.015
DP01	K21	DX	10	Often	0.015
DP01	D50	DX	10	Frequent	0.015

Appendix E. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	Z74	DX	10	Frequent	0.015
DP01	R13	DX	10	Often	0.015
DP01	R10	DX	10	Any	0.015
DP01	74177	PX	CPT	Any	0.015
DP01	R11	DX	10	Often	0.015
DP01	L89	DX	10	Any	0.015
DP01	Z79	DX	10	Frequent	0.014
DP01	I48	DX	10	Often	0.014
DP01	K29	DX	10	Any	0.014
DP01	I63	DX	10	Often	0.014
DP01	99233	PX	CPT	Any	0.014
DP01	K21	DX	10	Frequent	0.013
DP01	F03	DX	10	Frequent	0.013
DP01	C58	RX	CLASS	Any	0.013
DP01	I48	DX	10	Frequent	0.013
DP01	N25	DX	10	Any	0.013
DP01	B96	DX	10	Any	0.013
DP01	N18	DX	10	Frequent	0.013
DP01	L89	DX	10	Often	0.013
DP01	R0075	PX	HCPCS	Any	0.013
DP01	R27	DX	10	Frequent	0.013
DP01	R06	DX	10	Any	0.013
DP01	G40	DX	10	Any	0.012
DP01	Z87	DX	10	Any	0.012
DP01	P9603	PX	HCPCS	Frequent	0.012
DP01	70450	PX	CPT	Any	0.012
DP01	K25	DX	10	Any	0.012
DP01	I12	DX	10	Often	0.012

Appendix F. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.056
DP01	99223	PX	CPT	Any	0.048
DP01	99232	PX	CPT	Any	0.047
DP01	K92	DX	10	Often	0.044
DP01	99222	PX	CPT	Any	0.044
DP01	99233	PX	CPT	Any	0.042
DP01	D62	DX	10	Any	0.038
DP01	93010	PX	CPT	Any	0.037
DP01	99285	PX	CPT	Any	0.036
DP01	D64	DX	10	Often	0.035
DP01	71045	PX	CPT	Any	0.034
DP01	D50	DX	10	Any	0.033
DP01	99308	PX	CPT	Any	0.032
DP01	D64	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.031
DP01	99223	PX	CPT	Often	0.030
DP01	30233N1	PX	10	Any	0.030
DP01	D50	DX	10	Often	0.029
DP01	N17	DX	10	Any	0.029
DP01	K92	DX	10	Frequent	0.028
DP01	D01_INT_UNIQ_Q4	DX	10	Q4ServiceInt	0.028
DP01	D64	DX	10	Frequent	0.028
DP01	D62	DX	10	Often	0.027
DP01	99309	PX	CPT	Any	0.027
DP01	99222	PX	CPT	Frequent	0.027
DP01	99308	PX	CPT	Often	0.026
DP01	K21	DX	10	Any	0.025
DP01	F03	DX	10	Any	0.024
DP01	Z79	DX	10	Often	0.023
DP01	99232	PX	CPT	Often	0.022
DP01	0DB68ZX	PX	10	Any	0.022
DP01	F03	DX	10	Often	0.021
DP01	A0425	PX	HCPCS	Any	0.021
DP01	99291	PX	CPT	Any	0.021
DP01	99309	PX	CPT	Often	0.021
DP01	Z79	DX	10	Any	0.020

Appendix F. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99233	PX	CPT	Often	0.020
DP01	A0427	PX	HCPCS	Any	0.020
DP01	Z87	DX	10	Any	0.019
DP01	D50	DX	10	Frequent	0.019
DP01	R11	DX	10	Any	0.019
DP01	G0471	PX	HCPCS	Any	0.019
DP01	99285	PX	CPT	Frequent	0.019
DP01	R06	DX	10	Any	0.019
DP01	Z79	DX	10	Frequent	0.018
DP01	71045	PX	CPT	Often	0.018
DP01	93010	PX	CPT	Frequent	0.018
DP01	N17	DX	10	Often	0.018
DP01	I50	DX	10	Often	0.018
DP01	0DJ08ZZ	PX	10	Any	0.018
DP01	99308	PX	CPT	Frequent	0.018
DP01	B35	DX	10	Any	0.018
DP01	P9603	PX	HCPCS	Any	0.018
DP01	99239	PX	CPT	Any	0.017
DP01	99223	PX	CPT	Frequent	0.017
DP01	I50	DX	10	Any	0.017
DP01	K29	DX	10	Any	0.017
DP01	D03_INT_UNIQ_Q4	PX	CPT	Q4ServiceInt	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	D62	DX	10	Frequent	0.017
DP01	Z87	DX	10	Often	0.017
DP01	E87	DX	10	Any	0.017
DP01	99307	PX	CPT	Any	0.017
DP01	I48	DX	10	Often	0.017
DP01	F03	DX	10	Frequent	0.016
DP01	M62	DX	10	Often	0.016
DP01	J90	DX	10	Any	0.016
DP01	99231	PX	CPT	Any	0.016
DP01	R10	DX	10	Any	0.016
DP01	74176	PX	CPT	Any	0.016
DP01	Q0092	PX	HCPCS	Any	0.016
DP01	I48	DX	10	Frequent	0.016

Appendix F. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.016
DP01	I13	DX	10	Any	0.016
DP01	R26	DX	10	Any	0.015
DP01	E87	DX	10	Often	0.015
DP01	F02	DX	10	Any	0.015
DP01	K21	DX	10	Often	0.015
DP01	R11	DX	10	Often	0.015
DP01	D04_INT_ALL_Q2	PX	10	Q2ServiceInt	0.015
DP01	E86	DX	10	Any	0.015
DP01	M62	DX	10	Any	0.015
DP01	I25	DX	10	Any	0.015
DP01	R06	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	I95	DX	10	Any	0.015
DP01	I25	DX	10	Often	0.014
DP01	I48	DX	10	Any	0.014
DP01	M62	DX	10	Frequent	0.014
DP01	93306	PX	CPT	Any	0.014
DP01	43235	PX	CPT	Any	0.014
DP01	I50	DX	10	Frequent	0.014
DP01	G0471	PX	HCPCS	Often	0.014
DP01	R13	DX	10	Any	0.014
DP01	R41	DX	10	Any	0.014
DP01	Z87	DX	10	Frequent	0.014
DP01	D05_INT_UNIQ_Q4	PX	HCPCS	Q4ServiceInt	0.013
DP01	K29	DX	10	Often	0.013
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.013
DP01	R41	DX	10	Often	0.013

Appendix G. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99309	PX	CPT	Any	0.052
DP01	K31	DX	10	Any	0.051
DP01	99308	PX	CPT	Any	0.044
DP01	K31	DX	10	Often	0.036
DP01	731	PX	CPT	Any	0.034
DP01	Z94	DX	10	Any	0.031
DP01	88305	PX	CPT	Any	0.030
DP01	99309	PX	CPT	Often	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	R11	DX	10	Often	0.030
DP01	K92	DX	10	Often	0.030
DP01	A0428	PX	HCPCS	Any	0.030
DP01	G0471	PX	HCPCS	Any	0.030
DP01	R11	DX	10	Any	0.028
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.027
DP01	C58	RX	CLASS	Any	0.027
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.027
DP01	K92	DX	10	Any	0.027
DP01	R11	DX	10	Frequent	0.026
DP01	99308	PX	CPT	Often	0.026
DP01	Z74	DX	10	Any	0.026
DP01	N18	DX	10	Any	0.025
DP01	Z93	DX	10	Any	0.025
DP01	I10	DX	10	Any	0.025
DP01	Z99	DX	10	Any	0.025
DP01	Z20	DX	10	Frequent	0.025
DP01	K29	DX	10	Any	0.024
DP01	74176	PX	CPT	Any	0.024
DP01	R10	DX	10	Often	0.024
DP01	84100	PX	CPT	Any	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	A0425	PX	HCPCS	Any	0.023
DP01	P9603	PX	HCPCS	Any	0.023
DP01	K31	DX	10	Frequent	0.023
DP01	A0428	PX	HCPCS	Frequent	0.022
DP01	L89	DX	10	Any	0.022

Appendix G. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	G0471	PX	HCPCS	Often	0.022
DP01	A0429	PX	HCPCS	Any	0.022
DP01	R10	DX	10	Any	0.022
DP01	74177	PX	CPT	Any	0.021
DP01	K92	DX	10	Frequent	0.021
DP01	Z23	DX	10	Frequent	0.021
DP01	5A1D70Z	PX	10	Often	0.021
DP01	Z94	DX	10	Often	0.021
DP01	R10	DX	10	Frequent	0.021
DP01	R19	DX	10	Any	0.020
DP01	87340	PX	CPT	Any	0.020
DP01	84100	PX	CPT	Often	0.020
DP01	90935	PX	CPT	Any	0.020
DP01	Z74	DX	10	Frequent	0.020
DP01	I10	DX	10	Often	0.020
DP01	E11	DX	10	Any	0.019
DP01	Z99	DX	10	Often	0.019
DP01	83735	PX	CPT	Frequent	0.019
DP01	D64	DX	10	Often	0.019
DP01	G89	DX	10	Any	0.019
DP01	D50	DX	10	Any	0.018
DP01	Q0092	PX	HCPCS	Any	0.018
DP01	G40	DX	10	Often	0.018
DP01	J96	DX	10	Frequent	0.018
DP01	99223	PX	CPT	Frequent	0.018
DP01	E11	DX	10	Often	0.018
DP01	43239	PX	CPT	Any	0.018
DP01	D64	DX	10	Frequent	0.018
DP01	I50	DX	10	Any	0.018
DP01	G40	DX	10	Frequent	0.018
DP01	96376	PX	CPT	Any	0.018
DP01	E87	DX	10	Often	0.018
DP01	Z20	DX	10	Often	0.018
DP01	Z23	DX	10	Any	0.017
DP01	87086	PX	CPT	Frequent	0.017
DP01	N17	DX	10	Any	0.017

Appendix G. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Often	0.017
DP01	K20	DX	10	Any	0.017
DP01	0TY00Z0	PX	10	Any	0.017
DP01	85025	PX	CPT	Frequent	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	3E0G76Z	PX	10	Any	0.017
DP01	90935	PX	CPT	Often	0.017
DP01	J2405	PX	HCPCS	Any	0.017
DP01	30233N1	PX	10	Any	0.017
DP01	G89	DX	10	Often	0.017
DP01	G40	DX	10	Any	0.017
DP01	F79	DX	10	Any	0.016
DP01	T86	DX	10	Any	0.016
DP01	C58	RX	CLASS	Often	0.016
DP01	I16	DX	10	Often	0.016
DP01	I25	DX	10	Any	0.016
DP01	71045	PX	CPT	Frequent	0.016
DP01	Q9967	PX	HCPCS	Any	0.016
DP01	88312	PX	CPT	Any	0.016
DP01	K21	DX	10	Frequent	0.016
DP01	Z90	DX	10	Any	0.016
DP01	99222	PX	CPT	Any	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	93306	PX	CPT	Any	0.016
DP01	Z93	DX	10	Often	0.015
DP01	0DB58ZX	PX	10	Any	0.015
DP01	D84	DX	10	Any	0.015
DP01	99306	PX	CPT	Any	0.015

Appendix H. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99308	PX	CPT	Any	0.074
DP01	99309	PX	CPT	Any	0.073
DP01	K92	DX	10	Any	0.056
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.048
DP01	G0471	PX	HCPCS	Any	0.045
DP01	99309	PX	CPT	Often	0.044
DP01	A0428	PX	HCPCS	Any	0.044
DP01	99307	PX	CPT	Any	0.042
DP01	N18	DX	10	Any	0.040
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.038
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.037
DP01	M62	DX	10	Often	0.034
DP01	R26	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.032
DP01	A0428	PX	HCPCS	Frequent	0.031
DP01	B35	DX	10	Any	0.031
DP01	D62	DX	10	Any	0.031
DP01	99309	PX	CPT	Frequent	0.030
DP01	K92	DX	10	Frequent	0.030
DP01	Z74	DX	10	Frequent	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	Z74	DX	10	Often	0.030
DP01	R11	DX	10	Any	0.030
DP01	P9603	PX	HCPCS	Any	0.030
DP01	99306	PX	CPT	Any	0.029
DP01	M62	DX	10	Frequent	0.028
DP01	99305	PX	CPT	Any	0.028
DP01	99310	PX	CPT	Any	0.027
DP01	R11	DX	10	Often	0.027
DP01	M62	DX	10	Any	0.027
DP01	G0471	PX	HCPCS	Often	0.027
DP01	R10	DX	10	Any	0.027
DP01	K31	DX	10	Any	0.027
DP01	99307	PX	CPT	Often	0.027
DP01	R26	DX	10	Often	0.026

Appendix H. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K29	DX	10	Any	0.026
DP01	A0425	PX	HCPCS	Often	0.026
DP01	R11	DX	10	Frequent	0.025
DP01	R27	DX	10	Any	0.025
DP01	R41	DX	10	Often	0.025
DP01	0DB68ZX	PX	10	Any	0.025
DP01	R41	DX	10	Any	0.024
DP01	J96	DX	10	Often	0.024
DP01	J96	DX	10	Frequent	0.024
DP01	Z74	DX	10	Any	0.023
DP01	R41	DX	10	Frequent	0.023
DP01	30233N1	PX	10	Any	0.023
DP01	R10	DX	10	Often	0.023
DP01	I69	DX	10	Any	0.022
DP01	Q0092	PX	HCPCS	Any	0.022
DP01	R26	DX	10	Frequent	0.022
DP01	99308	PX	CPT	Frequent	0.022
DP01	G93	DX	10	Any	0.022
DP01	L89	DX	10	Any	0.022
DP01	I12	DX	10	Any	0.022
DP01	G93	DX	10	Often	0.022
DP01	0DJ08ZZ	PX	10	Any	0.021
DP01	R27	DX	10	Often	0.021
DP01	N18	DX	10	Often	0.021
DP01	11721	PX	CPT	Any	0.020
DP01	Z99	DX	10	Often	0.020
DP01	74177	PX	CPT	Any	0.020
DP01	99310	PX	CPT	Often	0.020
DP01	Z99	DX	10	Any	0.020
DP01	Z94	DX	10	Any	0.020
DP01	N18	DX	10	Frequent	0.020
DP01	99232	PX	CPT	Frequent	0.019
DP01	74176	PX	CPT	Any	0.019
DP01	I69	DX	10	Often	0.019
DP01	J96	DX	10	Any	0.019
DP01	P9603	PX	HCPCS	Often	0.019

Appendix H. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99307	PX	CPT	Frequent	0.018
DP01	D62	DX	10	Often	0.018
DP01	D64	DX	10	Often	0.018
DP01	G40	DX	10	Any	0.018
DP01	97535	PX	CPT	Often	0.018
DP01	83970	PX	CPT	Any	0.018
DP01	71045	PX	CPT	Frequent	0.018
DP01	84100	PX	CPT	Any	0.018
DP01	D63	DX	10	Any	0.017
DP01	N25	DX	10	Any	0.017
DP01	G40	DX	10	Frequent	0.017
DP01	G40	DX	10	Often	0.017
DP01	R27	DX	10	Frequent	0.017
DP01	K29	DX	10	Often	0.017
DP01	R18	DX	10	Any	0.017
DP01	97535	PX	CPT	Any	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	P9604	PX	HCPCS	Any	0.016
DP01	97530	PX	CPT	Any	0.016
DP01	99285	PX	CPT	Any	0.016
DP01	D64	DX	10	Frequent	0.016
DP01	99306	PX	CPT	Frequent	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	R0070	PX	HCPCS	Any	0.016
DP01	Z20	DX	10	Frequent	0.016
DP01	Z99	DX	10	Frequent	0.016
DP01	D50	DX	10	Any	0.016
DP01	A0429	PX	HCPCS	Any	0.016

Appendix I. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.054
DP01	99308	PX	CPT	Any	0.053
DP01	99309	PX	CPT	Any	0.051
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.044
DP01	99309	PX	CPT	Often	0.039
DP01	K92	DX	10	Frequent	0.033
DP01	A0428	PX	HCPCS	Any	0.032
DP01	N18	DX	10	Any	0.030
DP01	D50	DX	10	Any	0.029
DP01	G0471	PX	HCPCS	Any	0.029
DP01	D50	DX	10	Often	0.029
DP01	N18	DX	10	Often	0.029
DP01	D64	DX	10	Often	0.028
DP01	D62	DX	10	Any	0.027
DP01	P9603	PX	HCPCS	Any	0.026
DP01	731	PX	CPT	Any	0.026
DP01	F03	DX	10	Any	0.025
DP01	D64	DX	10	Any	0.025
DP01	Q0092	PX	HCPCS	Any	0.024
DP01	R41	DX	10	Any	0.024
DP01	99308	PX	CPT	Frequent	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	G93	DX	10	Any	0.023
DP01	D64	DX	10	Frequent	0.023
DP01	R41	DX	10	Often	0.023
DP01	R26	DX	10	Any	0.023
DP01	99285	PX	CPT	Any	0.023
DP01	F03	DX	10	Often	0.023
DP01	30233N1	PX	10	Any	0.022
DP01	99222	PX	CPT	Any	0.022
DP01	D62	DX	10	Often	0.022
DP01	99306	PX	CPT	Any	0.021
DP01	G93	DX	10	Often	0.021
DP01	R13	DX	10	Any	0.021
DP01	I69	DX	10	Any	0.020

Appendix I. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Any	0.020
DP01	R27	DX	10	Any	0.020
DP01	G0471	PX	HCPCS	Often	0.020
DP01	99309	PX	CPT	Frequent	0.020
DP01	R11	DX	10	Any	0.020
DP01	M62	DX	10	Any	0.019
DP01	99305	PX	CPT	Any	0.019
DP01	R41	DX	10	Frequent	0.019
DP01	A0428	PX	HCPCS	Frequent	0.019
DP01	0DJ08ZZ	PX	10	Any	0.019
DP01	99232	PX	CPT	Any	0.018
DP01	99310	PX	CPT	Any	0.018
DP01	Z79	DX	10	Any	0.018
DP01	G93	DX	10	Frequent	0.018
DP01	P9603	PX	HCPCS	Often	0.017
DP01	R0070	PX	HCPCS	Any	0.017
DP01	B35	DX	10	Any	0.017
DP01	Z74	DX	10	Any	0.017
DP01	K21	DX	10	Any	0.017
DP01	93010	PX	CPT	Any	0.017
DP01	Z79	DX	10	Often	0.017
DP01	I12	DX	10	Any	0.017
DP01	I69	DX	10	Often	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	A0425	PX	HCPCS	Frequent	0.016
DP01	83970	PX	CPT	Any	0.016
DP01	11721	PX	CPT	Any	0.016
DP01	I63	DX	10	Any	0.016
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.016
DP01	M62	DX	10	Often	0.016
DP01	R27	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	43235	PX	CPT	Any	0.015
DP01	M62	DX	10	Frequent	0.015
DP01	K21	DX	10	Often	0.015
DP01	D50	DX	10	Frequent	0.015

Appendix I. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	Z74	DX	10	Frequent	0.015
DP01	R13	DX	10	Often	0.015
DP01	R10	DX	10	Any	0.015
DP01	74177	PX	CPT	Any	0.015
DP01	R11	DX	10	Often	0.015
DP01	L89	DX	10	Any	0.015
DP01	Z79	DX	10	Frequent	0.014
DP01	I48	DX	10	Often	0.014
DP01	K29	DX	10	Any	0.014
DP01	I63	DX	10	Often	0.014
DP01	99233	PX	CPT	Any	0.014
DP01	K21	DX	10	Frequent	0.013
DP01	F03	DX	10	Frequent	0.013
DP01	C58	RX	CLASS	Any	0.013
DP01	I48	DX	10	Frequent	0.013
DP01	N25	DX	10	Any	0.013
DP01	B96	DX	10	Any	0.013
DP01	N18	DX	10	Frequent	0.013
DP01	L89	DX	10	Often	0.013
DP01	R0075	PX	HCPCS	Any	0.013
DP01	R27	DX	10	Frequent	0.013
DP01	R06	DX	10	Any	0.013
DP01	G40	DX	10	Any	0.012
DP01	Z87	DX	10	Any	0.012
DP01	P9603	PX	HCPCS	Frequent	0.012
DP01	70450	PX	CPT	Any	0.012
DP01	K25	DX	10	Any	0.012
DP01	I12	DX	10	Often	0.012

Appendix J. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.056
DP01	99223	PX	CPT	Any	0.048
DP01	99232	PX	CPT	Any	0.047
DP01	K92	DX	10	Often	0.044
DP01	99222	PX	CPT	Any	0.044
DP01	99233	PX	CPT	Any	0.042
DP01	D62	DX	10	Any	0.038
DP01	93010	PX	CPT	Any	0.037
DP01	99285	PX	CPT	Any	0.036
DP01	D64	DX	10	Often	0.035
DP01	71045	PX	CPT	Any	0.034
DP01	D50	DX	10	Any	0.033
DP01	99308	PX	CPT	Any	0.032
DP01	D64	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.031
DP01	99223	PX	CPT	Often	0.030
DP01	30233N1	PX	10	Any	0.030
DP01	D50	DX	10	Often	0.029
DP01	N17	DX	10	Any	0.029
DP01	K92	DX	10	Frequent	0.028
DP01	D01_INT_UNIQ_Q4	DX	10	Q4ServiceInt	0.028
DP01	D64	DX	10	Frequent	0.028
DP01	D62	DX	10	Often	0.027
DP01	99309	PX	CPT	Any	0.027
DP01	99222	PX	CPT	Frequent	0.027
DP01	99308	PX	CPT	Often	0.026
DP01	K21	DX	10	Any	0.025
DP01	F03	DX	10	Any	0.024
DP01	Z79	DX	10	Often	0.023
DP01	99232	PX	CPT	Often	0.022
DP01	0DB68ZX	PX	10	Any	0.022
DP01	F03	DX	10	Often	0.021
DP01	A0425	PX	HCPCS	Any	0.021
DP01	99291	PX	CPT	Any	0.021
DP01	99309	PX	CPT	Often	0.021
DP01	Z79	DX	10	Any	0.020

Appendix J. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99233	PX	CPT	Often	0.020
DP01	A0427	PX	HCPCS	Any	0.020
DP01	Z87	DX	10	Any	0.019
DP01	D50	DX	10	Frequent	0.019
DP01	R11	DX	10	Any	0.019
DP01	G0471	PX	HCPCS	Any	0.019
DP01	99285	PX	CPT	Frequent	0.019
DP01	R06	DX	10	Any	0.019
DP01	Z79	DX	10	Frequent	0.018
DP01	71045	PX	CPT	Often	0.018
DP01	93010	PX	CPT	Frequent	0.018
DP01	N17	DX	10	Often	0.018
DP01	I50	DX	10	Often	0.018
DP01	0DJ08ZZ	PX	10	Any	0.018
DP01	99308	PX	CPT	Frequent	0.018
DP01	B35	DX	10	Any	0.018
DP01	P9603	PX	HCPCS	Any	0.018
DP01	99239	PX	CPT	Any	0.017
DP01	99223	PX	CPT	Frequent	0.017
DP01	I50	DX	10	Any	0.017
DP01	K29	DX	10	Any	0.017
DP01	D03_INT_UNIQ_Q4	PX	CPT	Q4ServiceInt	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	D62	DX	10	Frequent	0.017
DP01	Z87	DX	10	Often	0.017
DP01	E87	DX	10	Any	0.017
DP01	99307	PX	CPT	Any	0.017
DP01	I48	DX	10	Often	0.017
DP01	F03	DX	10	Frequent	0.016
DP01	M62	DX	10	Often	0.016
DP01	J90	DX	10	Any	0.016
DP01	99231	PX	CPT	Any	0.016
DP01	R10	DX	10	Any	0.016
DP01	74176	PX	CPT	Any	0.016
DP01	Q0092	PX	HCPCS	Any	0.016
DP01	I48	DX	10	Frequent	0.016

Appendix J. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.016
DP01	I13	DX	10	Any	0.016
DP01	R26	DX	10	Any	0.015
DP01	E87	DX	10	Often	0.015
DP01	F02	DX	10	Any	0.015
DP01	K21	DX	10	Often	0.015
DP01	R11	DX	10	Often	0.015
DP01	D04_INT_ALL_Q2	PX	10	Q2ServiceInt	0.015
DP01	E86	DX	10	Any	0.015
DP01	M62	DX	10	Any	0.015
DP01	I25	DX	10	Any	0.015
DP01	R06	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	I95	DX	10	Any	0.015
DP01	I25	DX	10	Often	0.014
DP01	I48	DX	10	Any	0.014
DP01	M62	DX	10	Frequent	0.014
DP01	93306	PX	CPT	Any	0.014
DP01	43235	PX	CPT	Any	0.014
DP01	I50	DX	10	Frequent	0.014
DP01	G0471	PX	HCPCS	Often	0.014
DP01	R13	DX	10	Any	0.014
DP01	R41	DX	10	Any	0.014
DP01	Z87	DX	10	Frequent	0.014
DP01	D05_INT_UNIQ_Q4	PX	HCPCS	Q4ServiceInt	0.013
DP01	K29	DX	10	Often	0.013
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.013
DP01	R41	DX	10	Often	0.013

Appendix K. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99309	PX	CPT	Any	0.052
DP01	K31	DX	10	Any	0.051
DP01	99308	PX	CPT	Any	0.044
DP01	K31	DX	10	Often	0.036
DP01	731	PX	CPT	Any	0.034
DP01	Z94	DX	10	Any	0.031
DP01	88305	PX	CPT	Any	0.030
DP01	99309	PX	CPT	Often	0.030
DP01	R11	DX	10	Often	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	K92	DX	10	Often	0.030
DP01	G0471	PX	HCPCS	Any	0.030
DP01	A0428	PX	HCPCS	Any	0.030
DP01	R11	DX	10	Any	0.028
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.027
DP01	C58	RX	CLASS	Any	0.027
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.027
DP01	K92	DX	10	Any	0.027
DP01	R11	DX	10	Frequent	0.026
DP01	99308	PX	CPT	Often	0.026
DP01	Z74	DX	10	Any	0.026
DP01	N18	DX	10	Any	0.025
DP01	Z93	DX	10	Any	0.025
DP01	I10	DX	10	Any	0.025
DP01	Z99	DX	10	Any	0.025
DP01	Z20	DX	10	Frequent	0.025
DP01	K29	DX	10	Any	0.024
DP01	74176	PX	CPT	Any	0.024
DP01	R10	DX	10	Often	0.024
DP01	84100	PX	CPT	Any	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	A0425	PX	HCPCS	Any	0.023
DP01	P9603	PX	HCPCS	Any	0.023
DP01	K31	DX	10	Frequent	0.023
DP01	A0428	PX	HCPCS	Frequent	0.022
DP01	L89	DX	10	Any	0.022

Appendix K. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	A0429	PX	HCPCS	Any	0.022
DP01	G0471	PX	HCPCS	Often	0.022
DP01	R10	DX	10	Any	0.022
DP01	74177	PX	CPT	Any	0.021
DP01	K92	DX	10	Frequent	0.021
DP01	Z23	DX	10	Frequent	0.021
DP01	5A1D70Z	PX	10	Often	0.021
DP01	Z94	DX	10	Often	0.021
DP01	R10	DX	10	Frequent	0.021
DP01	R19	DX	10	Any	0.020
DP01	87340	PX	CPT	Any	0.020
DP01	84100	PX	CPT	Often	0.020
DP01	90935	PX	CPT	Any	0.020
DP01	Z74	DX	10	Frequent	0.020
DP01	I10	DX	10	Often	0.020
DP01	E11	DX	10	Any	0.019
DP01	Z99	DX	10	Often	0.019
DP01	83735	PX	CPT	Frequent	0.019
DP01	D64	DX	10	Often	0.019
DP01	D50	DX	10	Any	0.019
DP01	G89	DX	10	Any	0.019
DP01	Q0092	PX	HCPCS	Any	0.018
DP01	G40	DX	10	Often	0.018
DP01	99223	PX	CPT	Frequent	0.018
DP01	J96	DX	10	Frequent	0.018
DP01	E11	DX	10	Often	0.018
DP01	43239	PX	CPT	Any	0.018
DP01	D64	DX	10	Frequent	0.018
DP01	I50	DX	10	Any	0.018
DP01	G40	DX	10	Frequent	0.018
DP01	96376	PX	CPT	Any	0.018
DP01	E87	DX	10	Often	0.018
DP01	Z20	DX	10	Often	0.018
DP01	Z23	DX	10	Any	0.017
DP01	N17	DX	10	Any	0.017
DP01	87086	PX	CPT	Frequent	0.017

Appendix K. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Often	0.017
DP01	K20	DX	10	Any	0.017
DP01	0TY00Z0	PX	10	Any	0.017
DP01	85025	PX	CPT	Frequent	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	3E0G76Z	PX	10	Any	0.017
DP01	90935	PX	CPT	Often	0.017
DP01	J2405	PX	HCPCS	Any	0.017
DP01	30233N1	PX	10	Any	0.017
DP01	G89	DX	10	Often	0.017
DP01	G40	DX	10	Any	0.017
DP01	F79	DX	10	Any	0.016
DP01	T86	DX	10	Any	0.016
DP01	C58	RX	CLASS	Often	0.016
DP01	I25	DX	10	Any	0.016
DP01	I16	DX	10	Often	0.016
DP01	Q9967	PX	HCPCS	Any	0.016
DP01	88312	PX	CPT	Any	0.016
DP01	71045	PX	CPT	Frequent	0.016
DP01	K21	DX	10	Frequent	0.016
DP01	Z90	DX	10	Any	0.016
DP01	99222	PX	CPT	Any	0.016
DP01	93306	PX	CPT	Any	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	Z93	DX	10	Often	0.015
DP01	0DB58ZX	PX	10	Any	0.015
DP01	D84	DX	10	Any	0.015
DP01	Z98	DX	10	Any	0.015

Appendix L. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99308	PX	CPT	Any	0.074
DP01	99309	PX	CPT	Any	0.073
DP01	K92	DX	10	Any	0.056
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.048
DP01	G0471	PX	HCPCS	Any	0.045
DP01	99309	PX	CPT	Often	0.044
DP01	A0428	PX	HCPCS	Any	0.044
DP01	99307	PX	CPT	Any	0.042
DP01	N18	DX	10	Any	0.040
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.038
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.037
DP01	M62	DX	10	Often	0.034
DP01	R26	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.032
DP01	A0428	PX	HCPCS	Frequent	0.031
DP01	B35	DX	10	Any	0.031
DP01	D62	DX	10	Any	0.031
DP01	99309	PX	CPT	Frequent	0.030
DP01	K92	DX	10	Frequent	0.030
DP01	Z74	DX	10	Frequent	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	Z74	DX	10	Often	0.030
DP01	R11	DX	10	Any	0.030
DP01	P9603	PX	HCPCS	Any	0.030
DP01	99306	PX	CPT	Any	0.029
DP01	M62	DX	10	Frequent	0.028
DP01	99305	PX	CPT	Any	0.028
DP01	99310	PX	CPT	Any	0.027
DP01	R11	DX	10	Often	0.027
DP01	M62	DX	10	Any	0.027
DP01	G0471	PX	HCPCS	Often	0.027
DP01	R10	DX	10	Any	0.027
DP01	K31	DX	10	Any	0.027
DP01	99307	PX	CPT	Often	0.027
DP01	R26	DX	10	Often	0.026

Appendix L. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	A0425	PX	HCPCS	Often	0.026
DP01	K29	DX	10	Any	0.026
DP01	R11	DX	10	Frequent	0.025
DP01	R27	DX	10	Any	0.025
DP01	R41	DX	10	Often	0.025
DP01	0DB68ZX	PX	10	Any	0.025
DP01	R41	DX	10	Any	0.024
DP01	J96	DX	10	Often	0.024
DP01	J96	DX	10	Frequent	0.024
DP01	Z74	DX	10	Any	0.023
DP01	R41	DX	10	Frequent	0.023
DP01	30233N1	PX	10	Any	0.023
DP01	R10	DX	10	Often	0.023
DP01	I69	DX	10	Any	0.022
DP01	Q0092	PX	HCPCS	Any	0.022
DP01	R26	DX	10	Frequent	0.022
DP01	99308	PX	CPT	Frequent	0.022
DP01	G93	DX	10	Any	0.022
DP01	L89	DX	10	Any	0.022
DP01	I12	DX	10	Any	0.022
DP01	G93	DX	10	Often	0.022
DP01	0DJ08ZZ	PX	10	Any	0.021
DP01	R27	DX	10	Often	0.021
DP01	N18	DX	10	Often	0.021
DP01	11721	PX	CPT	Any	0.020
DP01	Z99	DX	10	Often	0.020
DP01	74177	PX	CPT	Any	0.020
DP01	99310	PX	CPT	Often	0.020
DP01	Z99	DX	10	Any	0.020
DP01	Z94	DX	10	Any	0.020
DP01	N18	DX	10	Frequent	0.020
DP01	99232	PX	CPT	Frequent	0.019
DP01	74176	PX	CPT	Any	0.019
DP01	I69	DX	10	Often	0.019
DP01	J96	DX	10	Any	0.019
DP01	P9603	PX	HCPCS	Often	0.019

Appendix L. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99307	PX	CPT	Frequent	0.018
DP01	D62	DX	10	Often	0.018
DP01	D64	DX	10	Often	0.018
DP01	G40	DX	10	Any	0.018
DP01	97535	PX	CPT	Often	0.018
DP01	71045	PX	CPT	Frequent	0.018
DP01	83970	PX	CPT	Any	0.018
DP01	84100	PX	CPT	Any	0.018
DP01	D63	DX	10	Any	0.017
DP01	N25	DX	10	Any	0.017
DP01	G40	DX	10	Frequent	0.017
DP01	G40	DX	10	Often	0.017
DP01	R27	DX	10	Frequent	0.017
DP01	K29	DX	10	Often	0.017
DP01	R18	DX	10	Any	0.017
DP01	97535	PX	CPT	Any	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	P9604	PX	HCPCS	Any	0.016
DP01	97530	PX	CPT	Any	0.016
DP01	99285	PX	CPT	Any	0.016
DP01	D64	DX	10	Frequent	0.016
DP01	99306	PX	CPT	Frequent	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	R0070	PX	HCPCS	Any	0.016
DP01	Z20	DX	10	Frequent	0.016
DP01	A0429	PX	HCPCS	Any	0.016
DP01	D50	DX	10	Any	0.016
DP01	Z99	DX	10	Frequent	0.016

Appendix M. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.054
DP01	99308	PX	CPT	Any	0.053
DP01	99309	PX	CPT	Any	0.051
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.044
DP01	99309	PX	CPT	Often	0.039
DP01	K92	DX	10	Frequent	0.033
DP01	A0428	PX	HCPCS	Any	0.032
DP01	N18	DX	10	Any	0.030
DP01	D50	DX	10	Any	0.030
DP01	G0471	PX	HCPCS	Any	0.029
DP01	D50	DX	10	Often	0.029
DP01	N18	DX	10	Often	0.029
DP01	D64	DX	10	Often	0.028
DP01	D62	DX	10	Any	0.028
DP01	P9603	PX	HCPCS	Any	0.026
DP01	731	PX	CPT	Any	0.026
DP01	F03	DX	10	Any	0.025
DP01	D64	DX	10	Any	0.025
DP01	Q0092	PX	HCPCS	Any	0.024
DP01	R41	DX	10	Any	0.024
DP01	99308	PX	CPT	Frequent	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	G93	DX	10	Any	0.023
DP01	D64	DX	10	Frequent	0.023
DP01	R41	DX	10	Often	0.023
DP01	R26	DX	10	Any	0.023
DP01	99285	PX	CPT	Any	0.023
DP01	F03	DX	10	Often	0.023
DP01	30233N1	PX	10	Any	0.022
DP01	99222	PX	CPT	Any	0.022
DP01	D62	DX	10	Often	0.022
DP01	99306	PX	CPT	Any	0.021
DP01	G93	DX	10	Often	0.021
DP01	R13	DX	10	Any	0.021
DP01	I69	DX	10	Any	0.020

Appendix M. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Any	0.020
DP01	R27	DX	10	Any	0.020
DP01	G0471	PX	HCPCS	Often	0.020
DP01	R11	DX	10	Any	0.020
DP01	99309	PX	CPT	Frequent	0.020
DP01	99305	PX	CPT	Any	0.019
DP01	M62	DX	10	Any	0.019
DP01	R41	DX	10	Frequent	0.019
DP01	0DJ08ZZ	PX	10	Any	0.019
DP01	A0428	PX	HCPCS	Frequent	0.019
DP01	99232	PX	CPT	Any	0.018
DP01	99310	PX	CPT	Any	0.018
DP01	Z79	DX	10	Any	0.018
DP01	G93	DX	10	Frequent	0.018
DP01	P9603	PX	HCPCS	Often	0.017
DP01	R0070	PX	HCPCS	Any	0.017
DP01	B35	DX	10	Any	0.017
DP01	Z74	DX	10	Any	0.017
DP01	K21	DX	10	Any	0.017
DP01	93010	PX	CPT	Any	0.017
DP01	Z79	DX	10	Often	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	I69	DX	10	Often	0.017
DP01	I12	DX	10	Any	0.017
DP01	83970	PX	CPT	Any	0.016
DP01	11721	PX	CPT	Any	0.016
DP01	A0425	PX	HCPCS	Frequent	0.016
DP01	I63	DX	10	Any	0.016
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.016
DP01	M62	DX	10	Often	0.016
DP01	R27	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	43235	PX	CPT	Any	0.015
DP01	K21	DX	10	Often	0.015
DP01	M62	DX	10	Frequent	0.015
DP01	D50	DX	10	Frequent	0.015

Appendix M. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	Z74	DX	10	Frequent	0.015
DP01	R10	DX	10	Any	0.015
DP01	R13	DX	10	Often	0.015
DP01	74177	PX	CPT	Any	0.015
DP01	R11	DX	10	Often	0.015
DP01	L89	DX	10	Any	0.015
DP01	Z79	DX	10	Frequent	0.014
DP01	I48	DX	10	Often	0.014
DP01	K29	DX	10	Any	0.014
DP01	I63	DX	10	Often	0.014
DP01	99233	PX	CPT	Any	0.014
DP01	K21	DX	10	Frequent	0.013
DP01	F03	DX	10	Frequent	0.013
DP01	C58	RX	CLASS	Any	0.013
DP01	I48	DX	10	Frequent	0.013
DP01	N25	DX	10	Any	0.013
DP01	B96	DX	10	Any	0.013
DP01	N18	DX	10	Frequent	0.013
DP01	L89	DX	10	Often	0.013
DP01	R0075	PX	HCPCS	Any	0.013
DP01	R06	DX	10	Any	0.013
DP01	R27	DX	10	Frequent	0.013
DP01	G40	DX	10	Any	0.012
DP01	Z87	DX	10	Any	0.012
DP01	P9603	PX	HCPCS	Frequent	0.012
DP01	K25	DX	10	Any	0.012
DP01	70450	PX	CPT	Any	0.012
DP01	I12	DX	10	Often	0.012

Appendix N. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.056
DP01	99223	PX	CPT	Any	0.048
DP01	99232	PX	CPT	Any	0.047
DP01	K92	DX	10	Often	0.044
DP01	99222	PX	CPT	Any	0.044
DP01	99233	PX	CPT	Any	0.042
DP01	D62	DX	10	Any	0.038
DP01	93010	PX	CPT	Any	0.037
DP01	99285	PX	CPT	Any	0.036
DP01	D64	DX	10	Often	0.035
DP01	71045	PX	CPT	Any	0.034
DP01	D50	DX	10	Any	0.033
DP01	99308	PX	CPT	Any	0.032
DP01	D64	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.031
DP01	99223	PX	CPT	Often	0.030
DP01	30233N1	PX	10	Any	0.030
DP01	D50	DX	10	Often	0.029
DP01	N17	DX	10	Any	0.029
DP01	K92	DX	10	Frequent	0.028
DP01	D01_INT_UNIQ_Q4	DX	10	Q4ServiceInt	0.028
DP01	D64	DX	10	Frequent	0.028
DP01	D62	DX	10	Often	0.027
DP01	99309	PX	CPT	Any	0.027
DP01	99222	PX	CPT	Frequent	0.027
DP01	99308	PX	CPT	Often	0.026
DP01	K21	DX	10	Any	0.025
DP01	F03	DX	10	Any	0.024
DP01	Z79	DX	10	Often	0.023
DP01	99232	PX	CPT	Often	0.022
DP01	0DB68ZX	PX	10	Any	0.022
DP01	F03	DX	10	Often	0.021
DP01	A0425	PX	HCPCS	Any	0.021
DP01	99291	PX	CPT	Any	0.021
DP01	99309	PX	CPT	Often	0.021
DP01	Z79	DX	10	Any	0.020

Appendix N. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99233	PX	CPT	Often	0.020
DP01	A0427	PX	HCPCS	Any	0.020
DP01	Z87	DX	10	Any	0.019
DP01	D50	DX	10	Frequent	0.019
DP01	R11	DX	10	Any	0.019
DP01	G0471	PX	HCPCS	Any	0.019
DP01	99285	PX	CPT	Frequent	0.019
DP01	R06	DX	10	Any	0.019
DP01	Z79	DX	10	Frequent	0.018
DP01	71045	PX	CPT	Often	0.018
DP01	93010	PX	CPT	Frequent	0.018
DP01	N17	DX	10	Often	0.018
DP01	I50	DX	10	Often	0.018
DP01	0DJ08ZZ	PX	10	Any	0.018
DP01	99308	PX	CPT	Frequent	0.018
DP01	B35	DX	10	Any	0.018
DP01	P9603	PX	HCPCS	Any	0.018
DP01	99239	PX	CPT	Any	0.017
DP01	99223	PX	CPT	Frequent	0.017
DP01	I50	DX	10	Any	0.017
DP01	K29	DX	10	Any	0.017
DP01	D03_INT_UNIQ_Q4	PX	CPT	Q4ServiceInt	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	D62	DX	10	Frequent	0.017
DP01	Z87	DX	10	Often	0.017
DP01	99307	PX	CPT	Any	0.017
DP01	I48	DX	10	Often	0.017
DP01	E87	DX	10	Any	0.017
DP01	F03	DX	10	Frequent	0.016
DP01	M62	DX	10	Often	0.016
DP01	J90	DX	10	Any	0.016
DP01	99231	PX	CPT	Any	0.016
DP01	R10	DX	10	Any	0.016
DP01	74176	PX	CPT	Any	0.016
DP01	Q0092	PX	HCPCS	Any	0.016
DP01	I48	DX	10	Frequent	0.016

Appendix N. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.016
DP01	I13	DX	10	Any	0.016
DP01	R26	DX	10	Any	0.015
DP01	E87	DX	10	Often	0.015
DP01	F02	DX	10	Any	0.015
DP01	K21	DX	10	Often	0.015
DP01	R11	DX	10	Often	0.015
DP01	D04_INT_ALL_Q2	PX	10	Q2ServiceInt	0.015
DP01	E86	DX	10	Any	0.015
DP01	M62	DX	10	Any	0.015
DP01	I25	DX	10	Any	0.015
DP01	R06	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	I95	DX	10	Any	0.015
DP01	I25	DX	10	Often	0.014
DP01	I48	DX	10	Any	0.014
DP01	M62	DX	10	Frequent	0.014
DP01	93306	PX	CPT	Any	0.014
DP01	43235	PX	CPT	Any	0.014
DP01	I50	DX	10	Frequent	0.014
DP01	G0471	PX	HCPCS	Often	0.014
DP01	R13	DX	10	Any	0.014
DP01	Z87	DX	10	Frequent	0.014
DP01	R41	DX	10	Any	0.014
DP01	D05_INT_UNIQ_Q4	PX	HCPCS	Q4ServiceInt	0.013
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.013
DP01	K29	DX	10	Often	0.013
DP01	R41	DX	10	Often	0.013

Appendix O. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99309	PX	CPT	Any	0.052
DP01	K31	DX	10	Any	0.051
DP01	99308	PX	CPT	Any	0.044
DP01	K31	DX	10	Often	0.036
DP01	731	PX	CPT	Any	0.034
DP01	Z94	DX	10	Any	0.031
DP01	88305	PX	CPT	Any	0.030
DP01	99309	PX	CPT	Often	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	R11	DX	10	Often	0.030
DP01	K92	DX	10	Often	0.030
DP01	A0428	PX	HCPCS	Any	0.030
DP01	G0471	PX	HCPCS	Any	0.030
DP01	R11	DX	10	Any	0.028
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.027
DP01	C58	RX	CLASS	Any	0.027
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.027
DP01	K92	DX	10	Any	0.027
DP01	R11	DX	10	Frequent	0.026
DP01	99308	PX	CPT	Often	0.026
DP01	Z74	DX	10	Any	0.026
DP01	N18	DX	10	Any	0.025
DP01	Z93	DX	10	Any	0.025
DP01	I10	DX	10	Any	0.025
DP01	Z99	DX	10	Any	0.025
DP01	Z20	DX	10	Frequent	0.025
DP01	K29	DX	10	Any	0.024
DP01	74176	PX	CPT	Any	0.024
DP01	R10	DX	10	Often	0.024
DP01	84100	PX	CPT	Any	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	A0425	PX	HCPCS	Any	0.023
DP01	P9603	PX	HCPCS	Any	0.023
DP01	K31	DX	10	Frequent	0.023
DP01	A0428	PX	HCPCS	Frequent	0.022
DP01	L89	DX	10	Any	0.022

Appendix O. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	G0471	PX	HCPCS	Often	0.022
DP01	A0429	PX	HCPCS	Any	0.022
DP01	R10	DX	10	Any	0.022
DP01	74177	PX	CPT	Any	0.021
DP01	K92	DX	10	Frequent	0.021
DP01	Z23	DX	10	Frequent	0.021
DP01	5A1D70Z	PX	10	Often	0.021
DP01	Z94	DX	10	Often	0.021
DP01	R10	DX	10	Frequent	0.021
DP01	R19	DX	10	Any	0.020
DP01	87340	PX	CPT	Any	0.020
DP01	84100	PX	CPT	Often	0.020
DP01	90935	PX	CPT	Any	0.020
DP01	Z74	DX	10	Frequent	0.020
DP01	I10	DX	10	Often	0.020
DP01	E11	DX	10	Any	0.019
DP01	Z99	DX	10	Often	0.019
DP01	83735	PX	CPT	Frequent	0.019
DP01	D64	DX	10	Often	0.019
DP01	G89	DX	10	Any	0.019
DP01	D50	DX	10	Any	0.018
DP01	Q0092	PX	HCPCS	Any	0.018
DP01	G40	DX	10	Often	0.018
DP01	J96	DX	10	Frequent	0.018
DP01	99223	PX	CPT	Frequent	0.018
DP01	E11	DX	10	Often	0.018
DP01	43239	PX	CPT	Any	0.018
DP01	D64	DX	10	Frequent	0.018
DP01	I50	DX	10	Any	0.018
DP01	G40	DX	10	Frequent	0.018
DP01	96376	PX	CPT	Any	0.018
DP01	E87	DX	10	Often	0.018
DP01	Z20	DX	10	Often	0.018
DP01	Z23	DX	10	Any	0.017
DP01	87086	PX	CPT	Frequent	0.017
DP01	N17	DX	10	Any	0.017

Appendix O. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Often	0.017
DP01	K20	DX	10	Any	0.017
DP01	0TY00Z0	PX	10	Any	0.017
DP01	85025	PX	CPT	Frequent	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	3E0G76Z	PX	10	Any	0.017
DP01	90935	PX	CPT	Often	0.017
DP01	J2405	PX	HCPCS	Any	0.017
DP01	30233N1	PX	10	Any	0.017
DP01	G89	DX	10	Often	0.017
DP01	G40	DX	10	Any	0.017
DP01	F79	DX	10	Any	0.016
DP01	T86	DX	10	Any	0.016
DP01	C58	RX	CLASS	Often	0.016
DP01	I16	DX	10	Often	0.016
DP01	I25	DX	10	Any	0.016
DP01	71045	PX	CPT	Frequent	0.016
DP01	Q9967	PX	HCPCS	Any	0.016
DP01	88312	PX	CPT	Any	0.016
DP01	K21	DX	10	Frequent	0.016
DP01	Z90	DX	10	Any	0.016
DP01	99222	PX	CPT	Any	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	93306	PX	CPT	Any	0.016
DP01	Z93	DX	10	Often	0.015
DP01	0DB58ZX	PX	10	Any	0.015
DP01	D84	DX	10	Any	0.015
DP01	99306	PX	CPT	Any	0.015

Appendix P. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99308	PX	CPT	Any	0.074
DP01	99309	PX	CPT	Any	0.073
DP01	K92	DX	10	Any	0.056
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.048
DP01	G0471	PX	HCPCS	Any	0.045
DP01	99309	PX	CPT	Often	0.044
DP01	A0428	PX	HCPCS	Any	0.044
DP01	99307	PX	CPT	Any	0.042
DP01	N18	DX	10	Any	0.040
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.038
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.037
DP01	M62	DX	10	Often	0.034
DP01	R26	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.032
DP01	A0428	PX	HCPCS	Frequent	0.031
DP01	B35	DX	10	Any	0.031
DP01	D62	DX	10	Any	0.031
DP01	99309	PX	CPT	Frequent	0.030
DP01	K92	DX	10	Frequent	0.030
DP01	Z74	DX	10	Frequent	0.030
DP01	A0425	PX	HCPCS	Frequent	0.030
DP01	Z74	DX	10	Often	0.030
DP01	R11	DX	10	Any	0.030
DP01	P9603	PX	HCPCS	Any	0.030
DP01	99306	PX	CPT	Any	0.029
DP01	M62	DX	10	Frequent	0.028
DP01	99305	PX	CPT	Any	0.028
DP01	99310	PX	CPT	Any	0.027
DP01	R11	DX	10	Often	0.027
DP01	M62	DX	10	Any	0.027
DP01	G0471	PX	HCPCS	Often	0.027
DP01	R10	DX	10	Any	0.027
DP01	K31	DX	10	Any	0.027
DP01	99307	PX	CPT	Often	0.027
DP01	R26	DX	10	Often	0.026

Appendix P. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K29	DX	10	Any	0.026
DP01	A0425	PX	HCPCS	Often	0.026
DP01	R11	DX	10	Frequent	0.025
DP01	R27	DX	10	Any	0.025
DP01	R41	DX	10	Often	0.025
DP01	0DB68ZX	PX	10	Any	0.025
DP01	R41	DX	10	Any	0.024
DP01	J96	DX	10	Often	0.024
DP01	J96	DX	10	Frequent	0.024
DP01	Z74	DX	10	Any	0.023
DP01	R41	DX	10	Frequent	0.023
DP01	30233N1	PX	10	Any	0.023
DP01	R10	DX	10	Often	0.023
DP01	I69	DX	10	Any	0.022
DP01	Q0092	PX	HCPCS	Any	0.022
DP01	R26	DX	10	Frequent	0.022
DP01	99308	PX	CPT	Frequent	0.022
DP01	G93	DX	10	Any	0.022
DP01	L89	DX	10	Any	0.022
DP01	I12	DX	10	Any	0.022
DP01	G93	DX	10	Often	0.022
DP01	0DJ08ZZ	PX	10	Any	0.021
DP01	R27	DX	10	Often	0.021
DP01	N18	DX	10	Often	0.021
DP01	11721	PX	CPT	Any	0.020
DP01	Z99	DX	10	Often	0.020
DP01	74177	PX	CPT	Any	0.020
DP01	99310	PX	CPT	Often	0.020
DP01	Z99	DX	10	Any	0.020
DP01	Z94	DX	10	Any	0.020
DP01	N18	DX	10	Frequent	0.020
DP01	99232	PX	CPT	Frequent	0.019
DP01	74176	PX	CPT	Any	0.019
DP01	I69	DX	10	Often	0.019
DP01	J96	DX	10	Any	0.019
DP01	P9603	PX	HCPCS	Often	0.019

Appendix P. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99307	PX	CPT	Frequent	0.018
DP01	D62	DX	10	Often	0.018
DP01	D64	DX	10	Often	0.018
DP01	G40	DX	10	Any	0.018
DP01	97535	PX	CPT	Often	0.018
DP01	83970	PX	CPT	Any	0.018
DP01	71045	PX	CPT	Frequent	0.018
DP01	84100	PX	CPT	Any	0.018
DP01	D63	DX	10	Any	0.017
DP01	N25	DX	10	Any	0.017
DP01	G40	DX	10	Frequent	0.017
DP01	G40	DX	10	Often	0.017
DP01	R27	DX	10	Frequent	0.017
DP01	K29	DX	10	Often	0.017
DP01	R18	DX	10	Any	0.017
DP01	97535	PX	CPT	Any	0.017
DP01	G93	DX	10	Frequent	0.017
DP01	P9604	PX	HCPCS	Any	0.016
DP01	97530	PX	CPT	Any	0.016
DP01	99285	PX	CPT	Any	0.016
DP01	D64	DX	10	Frequent	0.016
DP01	99306	PX	CPT	Frequent	0.016
DP01	731	PX	CPT	Frequent	0.016
DP01	R0070	PX	HCPCS	Any	0.016
DP01	Z20	DX	10	Frequent	0.016
DP01	Z99	DX	10	Frequent	0.016
DP01	D50	DX	10	Any	0.016
DP01	A0429	PX	HCPCS	Any	0.016

Appendix Q. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.054
DP01	99308	PX	CPT	Any	0.053
DP01	99309	PX	CPT	Any	0.051
DP01	K92	DX	10	Often	0.050
DP01	99308	PX	CPT	Often	0.044
DP01	99309	PX	CPT	Often	0.039
DP01	K92	DX	10	Frequent	0.033
DP01	A0428	PX	HCPCS	Any	0.032
DP01	N18	DX	10	Any	0.030
DP01	D50	DX	10	Any	0.029
DP01	G0471	PX	HCPCS	Any	0.029
DP01	D50	DX	10	Often	0.029
DP01	N18	DX	10	Often	0.029
DP01	D64	DX	10	Often	0.028
DP01	D62	DX	10	Any	0.027
DP01	P9603	PX	HCPCS	Any	0.026
DP01	731	PX	CPT	Any	0.026
DP01	F03	DX	10	Any	0.025
DP01	D64	DX	10	Any	0.025
DP01	Q0092	PX	HCPCS	Any	0.024
DP01	R41	DX	10	Any	0.024
DP01	99308	PX	CPT	Frequent	0.024
DP01	0DB68ZX	PX	10	Any	0.024
DP01	G93	DX	10	Any	0.023
DP01	D64	DX	10	Frequent	0.023
DP01	R41	DX	10	Often	0.023
DP01	R26	DX	10	Any	0.023
DP01	99285	PX	CPT	Any	0.023
DP01	F03	DX	10	Often	0.023
DP01	30233N1	PX	10	Any	0.022
DP01	99222	PX	CPT	Any	0.022
DP01	D62	DX	10	Often	0.022
DP01	99306	PX	CPT	Any	0.021
DP01	G93	DX	10	Often	0.021
DP01	R13	DX	10	Any	0.021
DP01	I69	DX	10	Any	0.020

Appendix Q. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99223	PX	CPT	Any	0.020
DP01	R27	DX	10	Any	0.020
DP01	G0471	PX	HCPCS	Often	0.020
DP01	99309	PX	CPT	Frequent	0.020
DP01	R11	DX	10	Any	0.020
DP01	M62	DX	10	Any	0.019
DP01	99305	PX	CPT	Any	0.019
DP01	R41	DX	10	Frequent	0.019
DP01	A0428	PX	HCPCS	Frequent	0.019
DP01	0DJ08ZZ	PX	10	Any	0.019
DP01	99232	PX	CPT	Any	0.018
DP01	99310	PX	CPT	Any	0.018
DP01	Z79	DX	10	Any	0.018
DP01	G93	DX	10	Frequent	0.018
DP01	P9603	PX	HCPCS	Often	0.017
DP01	R0070	PX	HCPCS	Any	0.017
DP01	B35	DX	10	Any	0.017
DP01	Z74	DX	10	Any	0.017
DP01	K21	DX	10	Any	0.017
DP01	93010	PX	CPT	Any	0.017
DP01	Z79	DX	10	Often	0.017
DP01	I12	DX	10	Any	0.017
DP01	I69	DX	10	Often	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	A0425	PX	HCPCS	Frequent	0.016
DP01	83970	PX	CPT	Any	0.016
DP01	11721	PX	CPT	Any	0.016
DP01	I63	DX	10	Any	0.016
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.016
DP01	M62	DX	10	Often	0.016
DP01	R27	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	43235	PX	CPT	Any	0.015
DP01	M62	DX	10	Frequent	0.015
DP01	K21	DX	10	Often	0.015
DP01	D50	DX	10	Frequent	0.015

Appendix Q. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	Z74	DX	10	Frequent	0.015
DP01	R13	DX	10	Often	0.015
DP01	R10	DX	10	Any	0.015
DP01	74177	PX	CPT	Any	0.015
DP01	R11	DX	10	Often	0.015
DP01	L89	DX	10	Any	0.015
DP01	Z79	DX	10	Frequent	0.014
DP01	I48	DX	10	Often	0.014
DP01	K29	DX	10	Any	0.014
DP01	I63	DX	10	Often	0.014
DP01	99233	PX	CPT	Any	0.014
DP01	K21	DX	10	Frequent	0.013
DP01	F03	DX	10	Frequent	0.013
DP01	C58	RX	CLASS	Any	0.013
DP01	I48	DX	10	Frequent	0.013
DP01	N25	DX	10	Any	0.013
DP01	B96	DX	10	Any	0.013
DP01	N18	DX	10	Frequent	0.013
DP01	L89	DX	10	Often	0.013
DP01	R0075	PX	HCPCS	Any	0.013
DP01	R27	DX	10	Frequent	0.013
DP01	R06	DX	10	Any	0.013
DP01	G40	DX	10	Any	0.012
DP01	Z87	DX	10	Any	0.012
DP01	P9603	PX	HCPCS	Frequent	0.012
DP01	70450	PX	CPT	Any	0.012
DP01	K25	DX	10	Any	0.012
DP01	I12	DX	10	Often	0.012

Appendix R. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.056
DP01	99223	PX	CPT	Any	0.048
DP01	99232	PX	CPT	Any	0.047
DP01	K92	DX	10	Often	0.044
DP01	99222	PX	CPT	Any	0.044
DP01	99233	PX	CPT	Any	0.042
DP01	D62	DX	10	Any	0.038
DP01	93010	PX	CPT	Any	0.037
DP01	99285	PX	CPT	Any	0.036
DP01	D64	DX	10	Often	0.035
DP01	71045	PX	CPT	Any	0.034
DP01	D50	DX	10	Any	0.033
DP01	99308	PX	CPT	Any	0.032
DP01	D64	DX	10	Any	0.032
DP01	731	PX	CPT	Any	0.031
DP01	99223	PX	CPT	Often	0.030
DP01	30233N1	PX	10	Any	0.030
DP01	D50	DX	10	Often	0.029
DP01	N17	DX	10	Any	0.029
DP01	K92	DX	10	Frequent	0.028
DP01	D01_INT_UNIQ_Q4	DX	10	Q4ServiceInt	0.028
DP01	D64	DX	10	Frequent	0.028
DP01	D62	DX	10	Often	0.027
DP01	99309	PX	CPT	Any	0.027
DP01	99222	PX	CPT	Frequent	0.027
DP01	99308	PX	CPT	Often	0.026
DP01	K21	DX	10	Any	0.025
DP01	F03	DX	10	Any	0.024
DP01	Z79	DX	10	Often	0.023
DP01	99232	PX	CPT	Often	0.022
DP01	0DB68ZX	PX	10	Any	0.022
DP01	F03	DX	10	Often	0.021
DP01	A0425	PX	HCPCS	Any	0.021
DP01	99291	PX	CPT	Any	0.021
DP01	99309	PX	CPT	Often	0.021
DP01	Z79	DX	10	Any	0.020

Appendix R. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99233	PX	CPT	Often	0.020
DP01	A0427	PX	HCPCS	Any	0.020
DP01	Z87	DX	10	Any	0.019
DP01	D50	DX	10	Frequent	0.019
DP01	R11	DX	10	Any	0.019
DP01	G0471	PX	HCPCS	Any	0.019
DP01	99285	PX	CPT	Frequent	0.019
DP01	R06	DX	10	Any	0.019
DP01	Z79	DX	10	Frequent	0.018
DP01	71045	PX	CPT	Often	0.018
DP01	93010	PX	CPT	Frequent	0.018
DP01	N17	DX	10	Often	0.018
DP01	I50	DX	10	Often	0.018
DP01	0DJ08ZZ	PX	10	Any	0.018
DP01	99308	PX	CPT	Frequent	0.018
DP01	B35	DX	10	Any	0.018
DP01	P9603	PX	HCPCS	Any	0.018
DP01	99239	PX	CPT	Any	0.017
DP01	99223	PX	CPT	Frequent	0.017
DP01	I50	DX	10	Any	0.017
DP01	K29	DX	10	Any	0.017
DP01	D03_INT_UNIQ_Q4	PX	CPT	Q4ServiceInt	0.017
DP01	731	PX	CPT	Frequent	0.017
DP01	D62	DX	10	Frequent	0.017
DP01	Z87	DX	10	Often	0.017
DP01	E87	DX	10	Any	0.017
DP01	99307	PX	CPT	Any	0.017
DP01	I48	DX	10	Often	0.017
DP01	F03	DX	10	Frequent	0.016
DP01	M62	DX	10	Often	0.016
DP01	J90	DX	10	Any	0.016
DP01	99231	PX	CPT	Any	0.016
DP01	R10	DX	10	Any	0.016
DP01	74176	PX	CPT	Any	0.016
DP01	Q0092	PX	HCPCS	Any	0.016
DP01	I48	DX	10	Frequent	0.016

Appendix R. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.016
DP01	I13	DX	10	Any	0.016
DP01	R26	DX	10	Any	0.015
DP01	E87	DX	10	Often	0.015
DP01	F02	DX	10	Any	0.015
DP01	K21	DX	10	Often	0.015
DP01	R11	DX	10	Often	0.015
DP01	D04_INT_ALL_Q2	PX	10	Q2ServiceInt	0.015
DP01	E86	DX	10	Any	0.015
DP01	M62	DX	10	Any	0.015
DP01	I25	DX	10	Any	0.015
DP01	R06	DX	10	Often	0.015
DP01	R26	DX	10	Often	0.015
DP01	I95	DX	10	Any	0.015
DP01	I25	DX	10	Often	0.014
DP01	I48	DX	10	Any	0.014
DP01	M62	DX	10	Frequent	0.014
DP01	93306	PX	CPT	Any	0.014
DP01	43235	PX	CPT	Any	0.014
DP01	I50	DX	10	Frequent	0.014
DP01	G0471	PX	HCPCS	Often	0.014
DP01	R13	DX	10	Any	0.014
DP01	R41	DX	10	Any	0.014
DP01	Z87	DX	10	Frequent	0.014
DP01	D05_INT_UNIQ_Q4	PX	HCPCS	Q4ServiceInt	0.013
DP01	K29	DX	10	Often	0.013
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.013
DP01	R41	DX	10	Often	0.013

Appendix S. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.060
DP01	K92	DX	10	Often	0.056
DP01	99308	PX	CPT	Any	0.049
DP01	99309	PX	CPT	Any	0.045
DP01	99308	PX	CPT	Often	0.040
DP01	D62	DX	10	Any	0.037
DP01	D50	DX	10	Any	0.036
DP01	K92	DX	10	Frequent	0.035
DP01	731	PX	CPT	Any	0.035
DP01	99309	PX	CPT	Often	0.034
DP01	99223	PX	CPT	Any	0.033
DP01	99222	PX	CPT	Any	0.033
DP01	D64	DX	10	Often	0.032
DP01	30233N1	PX	10	Any	0.031
DP01	D50	DX	10	Often	0.031
DP01	99232	PX	CPT	Any	0.030
DP01	G0471	PX	HCPCS	Any	0.030
DP01	D64	DX	10	Frequent	0.029
DP01	F03	DX	10	Any	0.029
DP01	D64	DX	10	Any	0.028
DP01	P9603	PX	HCPCS	Any	0.027
DP01	0DB68ZX	PX	10	Any	0.027
DP01	D62	DX	10	Often	0.026
DP01	99233	PX	CPT	Any	0.026
DP01	N18	DX	10	Any	0.025
DP01	R26	DX	10	Any	0.025
DP01	A0428	PX	HCPCS	Any	0.025
DP01	99307	PX	CPT	Any	0.025
DP01	99285	PX	CPT	Any	0.024
DP01	93010	PX	CPT	Any	0.024
DP01	F03	DX	10	Often	0.023
DP01	0DJ08ZZ	PX	10	Any	0.023
DP01	Q0092	PX	HCPCS	Any	0.023
DP01	R41	DX	10	Any	0.023
DP01	B35	DX	10	Any	0.023
DP01	99223	PX	CPT	Often	0.022

Appendix S. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	G0471	PX	HCPCS	Often	0.022
DP01	99308	PX	CPT	Frequent	0.022
DP01	731	PX	CPT	Frequent	0.021
DP01	M62	DX	10	Often	0.021
DP01	R41	DX	10	Often	0.021
DP01	M62	DX	10	Any	0.021
DP01	R11	DX	10	Any	0.020
DP01	99222	PX	CPT	Frequent	0.020
DP01	K21	DX	10	Any	0.020
DP01	R26	DX	10	Often	0.019
DP01	N17	DX	10	Any	0.019
DP01	11721	PX	CPT	Any	0.019
DP01	M62	DX	10	Frequent	0.019
DP01	Z79	DX	10	Often	0.019
DP01	Z79	DX	10	Any	0.019
DP01	93010	PX	CPT	Frequent	0.019
DP01	P9603	PX	HCPCS	Often	0.018
DP01	R41	DX	10	Frequent	0.018
DP01	99309	PX	CPT	Frequent	0.018
DP01	71045	PX	CPT	Any	0.018
DP01	G93	DX	10	Any	0.018
DP01	D50	DX	10	Frequent	0.018
DP01	R27	DX	10	Any	0.018
DP01	R13	DX	10	Any	0.017
DP01	D62	DX	10	Frequent	0.017
DP01	43235	PX	CPT	Any	0.017
DP01	K29	DX	10	Any	0.017
DP01	99291	PX	CPT	Any	0.016
DP01	R06	DX	10	Any	0.016
DP01	99306	PX	CPT	Any	0.016
DP01	R10	DX	10	Any	0.016
DP01	I69	DX	10	Any	0.016
DP01	R11	DX	10	Often	0.016
DP01	99307	PX	CPT	Often	0.016
DP01	Z79	DX	10	Frequent	0.016
DP01	R0070	PX	HCPCS	Any	0.016

Appendix S. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Proton Pump Inhibitor and Famotidine New Users with an hdPS Model in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP)

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	Z74	DX	10	Frequent	0.016
DP01	N18	DX	10	Often	0.016
DP01	Z87	DX	10	Any	0.015
DP01	G93	DX	10	Often	0.015
DP01	R26	DX	10	Frequent	0.015
DP01	F03	DX	10	Frequent	0.015
DP01	F02	DX	10	Any	0.015
DP01	99305	PX	CPT	Any	0.015
DP01	99310	PX	CPT	Any	0.015
DP01	74176	PX	CPT	Any	0.015
DP01	Z74	DX	10	Any	0.015
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.014
DP01	A0428	PX	HCPCS	Frequent	0.014
DP01	97535	PX	CPT	Often	0.014
DP01	N17	DX	10	Often	0.014
DP01	97535	PX	CPT	Frequent	0.014
DP01	K21	DX	10	Often	0.014
DP01	R27	DX	10	Often	0.014
DP01	83970	PX	CPT	Any	0.014
DP01	K31	DX	10	Any	0.014
DP01	K29	DX	10	Often	0.014
DP01	R06	DX	10	Often	0.014
DP01	I48	DX	10	Often	0.014
DP01	I69	DX	10	Often	0.014
DP01	G93	DX	10	Frequent	0.014
DP01	99285	PX	CPT	Often	0.014
DP01	I48	DX	10	Frequent	0.013
DP01	74177	PX	CPT	Any	0.013

Appendix T. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99309	PX	CPT	Any	0.073
DP01	99308	PX	CPT	Any	0.059
DP01	K31	DX	10	Any	0.051
DP01	88305	PX	CPT	Any	0.046
DP01	99309	PX	CPT	Often	0.046
DP01	G0471	PX	HCPCS	Any	0.043
DP01	K31	DX	10	Often	0.042
DP01	A0428	PX	HCPCS	Any	0.039
DP01	99308	PX	CPT	Often	0.039
DP01	R11	DX	10	Often	0.036
DP01	731	PX	CPT	Any	0.035
DP01	K92	DX	10	Often	0.034
DP01	G0471	PX	HCPCS	Often	0.034
DP01	R11	DX	10	Any	0.033
DP01	N18	DX	10	Any	0.033
DP01	C58	RX	CLASS	Any	0.033
DP01	Z74	DX	10	Any	0.032
DP01	L89	DX	10	Any	0.032
DP01	A0425	PX	HCPCS	Frequent	0.032
DP01	K92	DX	10	Any	0.031
DP01	Z99	DX	10	Any	0.031
DP01	K31	DX	10	Frequent	0.031
DP01	P9603	PX	HCPCS	Any	0.030
DP01	Z94	DX	10	Any	0.030
DP01	0DB68ZX	PX	10	Any	0.030
DP01	J96	DX	10	Frequent	0.030
DP01	R11	DX	10	Frequent	0.030
DP01	Z93	DX	10	Any	0.030
DP01	K29	DX	10	Any	0.029
DP01	G0471	PX	HCPCS	Frequent	0.029
DP01	84100	PX	CPT	Any	0.029
DP01	I10	DX	10	Any	0.029
DP01	K20	DX	10	Any	0.029
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.028
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.028
DP01	74176	PX	CPT	Any	0.028

Appendix T. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Frequent	0.028
DP01	88342	PX	CPT	Any	0.028
DP01	A0425	PX	HCPCS	Any	0.027
DP01	74177	PX	CPT	Any	0.027
DP01	Z20	DX	10	Frequent	0.026
DP01	Q0092	PX	HCPCS	Any	0.025
DP01	K20	DX	10	Often	0.024
DP01	A0428	PX	HCPCS	Frequent	0.024
DP01	84100	PX	CPT	Often	0.024
DP01	I50	DX	10	Any	0.024
DP01	R19	DX	10	Any	0.024
DP01	731	PX	CPT	Frequent	0.024
DP01	Z74	DX	10	Frequent	0.024
DP01	Z99	DX	10	Often	0.024
DP01	87340	PX	CPT	Any	0.023
DP01	I10	DX	10	Often	0.023
DP01	R10	DX	10	Often	0.023
DP01	E11	DX	10	Any	0.023
DP01	88312	PX	CPT	Any	0.023
DP01	D64	DX	10	Frequent	0.023
DP01	P9603	PX	HCPCS	Frequent	0.023
DP01	A0429	PX	HCPCS	Any	0.023
DP01	99306	PX	CPT	Any	0.023
DP01	83735	PX	CPT	Frequent	0.022
DP01	99223	PX	CPT	Frequent	0.022
DP01	Z94	DX	10	Often	0.022
DP01	E66	DX	10	Frequent	0.022
DP01	93306	PX	CPT	Any	0.022
DP01	Z23	DX	10	Frequent	0.022
DP01	R10	DX	10	Any	0.022
DP01	I16	DX	10	Often	0.022
DP01	90935	PX	CPT	Any	0.022
DP01	R10	DX	10	Frequent	0.022
DP01	K29	DX	10	Often	0.022
DP01	E11	DX	10	Often	0.022
DP01	36620	PX	CPT	Any	0.021

Appendix T. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 18-49 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	J81	DX	10	Often	0.021
DP01	43239	PX	CPT	Any	0.021
DP01	D64	DX	10	Often	0.021
DP01	D50	DX	10	Any	0.021
DP01	3E0G76Z	PX	10	Any	0.021
DP01	G40	DX	10	Frequent	0.021
DP01	71045	PX	CPT	Frequent	0.021
DP01	5A1D70Z	PX	10	Often	0.021
DP01	90935	PX	CPT	Often	0.021
DP01	I25	DX	10	Any	0.021
DP01	N17	DX	10	Any	0.020
DP01	C58	RX	CLASS	Often	0.020
DP01	I50	DX	10	Frequent	0.020
DP01	99223	PX	CPT	Often	0.020
DP01	J96	DX	10	Often	0.020
DP01	99309	PX	CPT	Frequent	0.020
DP01	P9603	PX	HCPCS	Often	0.020
DP01	E87	DX	10	Often	0.020
DP01	88313	PX	CPT	Any	0.020
DP01	N17	DX	10	Often	0.020
DP01	R26	DX	10	Any	0.020
DP01	K20	DX	10	Frequent	0.019
DP01	R19	DX	10	Often	0.019
DP01	R0070	PX	HCPCS	Any	0.019
DP01	I50	DX	10	Often	0.019
DP01	Z23	DX	10	Any	0.019
DP01	T86	DX	10	Any	0.019
DP01	5A1955Z	PX	10	Any	0.019

Appendix U. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99308	PX	CPT	Any	0.071
DP01	99309	PX	CPT	Any	0.066
DP01	K92	DX	10	Any	0.056
DP01	K92	DX	10	Often	0.050
DP01	N18	DX	10	Any	0.046
DP01	A0428	PX	HCPCS	Any	0.046
DP01	99308	PX	CPT	Often	0.046
DP01	99309	PX	CPT	Often	0.043
DP01	99307	PX	CPT	Any	0.042
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.039
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.039
DP01	K92	DX	10	Frequent	0.037
DP01	A0428	PX	HCPCS	Frequent	0.037
DP01	G0471	PX	HCPCS	Any	0.037
DP01	R26	DX	10	Any	0.034
DP01	M62	DX	10	Often	0.033
DP01	J96	DX	10	Frequent	0.033
DP01	A0425	PX	HCPCS	Frequent	0.033
DP01	Z74	DX	10	Often	0.033
DP01	J96	DX	10	Often	0.033
DP01	Z74	DX	10	Frequent	0.032
DP01	D62	DX	10	Any	0.032
DP01	99305	PX	CPT	Any	0.032
DP01	99306	PX	CPT	Any	0.031
DP01	M62	DX	10	Frequent	0.030
DP01	R11	DX	10	Any	0.030
DP01	99307	PX	CPT	Often	0.030
DP01	99309	PX	CPT	Frequent	0.029
DP01	B35	DX	10	Any	0.029
DP01	731	PX	CPT	Any	0.028
DP01	30233N1	PX	10	Any	0.028
DP01	M62	DX	10	Any	0.027
DP01	R26	DX	10	Often	0.027
DP01	A0425	PX	HCPCS	Often	0.027
DP01	R27	DX	10	Any	0.027
DP01	99310	PX	CPT	Any	0.026

Appendix U. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	R11	DX	10	Often	0.026
DP01	I12	DX	10	Any	0.026
DP01	R41	DX	10	Often	0.025
DP01	P9603	PX	HCPCS	Any	0.025
DP01	N18	DX	10	Often	0.024
DP01	I69	DX	10	Any	0.024
DP01	Q0092	PX	HCPCS	Any	0.024
DP01	K31	DX	10	Any	0.024
DP01	R41	DX	10	Frequent	0.024
DP01	R41	DX	10	Any	0.024
DP01	Z94	DX	10	Any	0.024
DP01	G93	DX	10	Any	0.024
DP01	J96	DX	10	Any	0.024
DP01	Z99	DX	10	Any	0.024
DP01	Z99	DX	10	Often	0.024
DP01	R10	DX	10	Any	0.023
DP01	99308	PX	CPT	Frequent	0.023
DP01	L89	DX	10	Any	0.023
DP01	K29	DX	10	Any	0.023
DP01	N18	DX	10	Frequent	0.023
DP01	Z74	DX	10	Any	0.023
DP01	G93	DX	10	Often	0.023
DP01	G0471	PX	HCPCS	Often	0.022
DP01	R27	DX	10	Often	0.022
DP01	R11	DX	10	Frequent	0.022
DP01	11721	PX	CPT	Any	0.021
DP01	99232	PX	CPT	Frequent	0.021
DP01	0DB68ZX	PX	10	Any	0.021
DP01	84100	PX	CPT	Any	0.020
DP01	83970	PX	CPT	Any	0.020
DP01	71045	PX	CPT	Frequent	0.020
DP01	99307	PX	CPT	Frequent	0.020
DP01	N25	DX	10	Any	0.020
DP01	G93	DX	10	Frequent	0.020
DP01	74177	PX	CPT	Any	0.020
DP01	D63	DX	10	Any	0.019

Appendix U. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 50-64 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	R10	DX	10	Often	0.019
DP01	D62	DX	10	Often	0.019
DP01	99310	PX	CPT	Often	0.019
DP01	0DJ08ZZ	PX	10	Any	0.019
DP01	R26	DX	10	Frequent	0.019
DP01	K29	DX	10	Often	0.019
DP01	97535	PX	CPT	Often	0.019
DP01	G40	DX	10	Frequent	0.019
DP01	D64	DX	10	Often	0.019
DP01	74176	PX	CPT	Any	0.018
DP01	Z99	DX	10	Frequent	0.018
DP01	D50	DX	10	Any	0.018
DP01	G40	DX	10	Often	0.018
DP01	I63	DX	10	Any	0.018
DP01	R47	DX	10	Any	0.017
DP01	D64	DX	10	Frequent	0.017
DP01	Z93	DX	10	Any	0.017
DP01	L89	DX	10	Often	0.017
DP01	R27	DX	10	Frequent	0.017
DP01	97535	PX	CPT	Any	0.017
DP01	K31	DX	10	Frequent	0.017
DP01	88305	PX	CPT	Any	0.017
DP01	Z20	DX	10	Frequent	0.017
DP01	R47	DX	10	Often	0.017
DP01	K31	DX	10	Often	0.017
DP01	R18	DX	10	Any	0.017
DP01	I69	DX	10	Often	0.017
DP01	K74	DX	10	Any	0.016

Appendix V. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	99308	PX	CPT	Any	0.054
DP01	99309	PX	CPT	Any	0.051
DP01	K92	DX	10	Any	0.051
DP01	K92	DX	10	Often	0.049
DP01	99308	PX	CPT	Often	0.045
DP01	99309	PX	CPT	Often	0.039
DP01	G0471	PX	HCPCS	Any	0.034
DP01	D50	DX	10	Often	0.033
DP01	D50	DX	10	Any	0.033
DP01	N18	DX	10	Any	0.033
DP01	N18	DX	10	Often	0.032
DP01	A0428	PX	HCPCS	Any	0.032
DP01	K92	DX	10	Frequent	0.031
DP01	P9603	PX	HCPCS	Any	0.031
DP01	D64	DX	10	Often	0.030
DP01	Q0092	PX	HCPCS	Any	0.029
DP01	0DB68ZX	PX	10	Any	0.028
DP01	D62	DX	10	Any	0.028
DP01	731	PX	CPT	Any	0.027
DP01	D64	DX	10	Any	0.027
DP01	D64	DX	10	Frequent	0.026
DP01	F03	DX	10	Any	0.025
DP01	R41	DX	10	Any	0.025
DP01	R41	DX	10	Often	0.025
DP01	G93	DX	10	Any	0.024
DP01	G0471	PX	HCPCS	Often	0.024
DP01	99222	PX	CPT	Any	0.024
DP01	G93	DX	10	Often	0.023
DP01	R13	DX	10	Any	0.023
DP01	F03	DX	10	Often	0.023
DP01	30233N1	PX	10	Any	0.023
DP01	R26	DX	10	Any	0.023
DP01	99308	PX	CPT	Frequent	0.023
DP01	99285	PX	CPT	Any	0.022
DP01	D62	DX	10	Often	0.022
DP01	99223	PX	CPT	Any	0.021

Appendix V. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	G93	DX	10	Frequent	0.021
DP01	R0070	PX	HCPCS	Any	0.021
DP01	P9603	PX	HCPCS	Often	0.021
DP01	0DJ08ZZ	PX	10	Any	0.021
DP01	I69	DX	10	Any	0.020
DP01	R41	DX	10	Frequent	0.020
DP01	R27	DX	10	Any	0.020
DP01	99306	PX	CPT	Any	0.020
DP01	99232	PX	CPT	Any	0.020
DP01	A0428	PX	HCPCS	Frequent	0.019
DP01	M62	DX	10	Any	0.019
DP01	R11	DX	10	Any	0.019
DP01	731	PX	CPT	Frequent	0.019
DP01	99310	PX	CPT	Any	0.019
DP01	99309	PX	CPT	Frequent	0.019
DP01	Z79	DX	10	Any	0.019
DP01	83970	PX	CPT	Any	0.019
DP01	99305	PX	CPT	Any	0.019
DP01	I69	DX	10	Often	0.018
DP01	D50	DX	10	Frequent	0.018
DP01	Z79	DX	10	Often	0.018
DP01	I12	DX	10	Any	0.018
DP01	Z74	DX	10	Any	0.017
DP01	11721	PX	CPT	Any	0.017
DP01	93010	PX	CPT	Any	0.017
DP01	M62	DX	10	Often	0.017
DP01	A0425	PX	HCPCS	Frequent	0.017
DP01	R27	DX	10	Often	0.017
DP01	K21	DX	10	Any	0.017
DP01	R13	DX	10	Often	0.017
DP01	M62	DX	10	Frequent	0.017
DP01	Z74	DX	10	Frequent	0.016
DP01	D03_INT_ALL_Q4	PX	CPT	Q4ServiceInt	0.016
DP01	L89	DX	10	Any	0.016
DP01	R26	DX	10	Often	0.016
DP01	B35	DX	10	Any	0.016

Appendix V. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: 65-74 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	I48	DX	10	Often	0.016
DP01	I63	DX	10	Any	0.016
DP01	43235	PX	CPT	Any	0.016
DP01	Z79	DX	10	Frequent	0.015
DP01	K21	DX	10	Often	0.015
DP01	R11	DX	10	Often	0.015
DP01	R0075	PX	HCPCS	Any	0.015
DP01	R27	DX	10	Frequent	0.015
DP01	I48	DX	10	Frequent	0.015
DP01	N18	DX	10	Frequent	0.015
DP01	99233	PX	CPT	Any	0.015
DP01	N25	DX	10	Any	0.015
DP01	I48	DX	10	Any	0.014
DP01	J96	DX	10	Frequent	0.014
DP01	I63	DX	10	Often	0.014
DP01	R06	DX	10	Any	0.014
DP01	97535	PX	CPT	Frequent	0.014
DP01	R10	DX	10	Any	0.014
DP01	L89	DX	10	Often	0.014
DP01	P9603	PX	HCPCS	Frequent	0.014
DP01	I12	DX	10	Often	0.013
DP01	B96	DX	10	Any	0.013
DP01	I69	DX	10	Frequent	0.013
DP01	Z87	DX	10	Any	0.013
DP01	C58	RX	CLASS	Any	0.013
DP01	74177	PX	CPT	Any	0.013
DP01	99223	PX	CPT	Often	0.013
DP01	84100	PX	CPT	Any	0.013

Appendix W. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	K92	DX	10	Any	0.065
DP01	K92	DX	10	Often	0.053
DP01	99223	PX	CPT	Any	0.052
DP01	99222	PX	CPT	Any	0.050
DP01	99232	PX	CPT	Any	0.049
DP01	99233	PX	CPT	Any	0.046
DP01	D62	DX	10	Any	0.045
DP01	731	PX	CPT	Any	0.042
DP01	D50	DX	10	Any	0.040
DP01	D64	DX	10	Often	0.038
DP01	30233N1	PX	10	Any	0.038
DP01	93010	PX	CPT	Any	0.037
DP01	71045	PX	CPT	Any	0.036
DP01	99223	PX	CPT	Often	0.035
DP01	D64	DX	10	Any	0.035
DP01	D50	DX	10	Often	0.035
DP01	99285	PX	CPT	Any	0.035
DP01	K92	DX	10	Frequent	0.034
DP01	N17	DX	10	Any	0.034
DP01	99308	PX	CPT	Any	0.033
DP01	D62	DX	10	Often	0.032
DP01	D64	DX	10	Frequent	0.031
DP01	99222	PX	CPT	Frequent	0.030
DP01	D01_INT_UNIQ_Q4	DX	10	Q4ServiceInt	0.029
DP01	K21	DX	10	Any	0.027
DP01	99308	PX	CPT	Often	0.027
DP01	99309	PX	CPT	Any	0.027
DP01	99291	PX	CPT	Any	0.026
DP01	0DB68ZX	PX	10	Any	0.026
DP01	0DJ08ZZ	PX	10	Any	0.026
DP01	F03	DX	10	Any	0.025
DP01	99232	PX	CPT	Often	0.024
DP01	731	PX	CPT	Frequent	0.024
DP01	Z79	DX	10	Often	0.024
DP01	99233	PX	CPT	Often	0.023
DP01	D50	DX	10	Frequent	0.023

Appendix W. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	N17	DX	10	Often	0.022
DP01	99309	PX	CPT	Often	0.022
DP01	G0471	PX	HCPCS	Any	0.022
DP01	I50	DX	10	Often	0.021
DP01	A0427	PX	HCPCS	Any	0.021
DP01	F03	DX	10	Often	0.021
DP01	A0425	PX	HCPCS	Any	0.021
DP01	99223	PX	CPT	Frequent	0.021
DP01	K29	DX	10	Any	0.021
DP01	R06	DX	10	Any	0.021
DP01	D62	DX	10	Frequent	0.021
DP01	P9603	PX	HCPCS	Any	0.020
DP01	Z87	DX	10	Any	0.020
DP01	93010	PX	CPT	Frequent	0.020
DP01	Z79	DX	10	Any	0.020
DP01	I50	DX	10	Any	0.020
DP01	J90	DX	10	Any	0.020
DP01	43235	PX	CPT	Any	0.020
DP01	71045	PX	CPT	Often	0.020
DP01	99308	PX	CPT	Frequent	0.019
DP01	Z79	DX	10	Frequent	0.019
DP01	I48	DX	10	Often	0.019
DP01	E87	DX	10	Any	0.019
DP01	R11	DX	10	Any	0.019
DP01	I13	DX	10	Any	0.019
DP01	I48	DX	10	Frequent	0.018
DP01	99239	PX	CPT	Any	0.018
DP01	99285	PX	CPT	Frequent	0.018
DP01	B35	DX	10	Any	0.018
DP01	E87	DX	10	Often	0.018
DP01	Z87	DX	10	Often	0.018
DP01	I50	DX	10	Frequent	0.018
DP01	R06	DX	10	Often	0.017
DP01	I25	DX	10	Often	0.017
DP01	D03_INT_UNIQ_Q4	PX	CPT	Q4ServiceInt	0.017
DP01	74176	PX	CPT	Any	0.017

Appendix W. Top 100 Codes Ranked by Bias Potential Selected by the High Dimensional Propensity Score Algorithm for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group: ≥ 75 years

Masked DP ID	Code	Code Category	Code Type	Frequency	Ranking
DP01	M62	DX	10	Often	0.017
DP01	I25	DX	10	Any	0.017
DP01	K29	DX	10	Often	0.017
DP01	G0471	PX	HCPCS	Often	0.017
DP01	0W3P8ZZ	PX	10	Any	0.017
DP01	99231	PX	CPT	Any	0.017
DP01	99307	PX	CPT	Any	0.017
DP01	I95	DX	10	Any	0.016
DP01	R10	DX	10	Any	0.016
DP01	I48	DX	10	Any	0.016
DP01	93306	PX	CPT	Any	0.016
DP01	D04_INT_UNIQ_Q2	PX	10	Q2ServiceInt	0.016
DP01	J96	DX	10	Any	0.016
DP01	E86	DX	10	Any	0.016
DP01	F03	DX	10	Frequent	0.016
DP01	Q0092	PX	HCPCS	Any	0.016
DP01	D04_INT_ALL_Q2	PX	10	Q2ServiceInt	0.016
DP01	M62	DX	10	Frequent	0.015
DP01	K21	DX	10	Often	0.015
DP01	R13	DX	10	Any	0.015
DP01	R26	DX	10	Any	0.015
DP01	Z87	DX	10	Frequent	0.015
DP01	M62	DX	10	Any	0.015
DP01	Z95	DX	10	Any	0.014
DP01	P9603	PX	HCPCS	Often	0.014
DP01	D01_INT_ALL_Q4	DX	10	Q4ServiceInt	0.014
DP01	R26	DX	10	Often	0.014
DP01	F02	DX	10	Any	0.014

Appendix X. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	1.000	6.286	1.635	1.410
DP01	*****	1.000	6.286	1.635	1.410

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix Y. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	1.000	6.286	1.635	1.410
DP01	*****	1.000	6.286	1.635	1.410
Age Group: 18-49 years					
Aggregated	*****	1.000	6.391	1.614	1.351
DP01	*****	1.000	6.391	1.614	1.351
Age Group: 50-64 years					
Aggregated	*****	1.000	6.575	1.646	1.468
DP01	*****	1.000	6.575	1.646	1.468
Age Group: 65-74 years					
Aggregated	*****	1.000	6.587	1.653	1.489
DP01	*****	1.000	6.587	1.653	1.489
Age Group: ≥ 75 years					
Aggregated	*****	1.000	5.975	1.613	1.319
DP01	*****	1.000	5.975	1.613	1.319

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix Z. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	0.623	12.194	1.642	1.436
DP01	*****	0.623	12.194	1.642	1.436

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AA. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	0.623	12.194	1.642	1.436
DP01	*****	0.623	12.194	1.642	1.436
Age Group: 18-49 years					
Aggregated	*****	0.820	10.442	1.622	1.383
DP01	*****	0.820	10.442	1.622	1.383
Age Group: 50-64 years					
Aggregated	*****	0.536	10.662	1.653	1.494
DP01	*****	0.536	10.662	1.653	1.494
Age Group: 65-74 years					
Aggregated	*****	0.777	12.511	1.660	1.517
DP01	*****	0.777	12.511	1.660	1.517
Age Group: ≥ 75 years					
Aggregated	*****	0.860	11.614	1.620	1.345
DP01	*****	0.860	11.614	1.620	1.345

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AB. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	1.000	6.906	1.600	1.375
DP01	*****	1.000	6.906	1.600	1.375

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AC. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	1.000	6.906	1.600	1.375
DP01	*****	1.000	6.906	1.600	1.375
Age Group: 18-49 years					
Aggregated	*****	1.000	7.070	1.585	1.349
DP01	*****	1.000	7.070	1.585	1.349
Age Group: 50-64 years					
Aggregated	*****	1.000	7.253	1.611	1.441
DP01	*****	1.000	7.253	1.611	1.441
Age Group: 65-74 years					
Aggregated	*****	1.000	7.235	1.626	1.469
DP01	*****	1.000	7.235	1.626	1.469
Age Group: ≥ 75 years					
Aggregated	*****	1.000	6.655	1.570	1.275
DP01	*****	1.000	6.655	1.570	1.275

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AD. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	0.173	206.363	1.642	1.823
DP01	*****	0.173	206.363	1.642	1.823

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AE. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	0.173	206.363	1.642	1.823
DP01	*****	0.173	206.363	1.642	1.823
Age Group: 18-49 years					
Aggregated	*****	0.362	57.987	1.623	1.646
DP01	*****	0.362	57.987	1.623	1.646
Age Group: 50-64 years					
Aggregated	*****	0.517	150.904	1.654	1.881
DP01	*****	0.517	150.904	1.654	1.881
Age Group: 65-74 years					
Aggregated	*****	0.428	134.802	1.660	1.787
DP01	*****	0.428	134.802	1.660	1.787
Age Group: ≥ 75 years					
Aggregated	*****	0.624	150.600	1.620	1.840
DP01	*****	0.624	150.600	1.620	1.840

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AF. Distribution of Propensity Score Stratum Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	0.483	9.679	1.000	0.237
DP01	*****	0.483	9.679	1.000	0.237

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AG. Distribution of Propensity Score Stratum Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Fine Stratification Adjustment in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	0.483	9.679	1.000	0.237
DP01	*****	0.483	9.679	1.000	0.237
Age Group: 18-49 years					
Aggregated	*****	0.358	6.234	1.000	0.224
DP01	*****	0.358	6.234	1.000	0.224
Age Group: 50-64 years					
Aggregated	*****	0.397	8.232	1.000	0.228
DP01	*****	0.397	8.232	1.000	0.228
Age Group: 65-74 years					
Aggregated	*****	0.513	7.800	1.000	0.197
DP01	*****	0.513	7.800	1.000	0.197
Age Group: ≥ 75 years					
Aggregated	*****	0.481	10.774	1.000	0.287
DP01	*****	0.481	10.774	1.000	0.287

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AH. Distribution of Overlap Weights for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	0.003	0.995	0.288	0.247
DP01	*****	0.003	0.995	0.288	0.247

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AI. Distribution of Overlap Weights for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS-Generated Overlap Weights in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	0.003	0.995	0.288	0.247
DP01	*****	0.003	0.995	0.288	0.247
Age Group: 18-49 years					
Aggregated	*****	0.005	0.989	0.298	0.245
DP01	*****	0.005	0.989	0.298	0.245
Age Group: 50-64 years					
Aggregated	*****	0.005	0.993	0.280	0.248
DP01	*****	0.005	0.993	0.280	0.248
Age Group: 65-74 years					
Aggregated	*****	0.003	0.994	0.278	0.249
DP01	*****	0.003	0.994	0.278	0.249
Age Group: ≥ 75 years					
Aggregated	*****	0.004	0.995	0.301	0.245
DP01	*****	0.004	0.995	0.301	0.245

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AJ. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect (ATE)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	1.026	7.906	1.958	1.660
DP01	*****	1.026	7.906	1.958	1.660

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AK. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with IPTW ATE Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect (ATE)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	1.026	7.906	1.958	1.660
DP01	*****	1.026	7.906	1.958	1.660
Age Group: 18-49 years					
Aggregated	*****	1.039	8.070	1.963	1.627
DP01	*****	1.039	8.070	1.963	1.627
Age Group: 50-64 years					
Aggregated	*****	1.027	8.253	1.958	1.723
DP01	*****	1.027	8.253	1.958	1.723
Age Group: 65-74 years					
Aggregated	*****	1.032	8.235	1.966	1.754
DP01	*****	1.032	8.235	1.966	1.754
Age Group: ≥ 75 years					
Aggregated	*****	1.022	7.655	1.950	1.558
DP01	*****	1.022	7.655	1.950	1.558

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AL. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect (ATE)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	1.005	207.363	2.000	2.060
DP01	*****	1.005	207.363	2.000	2.060

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AM. Distribution of Inverse Probability of Treatment Weights After Trimming for COVID-19 Hospitalization among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATE Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect (ATE)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	1.005	207.363	2.000	2.060
DP01	*****	1.005	207.363	2.000	2.060
Age Group: 18-49 years					
Aggregated	*****	1.012	58.987	2.001	1.893
DP01	*****	1.012	58.987	2.001	1.893
Age Group: 50-64 years					
Aggregated	*****	1.007	151.904	2.001	2.118
DP01	*****	1.007	151.904	2.001	2.118
Age Group: 65-74 years					
Aggregated	*****	1.006	135.802	1.999	2.039
DP01	*****	1.006	135.802	1.999	2.039
Age Group: ≥ 75 years					
Aggregated	*****	1.007	151.600	2.000	2.062
DP01	*****	1.007	151.600	2.000	2.062

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AN. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	1.000	6.287	1.635	1.410
DP01	*****	1.000	6.287	1.635	1.410

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AO. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using User-Specified PS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	1.000	6.287	1.635	1.410
DP01	*****	1.000	6.287	1.635	1.410
Age Group: 18-49 years					
Aggregated	*****	1.000	6.394	1.614	1.351
DP01	*****	1.000	6.394	1.614	1.351
Age Group: 50-64 years					
Aggregated	*****	1.000	6.573	1.646	1.468
DP01	*****	1.000	6.573	1.646	1.468
Age Group: 65-74 years					
Aggregated	*****	1.000	6.587	1.653	1.489
DP01	*****	1.000	6.587	1.653	1.489
Age Group: ≥ 75 years					
Aggregated	*****	1.000	5.975	1.613	1.319
DP01	*****	1.000	5.975	1.613	1.319

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AP. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	0.624	12.198	1.642	1.436
DP01	*****	0.624	12.198	1.642	1.436

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AQ. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with User-Specified PS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	0.624	12.198	1.642	1.436
DP01	*****	0.624	12.198	1.642	1.436
Age Group: 18-49 years					
Aggregated	*****	0.821	10.589	1.622	1.383
DP01	*****	0.821	10.589	1.622	1.383
Age Group: 50-64 years					
Aggregated	*****	0.536	10.669	1.653	1.494
DP01	*****	0.536	10.669	1.653	1.494
Age Group: 65-74 years					
Aggregated	*****	0.853	12.501	1.660	1.517
DP01	*****	0.853	12.501	1.660	1.517
Age Group: ≥ 75 years					
Aggregated	*****	0.845	11.620	1.620	1.345
DP01	*****	0.845	11.620	1.620	1.345

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AR. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	1.000	6.949	1.602	1.380
DP01	*****	1.000	6.949	1.602	1.380

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AS. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with IPTW ATT Adjustment Using hdPS, 1% Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	1.000	6.949	1.602	1.380
DP01	*****	1.000	6.949	1.602	1.380
Age Group: 18-49 years					
Aggregated	*****	1.000	7.116	1.586	1.348
DP01	*****	1.000	7.116	1.586	1.348
Age Group: 50-64 years					
Aggregated	*****	1.000	7.250	1.610	1.440
DP01	*****	1.000	7.250	1.610	1.440
Age Group: 65-74 years					
Aggregated	*****	1.000	7.200	1.628	1.472
DP01	*****	1.000	7.200	1.628	1.472
Age Group: ≥ 75 years					
Aggregated	*****	1.000	6.595	1.569	1.271
DP01	*****	1.000	6.595	1.569	1.271

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AT. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Aggregated	*****	0.165	164.151	1.643	1.810
DP01	*****	0.165	164.151	1.643	1.810

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AU. Distribution of Inverse Probability of Treatment Weights After Trimming for Severe COVID-19 Outcome or Death among Proton Pump Inhibitor and Famotidine New Users with hdPS with IPTW ATT Adjustment, No Truncation in the Sentinel Distributed Database from April 1, 2020 to June 30, 2023, by Data Partner (DP), Age Group, Weight: Average Treatment Effect in the Treated (ATT)

Masked DP ID	Number of Patients	Minimum	Maximum	Mean	Standard Deviation
Overall					
Aggregated	*****	0.165	164.151	1.643	1.810
DP01	*****	0.165	164.151	1.643	1.810
Age Group: 18-49 years					
Aggregated	*****	0.326	51.303	1.624	1.643
DP01	*****	0.326	51.303	1.624	1.643
Age Group: 50-64 years					
Aggregated	*****	0.413	136.988	1.653	1.860
DP01	*****	0.413	136.988	1.653	1.860
Age Group: 65-74 years					
Aggregated	*****	0.425	153.093	1.660	1.780
DP01	*****	0.425	153.093	1.660	1.780
Age Group: ≥ 75 years					
Aggregated	*****	0.653	302.629	1.621	2.010
DP01	*****	0.653	302.629	1.621	2.010

*****Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

Appendix AV. List of Generic and Brand Names of Medical Products Used to Define Exposures in this Request

Generic Name	Brand Name
Proton Pump Inhibitors	
Heartburn Treatment	esomeprazole magnesium
Heartburn Treatment 24 Hour	lansoprazole
Konvomep	omeprazole/sodium bicarbonate
LANSOPRAZOLE	FIRST-Lansoprazole
Nexium	esomeprazole magnesium
OMEPRAZOLE	FIRST-Omeprazole
OMEPRAZOLE	Omeprazole+SyrSpend SF Alka
dexlansoprazole	Dexilant
dexlansoprazole	dexlansoprazole
esomeprazole magnesium	Nexium
esomeprazole magnesium	Nexium 24HR
esomeprazole magnesium	Nexium Packet
esomeprazole magnesium	esomeprazole magnesium
esomeprazole magnesium/glycerin	Esomep-EZS
esomeprazole strontium	esomeprazole strontium
lansoprazole	Heartburn Treatment 24 Hour
lansoprazole	Prevacid
lansoprazole	Prevacid 24Hr
lansoprazole	Prevacid SoluTab
lansoprazole	lansoprazole
naproxen-esomeprazole	naproxen/esomeprazole magnesium
naproxen/esomeprazole magnesium	Vimovo
naproxen/esomeprazole magnesium	naproxen-esomeprazole
omeprazole	omeprazole
omeprazole magnesium	Acid Reducer (omeprazole)
omeprazole magnesium	Prilosec
omeprazole magnesium	Prilosec OTC
omeprazole magnesium	omeprazole magnesium
omeprazole-sodium bicarbonate	omeprazole/sodium bicarbonate
omeprazole/sodium bicarbonate	OmePPi
omeprazole/sodium bicarbonate	Zegerid
omeprazole/sodium bicarbonate	Zegerid OTC
omeprazole/sodium bicarbonate	omeprazole-sodium bicarbonate
pantoprazole	pantoprazole sodium
pantoprazole sodium	Protonix
pantoprazole sodium	pantoprazole
rabeprazole	rabeprazole sodium
rabeprazole sodium	AcipHex
rabeprazole sodium	AcipHex Sprinkle
rabeprazole sodium	rabeprazole
Famotidine	
Acid Controller	famotidine
Acid Reducer (famotidine)	famotidine
Dual Action Complete	famotidine/calcium carbonate/magnesium hydroxide
Duexis	ibuprofen/famotidine
Zantac-360 (famotidine)	famotidine
famotidine	Acid Controller

Appendix AV. List of Generic and Brand Names of Medical Products Used to Define Exposures in this Request

Generic Name	Brand Name
famotidine	Acid Reducer (famotidine)
famotidine	Acid-Pep
famotidine	Heartburn Prevention
famotidine	Heartburn Relief (famotidine)
famotidine	Pepcid
famotidine	Pepcid AC
famotidine	Pepcid AC Maximum Strength
famotidine	Zantac-360 (famotidine)
famotidine	famotidine
famotidine/calcium carbonate/magnesium hydroxide	Acid Controller Complete
famotidine/calcium carbonate/magnesium hydroxide	Acid Reducer Complete (famot)
famotidine/calcium carbonate/magnesium hydroxide	Complete
famotidine/calcium carbonate/magnesium hydroxide	Dual Action Complete
famotidine/calcium carbonate/magnesium hydroxide	Pepcid Complete
famotidine/calcium carbonate/magnesium hydroxide	Tums Dual Action (famotidine)
ibuprofen-famotidine	ibuprofen/famotidine

Appendix AW. List of Generic and Brand Names of Medical Products Used to Define Exposure Incidence Criteria in this Request

Generic Name	Brand Name
H2 Receptor Antagonists	
RANITIDINE HCL	Deprizine
cimetidine	Acid Reducer (cimetidine)
cimetidine	Heartburn Relief (cimetidine)
cimetidine	Tagamet HB
cimetidine	cimetidine
cimetidine HCl	cimetidine HCl
famotidine	Acid Controller
famotidine	Acid Reducer (famotidine)
famotidine	Acid-Pep
famotidine	Heartburn Prevention
famotidine	Heartburn Relief (famotidine)
famotidine	Pepcid
famotidine	Pepcid AC
famotidine	Pepcid AC Maximum Strength
famotidine	Zantac-360 (famotidine)
famotidine	famotidine
famotidine/calcium carbonate/magnesium hydroxide	Acid Controller Complete
famotidine/calcium carbonate/magnesium hydroxide	Acid Reducer Complete (famot)
famotidine/calcium carbonate/magnesium hydroxide	Acid Reducer-Antacid
famotidine/calcium carbonate/magnesium hydroxide	Complete
famotidine/calcium carbonate/magnesium hydroxide	Dual Action Complete
famotidine/calcium carbonate/magnesium hydroxide	Pepcid Complete
famotidine/calcium carbonate/magnesium hydroxide	Tums Dual Action (famotidine)
nizatidine	nizatidine
ranitidine HCl	Acid Control (ranitidine)
ranitidine HCl	Acid Reducer (ranitidine)
ranitidine HCl	Heartburn Relief (ranitidine)
ranitidine HCl	Wal-Zan 150
ranitidine HCl	Wal-Zan 75
ranitidine HCl	Zantac
ranitidine HCl	Zantac 75
ranitidine HCl	Zantac Maximum Strength
ranitidine HCl	ranitidine HCl

Appendix AX. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Inclusion Criteria in this Request

Code	Description	Code Category	Code Type
Gastroesophageal Reflux Disease (GERD)			
0057T	Upper gastrointestinal endoscopy, including esophagus, stomach, and either the duodenum and/or jejunum as appropriate, with delivery of thermal energy to the muscle of the lower esophageal sphincter and/or gastric cardia, for treatment of gastroesophageal reflux disease	Procedure	CPT-3
0133T	Upper gastrointestinal endoscopy, including esophagus, stomach, and either the duodenum and/or jejunum as appropriate, with injection of implant material into and along the muscle of the lower esophageal sphincter (eg, for treatment of gastroesophageal reflux disease)	Procedure	CPT-3
1070F	Alarm symptoms (involuntary weight loss, dysphagia, or gastrointestinal bleeding) assessed; none present (GERD)	Procedure	CPT-2
1071F	Alarm symptoms (involuntary weight loss, dysphagia, or gastrointestinal bleeding) assessed; 1 or more present (GERD)	Procedure	CPT-2
1118F	GERD symptoms assessed after 12 months of therapy (GERD)	Procedure	CPT-2
3130F	Upper gastrointestinal endoscopy performed (GERD)	Procedure	CPT-2
3132F	Documentation of referral for upper gastrointestinal endoscopy (GERD)	Procedure	CPT-2
3140F	Upper gastrointestinal endoscopy report indicates suspicion of Barrett's esophagus (GERD)	Procedure	CPT-2
3141F	Upper gastrointestinal endoscopy report indicates no suspicion of Barrett's esophagus (GERD)	Procedure	CPT-2
3142F	Barium swallow test ordered (GERD)	Procedure	CPT-2
3143F	Documentation of order for barium swallow test (GERD)5	Procedure	CPT-2
3150F	Forceps esophageal biopsy performed (GERD)	Procedure	CPT-2
3200F	Barium swallow test not ordered (GERD)	Procedure	CPT-2
4185F	Continuous (12-months) therapy with proton pump inhibitor (PPI) or histamine H2 receptor antagonist (H2RA) received (GERD)	Procedure	CPT-2
4186F	No continuous (12-months) therapy with either proton pump inhibitor (PPI) or histamine H2 receptor antagonist (H2RA) received (GERD)	Procedure	CPT-2
43257	Esophagogastroduodenoscopy, flexible, transoral; with delivery of thermal energy to the muscle of lower esophageal sphincter and/or gastric cardia, for treatment of gastroesophageal reflux disease	Procedure	CPT-4
C9712	Insertion of a pH capsule for measurement and monitoring of gastroesophageal reflux disease, includes data collection and interpretation	Procedure	HCPCS
K21	Gastro-esophageal reflux disease	Diagnosis	ICD-10-CM
K21.0	Gastro-esophageal reflux disease with esophagitis	Diagnosis	ICD-10-CM
K21.00	Gastro-esophageal reflux disease with esophagitis, without bleeding	Diagnosis	ICD-10-CM
K21.01	Gastro-esophageal reflux disease with esophagitis, with bleeding	Diagnosis	ICD-10-CM
K21.9	Gastro-esophageal reflux disease without esophagitis	Diagnosis	ICD-10-CM
M1056	Prescribed anticoagulant medication during the performance period, history of GI bleeding, history of intracranial bleeding, bleeding disorder and specific provider documented reasons: allergy to aspirin or antiplatelets, use of nonsteroidal antiinflammatory agents, drug-drug interaction, uncontrolled hypertension > 180/110 mm Hg or gastroesophageal reflux disease	Procedure	HCPCS

Appendix AX. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Inclusion Criteria in this Request

Code	Description	Code Category	Code Type
S2215	Upper gastrointestinal endoscopy, including esophagus, stomach, and either the duodenum and/or jejunum as appropriate; with injection of implant material into and along the muscle of the lower esophageal sphincter for treatment of gastroesophageal reflux disease	Procedure	HCPCS
COVID-19 Diagnosis			
B97.29	Other coronavirus as the cause of diseases classified elsewhere	Diagnosis	ICD-10-CM
U07.1	COVID-19	Diagnosis	ICD-10-CM

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
COVID-19			
U07.1	COVID-19	Diagnosis	ICD-10-CM
Intensive Care Unit Stay			
0188T	Remote real-time interactive video-conferenced critical care, evaluation and management of the critically ill or critically injured patient; first 30-74 minutes	Procedure	CPT-3
0189T	Remote real-time interactive video-conferenced critical care, evaluation and management of the critically ill or critically injured patient; each additional 30 minutes (List separately in addition to code for primary service)	Procedure	CPT-3
0200	General classification for intensive care unit (ICU)	Procedure	RE
0201	Surgical ICU	Procedure	RE
0202	Medical ICU	Procedure	RE
0203	Pediatric ICU	Procedure	RE
0204	Psychiatric ICU	Procedure	RE
0206	Intermediate ICU	Procedure	RE
0207	Burn care	Procedure	RE
0208	Trauma care	Procedure	RE
0209	Other intensive care	Procedure	RE
0210	General classification cardiac care unit (CCU)	Procedure	RE
0211	Myocardial infarction care	Procedure	RE
0212	Pulmonary care	Procedure	RE
0213	Heart transplant	Procedure	RE
0214	Intermediate CCU	Procedure	RE
0219	Other coronary care	Procedure	RE
0581F	Patient transferred directly from anesthetizing location to critical care unit (Peri2)	Procedure	CPT-2
0582F	Patient not transferred directly from anesthetizing location to critical care unit (Peri2)	Procedure	CPT-2
09HN7BZ	Insertion of Airway into Nasopharynx, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
09HN8BZ	Insertion of Airway into Nasopharynx, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0BH13EZ	Insertion of Endotracheal Airway into Trachea, Percutaneous Approach	Procedure	ICD-10-PCS
0BH17EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0BH18EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0CHY7BZ	Insertion of Airway into Mouth and Throat, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0CHY8BZ	Insertion of Airway into Mouth and Throat, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0DH57BZ	Insertion of Airway into Esophagus, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0DH58BZ	Insertion of Airway into Esophagus, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0WHQ73Z	Insertion of Infusion Device into Respiratory Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0WHQ7YZ	Insertion of Other Device into Respiratory Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
31500	Intubation, endotracheal, emergency procedure	Procedure	CPT-4
33946	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; initiation, veno-venous	Procedure	CPT-4

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
33947	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; initiation, veno-arterial	Procedure	CPT-4
33948	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; daily management, each day, veno-venous	Procedure	CPT-4
33949	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; daily management, each day, veno-arterial	Procedure	CPT-4
33952	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33954	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), open, 6 years and older	Procedure	CPT-4
33956	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of central cannula(e) by sternotomy or thoracotomy, 6 years and older	Procedure	CPT-4
33958	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33960	Prolonged extracorporeal circulation for cardiopulmonary insufficiency; initial day	Procedure	CPT-4
33961	Prolonged extracorporeal circulation for cardiopulmonary insufficiency; each subsequent day	Procedure	CPT-4
33962	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), open, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33964	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition central cannula(e) by sternotomy or thoracotomy, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33966	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older	Procedure	CPT-4
33984	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), open, 6 years and older	Procedure	CPT-4
33986	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of central cannula(e) by sternotomy or thoracotomy, 6 years and older	Procedure	CPT-4
33987	Arterial exposure with creation of graft conduit (eg, chimney graft) to facilitate arterial perfusion for ECMO/ECLS (List separately in addition to code for primary procedure)	Procedure	CPT-4
33988	Insertion of left heart vent by thoracic incision (eg, sternotomy, thoracotomy) for ECMO/ECLS	Procedure	CPT-4
33989	Removal of left heart vent by thoracic incision (eg, sternotomy, thoracotomy) for ECMO/ECLS	Procedure	CPT-4

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
36822	Insertion of cannula(s) for prolonged extracorporeal circulation for cardiopulmonary insufficiency (ECMO) (separate procedure)	Procedure	CPT-4
3E030XZ	Introduction of Vasopressor into Peripheral Vein, Open Approach	Procedure	ICD-10-PCS
3E033XZ	Introduction of Vasopressor into Peripheral Vein, Percutaneous Approach	Procedure	ICD-10-PCS
3E040XZ	Introduction of Vasopressor into Central Vein, Open Approach	Procedure	ICD-10-PCS
3E043XZ	Introduction of Vasopressor into Central Vein, Percutaneous Approach	Procedure	ICD-10-PCS
3E050XZ	Introduction of Vasopressor into Peripheral Artery, Open Approach	Procedure	ICD-10-PCS
3E053XZ	Introduction of Vasopressor into Peripheral Artery, Percutaneous Approach	Procedure	ICD-10-PCS
3E060XZ	Introduction of Vasopressor into Central Artery, Open Approach	Procedure	ICD-10-PCS
3E063XZ	Introduction of Vasopressor into Central Artery, Percutaneous Approach	Procedure	ICD-10-PCS
4168F	Patient receiving care in the intensive care unit (ICU) and receiving mechanical ventilation, 24 hours or less (CRIT)	Procedure	CPT-2
94002	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; hospital inpatient/observation, initial day	Procedure	CPT-4
94003	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; hospital inpatient/observation, each subsequent day	Procedure	CPT-4
99160	Critical Care, Initial, Including The Diagnostic And Therapeutic Services And Direction Of Care Of The Critically Ill Or Multiply Injured Or Comatose Patient, Requiring The Prolonged Presence Of The Physician; First Hour	Procedure	CPT-4
99162	Critical Care, Initial, Including The Diagnostic And Therapeutic Services And Direction Of Care Of The Critically Ill Or Multiply Injured Or Comatose Patient, Requiring The Prolonged Presence Of The Physician; Each Additional 30 Minutes	Procedure	CPT-4
99171	Critical Care, Subsequent Follow-up Visit; Brief Examination, Evaluation And/or Treatment For Same Illness	Procedure	CPT-4
99289	Critical care services delivered by a physician, face-to-face, during an interfacility transport of critically ill or critically injured pediatric patient, 24 months of age or less; first 30-74 minutes of hands on care during transport	Procedure	CPT-4
99290	Critical care services delivered by a physician, face-to-face, during an interfacility transport of critically ill or critically injured pediatric patient, 24 months of age or less; each additional 30 minutes (List separately in addition to code for primary service)	Procedure	CPT-4
99291	Critical care, evaluation and management of the critically ill or critically injured patient; first 30-74 minutes	Procedure	CPT-4
99292	Critical care, evaluation and management of the critically ill or critically injured patient; each additional 30 minutes (List separately in addition to code for primary service)	Procedure	CPT-4
99293	Initial inpatient pediatric critical care, per day, for the evaluation and management of a critically ill infant or young child, 29 days through 24 months of age	Procedure	CPT-4
99294	Subsequent inpatient pediatric critical care, per day, for the evaluation and management of a critically ill infant or young child, 29 days through 24 months of age	Procedure	CPT-4

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
99295	Initial inpatient neonatal critical care, per day, for the evaluation and management of a critically ill neonate, 28 days of age or less	Procedure	CPT-4
99296	Subsequent inpatient neonatal critical care, per day, for the evaluation and management of a critically ill neonate, 28 days of age or less	Procedure	CPT-4
99466	Critical care face-to-face services, during an interfacility transport of critically ill or critically injured pediatric patient, 24 months of age or younger; first 30-74 minutes of hands-on care during transport	Procedure	CPT-4
99467	Critical care face-to-face services, during an interfacility transport of critically ill or critically injured pediatric patient, 24 months of age or younger; each additional 30 minutes (List separately in addition to code for primary service)	Procedure	CPT-4
99468	Initial inpatient neonatal critical care, per day, for the evaluation and management of a critically ill neonate, 28 days of age or younger	Procedure	CPT-4
99469	Subsequent inpatient neonatal critical care, per day, for the evaluation and management of a critically ill neonate, 28 days of age or younger	Procedure	CPT-4
99471	Initial inpatient pediatric critical care, per day, for the evaluation and management of a critically ill infant or young child, 29 days through 24 months of age	Procedure	CPT-4
99472	Subsequent inpatient pediatric critical care, per day, for the evaluation and management of a critically ill infant or young child, 29 days through 24 months of age	Procedure	CPT-4
99475	Initial inpatient pediatric critical care, per day, for the evaluation and management of a critically ill infant or young child, 2 through 5 years of age	Procedure	CPT-4
99476	Subsequent inpatient pediatric critical care, per day, for the evaluation and management of a critically ill infant or young child, 2 through 5 years of age	Procedure	CPT-4
99477	Initial hospital care, per day, for the evaluation and management of the neonate, 28 days of age or younger, who requires intensive observation, frequent interventions, and other intensive care services	Procedure	CPT-4
99478	Subsequent intensive care, per day, for the evaluation and management of the recovering very low birth weight infant (present body weight less than 1500 grams)	Procedure	CPT-4
99479	Subsequent intensive care, per day, for the evaluation and management of the recovering low birth weight infant (present body weight of 1500-2500 grams)	Procedure	CPT-4
99480	Subsequent intensive care, per day, for the evaluation and management of the recovering infant (present body weight of 2501-5000 grams)	Procedure	CPT-4
99485	Supervision by a control physician of interfacility transport care of the critically ill or critically injured pediatric patient, 24 months of age or younger, includes two-way communication with transport team before transport, at the referring facility and during the transport, including data interpretation and report; first 30 minutes	Procedure	CPT-4
99486	Supervision by a control physician of interfacility transport care of the critically ill or critically injured pediatric patient, 24 months of age or younger, includes two-way communication with transport team before transport, at the referring facility and during the transport, including data interpretation and report; each additional 30 minutes (List separately in addition to code for primary procedure)	Procedure	CPT-4
A0396	ALS specialized service disposable supplies; esophageal intubation	Procedure	HCPCS
A4483	Moisture exchanger, disposable, for use with invasive mechanical ventilation	Procedure	HCPCS

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
E0472	Respiratory assist device, bi-level pressure capability, with backup rate feature, used with invasive interface, e.g., tracheostomy tube (intermittent assist device with continuous positive airway pressure device)	Procedure	HCPCS
E0481	Intrapulmonary percussive ventilation system and related accessories	Procedure	HCPCS
G0240	Critical care service delivered by a physician, face to face; during interfacility transport of a critically ill or critically injured patient; first 30-74 minutes of active transport	Procedure	HCPCS
G0390	Trauma response team associated with hospital critical care service	Procedure	HCPCS
G0508	Telehealth consultation, critical care, initial, physicians typically spend 60 minutes communicating with the patient and providers via telehealth	Procedure	HCPCS
G0509	Telehealth consultation, critical care, subsequent, physicians typically spend 50 minutes communicating with the patient and providers via telehealth	Procedure	HCPCS
G8569	Prolonged postoperative intubation (> 24 hrs) required	Procedure	HCPCS
J0171	Injection, adrenalin, epinephrine, 0.1 mg	Procedure	HCPCS
J1250	Injection, dobutamine HCl, per 250 mg	Procedure	HCPCS
J1265	Injection, dopamine HCl, 40 mg	Procedure	HCPCS
Mechanical Ventilation			
0BH13EZ	Insertion of Endotracheal Airway into Trachea, Percutaneous Approach	Procedure	ICD-10-PCS
0BH17EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0BH18EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0CHY7BZ	Insertion of Airway into Mouth and Throat, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0CHY8BZ	Insertion of Airway into Mouth and Throat, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0DH57BZ	Insertion of Airway into Esophagus, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0DH58BZ	Insertion of Airway into Esophagus, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0DL57DZ	Occlusion of Esophagus with Intraluminal Device, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0DL58DZ	Occlusion of Esophagus with Intraluminal Device, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0WHQ73Z	Insertion of Infusion Device into Respiratory Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0WHQ7YZ	Insertion of Other Device into Respiratory Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
31500	Intubation, endotracheal, emergency procedure	Procedure	CPT-4
31719	Transtracheal (percutaneous) Introduction Of Indwelling Tube For Therapy (eg, Tickle Tube, Catheter For Oxygen Administration)	Procedure	CPT-4
31730	Transtracheal (percutaneous) introduction of needle wire dilator/stent or indwelling tube for oxygen therapy	Procedure	CPT-4
33946	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; initiation, veno-venous	Procedure	CPT-4
33947	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; initiation, veno-arterial	Procedure	CPT-4
33948	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; daily management, each day, veno-venous	Procedure	CPT-4

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
33949	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; daily management, each day, veno-arterial	Procedure	CPT-4
33952	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33954	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), open, 6 years and older	Procedure	CPT-4
33956	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of central cannula(e) by sternotomy or thoracotomy, 6 years and older	Procedure	CPT-4
33958	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33962	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), open, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33964	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition central cannula(e) by sternotomy or thoracotomy, 6 years and older (includes fluoroscopic guidance, when performed)	Procedure	CPT-4
33966	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older	Procedure	CPT-4
33984	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), open, 6 years and older	Procedure	CPT-4
33986	Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of central cannula(e) by sternotomy or thoracotomy, 6 years and older	Procedure	CPT-4
33987	Arterial exposure with creation of graft conduit (eg, chimney graft) to facilitate arterial perfusion for ECMO/ECLS (List separately in addition to code for primary procedure)	Procedure	CPT-4
33988	Insertion of left heart vent by thoracic incision (eg, sternotomy, thoracotomy) for ECMO/ECLS	Procedure	CPT-4
33989	Removal of left heart vent by thoracic incision (eg, sternotomy, thoracotomy) for ECMO/ECLS	Procedure	CPT-4
4168F	Patient receiving care in the intensive care unit (ICU) and receiving mechanical ventilation, 24 hours or less (CRIT)	Procedure	CPT-2
5A09	Assistance / Respiratory	Procedure	ICD-10-PCS
5A0920Z	Assistance with Respiratory Filtration, Continuous	Procedure	ICD-10-PCS
5A09357	Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, Continuous Positive Airway Pressure	Procedure	ICD-10-PCS

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
5A09358	Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, Intermittent Positive Airway Pressure	Procedure	ICD-10-PCS
5A09359	Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, Continuous Negative Airway Pressure	Procedure	ICD-10-PCS
5A0935A	Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, High Nasal Flow/Velocity	Procedure	ICD-10-PCS
5A0935B	Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, Intermittent Negative Airway Pressure	Procedure	ICD-10-PCS
5A0935Z	Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours	Procedure	ICD-10-PCS
5A09457	Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, Continuous Positive Airway Pressure	Procedure	ICD-10-PCS
5A09458	Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, Intermittent Positive Airway Pressure	Procedure	ICD-10-PCS
5A09459	Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, Continuous Negative Airway Pressure	Procedure	ICD-10-PCS
5A0945A	Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, High Nasal Flow/Velocity	Procedure	ICD-10-PCS
5A0945B	Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, Intermittent Negative Airway Pressure	Procedure	ICD-10-PCS
5A0945Z	Assistance with Respiratory Ventilation, 24-96 Consecutive Hours	Procedure	ICD-10-PCS
5A09557	Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, Continuous Positive Airway Pressure	Procedure	ICD-10-PCS
5A09558	Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, Intermittent Positive Airway Pressure	Procedure	ICD-10-PCS
5A09559	Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, Continuous Negative Airway Pressure	Procedure	ICD-10-PCS
5A0955A	Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, High Nasal Flow/Velocity	Procedure	ICD-10-PCS
5A0955B	Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, Intermittent Negative Airway Pressure	Procedure	ICD-10-PCS
5A0955Z	Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours	Procedure	ICD-10-PCS
5A1935Z	Respiratory Ventilation, Less than 24 Consecutive Hours	Procedure	ICD-10-PCS
5A1945Z	Respiratory Ventilation, 24-96 Consecutive Hours	Procedure	ICD-10-PCS
5A1955Z	Respiratory Ventilation, Greater than 96 Consecutive Hours	Procedure	ICD-10-PCS
94002	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; hospital inpatient/observation, initial day	Procedure	CPT-4
94003	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; hospital inpatient/observation, each subsequent day	Procedure	CPT-4
94004	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; nursing facility, per day	Procedure	CPT-4

Appendix AY. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Revenue (RE) Codes Used to Define Outcomes in this Request

Code	Description	Code Category	Code Type
94656	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; first day	Procedure	CPT-4
94657	Ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing; subsequent days	Procedure	CPT-4
A0396	ALS specialized service disposable supplies; esophageal intubation	Procedure	HCPCS
A4483	Moisture exchanger, disposable, for use with invasive mechanical ventilation	Procedure	HCPCS
A4608	Transtracheal oxygen catheter, each	Procedure	HCPCS
A4623	Tracheostomy, inner cannula	Procedure	HCPCS
A4624	Tracheal suction catheter, any type other than closed system, each	Procedure	HCPCS
Z99.1	Dependence on respirator	Diagnosis	ICD-10-CM
Z99.11	Dependence on respirator [ventilator] status	Diagnosis	ICD-10-CM
Z99.12	Encounter for respirator [ventilator] dependence during power failure	Diagnosis	ICD-10-CM

Appendix AZ. List of SARS-CoV-2 Laboratory Tests Used to Define Exclusion Criteria in this Request

Laboratory Test Name	Laboratory Test Type	Specimen Source	Lab Result
SARS-CoV-2	Polymerase Chain Reaction (PCR)	bronchoalveolar lavage	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	blood	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	nasopharyngeal swab	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	nasopharyngeal wash	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	plasma	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	saliva	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	serum	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	sputum	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	serum/plasma	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	throat swab, oropharyngeal swab	Positive
SARS-CoV-2	Polymerase Chain Reaction (PCR)	unknown/missing	Positive

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Diabetes			
E08	Diabetes mellitus due to underlying condition	Diagnosis	ICD-10-CM
E08.0	Diabetes mellitus due to underlying condition with hyperosmolarity	Diagnosis	ICD-10-CM
E08.00	Diabetes mellitus due to underlying condition with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	Diagnosis	ICD-10-CM
E08.01	Diabetes mellitus due to underlying condition with hyperosmolarity with coma	Diagnosis	ICD-10-CM
E08.1	Diabetes mellitus due to underlying condition with ketoacidosis	Diagnosis	ICD-10-CM
E08.10	Diabetes mellitus due to underlying condition with ketoacidosis without coma	Diagnosis	ICD-10-CM
E08.11	Diabetes mellitus due to underlying condition with ketoacidosis with coma	Diagnosis	ICD-10-CM
E08.2	Diabetes mellitus due to underlying condition with kidney complications	Diagnosis	ICD-10-CM
E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy	Diagnosis	ICD-10-CM
E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication	Diagnosis	ICD-10-CM
E08.3	Diabetes mellitus due to underlying condition with ophthalmic complications	Diagnosis	ICD-10-CM
E08.31	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy	Diagnosis	ICD-10-CM
E08.311	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E08.319	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E08.32	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic	Diagnosis	ICD-10-CM
E08.321	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E08.3211	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E08.3212	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E08.3213	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3219	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.329	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E08.3291	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E08.3292	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E08.3293	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3299	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.33	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E08.331	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E08.3311	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E08.3312	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E08.3313	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3319	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.339	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E08.3391	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E08.3392	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E08.3393	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3399	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.34	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic	Diagnosis	ICD-10-CM
E08.341	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E08.3411	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E08.3412	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E08.3413	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3419	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.349	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E08.3491	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E08.3492	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E08.3493	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3499	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.35	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E08.351	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E08.3511	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E08.3512	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E08.3513	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3519	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.352	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula	Diagnosis	ICD-10-CM
E08.3521	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye	Diagnosis	ICD-10-CM
E08.3522	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye	Diagnosis	ICD-10-CM
E08.3523	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral	Diagnosis	ICD-10-CM
E08.3529	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, unspecified eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E08.353	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula	Diagnosis	ICD-10-CM
E08.3531	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye	Diagnosis	ICD-10-CM
E08.3532	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye	Diagnosis	ICD-10-CM
E08.3533	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral	Diagnosis	ICD-10-CM
E08.3539	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E08.354	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment	Diagnosis	ICD-10-CM
E08.3541	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye	Diagnosis	ICD-10-CM
E08.3542	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye	Diagnosis	ICD-10-CM
E08.3543	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral	Diagnosis	ICD-10-CM
E08.3549	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, unspecified eye	Diagnosis	ICD-10-CM
E08.355	Diabetes mellitus due to underlying condition with stable proliferative diabetic	Diagnosis	ICD-10-CM
E08.3551	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, right eye	Diagnosis	ICD-10-CM
E08.3552	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, left eye	Diagnosis	ICD-10-CM
E08.3553	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, bilateral	Diagnosis	ICD-10-CM
E08.3559	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, unspecified eye	Diagnosis	ICD-10-CM
E08.359	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E08.3591	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E08.3592	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E08.3593	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E08.3599	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E08.36	Diabetes mellitus due to underlying condition with diabetic cataract	Diagnosis	ICD-10-CM
E08.37	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment	Diagnosis	ICD-10-CM
E08.37X1	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, right eye	Diagnosis	ICD-10-CM
E08.37X2	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, left eye	Diagnosis	ICD-10-CM
E08.37X3	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, bilateral	Diagnosis	ICD-10-CM
E08.37X9	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, unspecified eye	Diagnosis	ICD-10-CM
E08.39	Diabetes mellitus due to underlying condition with other diabetic ophthalmic	Diagnosis	ICD-10-CM
E08.4	Diabetes mellitus due to underlying condition with neurological complications	Diagnosis	ICD-10-CM
E08.40	Diabetes mellitus due to underlying condition with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E08.41	Diabetes mellitus due to underlying condition with diabetic mononeuropathy	Diagnosis	ICD-10-CM
E08.42	Diabetes mellitus due to underlying condition with diabetic polyneuropathy	Diagnosis	ICD-10-CM
E08.43	Diabetes mellitus due to underlying condition with diabetic autonomic	Diagnosis	ICD-10-CM
E08.44	Diabetes mellitus due to underlying condition with diabetic amyotrophy	Diagnosis	ICD-10-CM
E08.49	Diabetes mellitus due to underlying condition with other diabetic neurological	Diagnosis	ICD-10-CM
E08.5	Diabetes mellitus due to underlying condition with circulatory complications	Diagnosis	ICD-10-CM
E08.51	Diabetes mellitus due to underlying condition with diabetic peripheral angiopathy without gangrene	Diagnosis	ICD-10-CM
E08.52	Diabetes mellitus due to underlying condition with diabetic peripheral angiopathy with gangrene	Diagnosis	ICD-10-CM
E08.59	Diabetes mellitus due to underlying condition with other circulatory complications	Diagnosis	ICD-10-CM
E08.6	Diabetes mellitus due to underlying condition with other specified complications	Diagnosis	ICD-10-CM
E08.61	Diabetes mellitus due to underlying condition with diabetic arthropathy	Diagnosis	ICD-10-CM
E08.610	Diabetes mellitus due to underlying condition with diabetic neuropathic arthropathy	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E08.618	Diabetes mellitus due to underlying condition with other diabetic arthropathy	Diagnosis	ICD-10-CM
E08.62	Diabetes mellitus due to underlying condition with skin complications	Diagnosis	ICD-10-CM
E08.620	Diabetes mellitus due to underlying condition with diabetic dermatitis	Diagnosis	ICD-10-CM
E08.621	Diabetes mellitus due to underlying condition with foot ulcer	Diagnosis	ICD-10-CM
E08.622	Diabetes mellitus due to underlying condition with other skin ulcer	Diagnosis	ICD-10-CM
E08.628	Diabetes mellitus due to underlying condition with other skin complications	Diagnosis	ICD-10-CM
E08.63	Diabetes mellitus due to underlying condition with oral complications	Diagnosis	ICD-10-CM
E08.630	Diabetes mellitus due to underlying condition with periodontal disease	Diagnosis	ICD-10-CM
E08.638	Diabetes mellitus due to underlying condition with other oral complications	Diagnosis	ICD-10-CM
E08.64	Diabetes mellitus due to underlying condition with hypoglycemia	Diagnosis	ICD-10-CM
E08.641	Diabetes mellitus due to underlying condition with hypoglycemia with coma	Diagnosis	ICD-10-CM
E08.649	Diabetes mellitus due to underlying condition with hypoglycemia without coma	Diagnosis	ICD-10-CM
E08.65	Diabetes mellitus due to underlying condition with hyperglycemia	Diagnosis	ICD-10-CM
E08.69	Diabetes mellitus due to underlying condition with other specified complication	Diagnosis	ICD-10-CM
E08.8	Diabetes mellitus due to underlying condition with unspecified complications	Diagnosis	ICD-10-CM
E08.9	Diabetes mellitus due to underlying condition without complications	Diagnosis	ICD-10-CM
E09	Drug or chemical induced diabetes mellitus	Diagnosis	ICD-10-CM
E09.0	Drug or chemical induced diabetes mellitus with hyperosmolarity	Diagnosis	ICD-10-CM
E09.00	Drug or chemical induced diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	Diagnosis	ICD-10-CM
E09.01	Drug or chemical induced diabetes mellitus with hyperosmolarity with coma	Diagnosis	ICD-10-CM
E09.1	Drug or chemical induced diabetes mellitus with ketoacidosis	Diagnosis	ICD-10-CM
E09.10	Drug or chemical induced diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
E09.11	Drug or chemical induced diabetes mellitus with ketoacidosis with coma	Diagnosis	ICD-10-CM
E09.2	Drug or chemical induced diabetes mellitus with kidney complications	Diagnosis	ICD-10-CM
E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E09.3	Drug or chemical induced diabetes mellitus with ophthalmic complications	Diagnosis	ICD-10-CM
E09.31	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy	Diagnosis	ICD-10-CM
E09.311	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E09.319	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.32	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic	Diagnosis	ICD-10-CM
E09.321	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E09.3211	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E09.3212	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E09.3213	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3219	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.329	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E09.3291	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E09.3292	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E09.3293	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3299	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.33	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic	Diagnosis	ICD-10-CM
E09.331	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E09.3311	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E09.3312	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E09.3313	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3319	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.339	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.3391	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E09.3392	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E09.3393	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3399	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.34	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic	Diagnosis	ICD-10-CM
E09.341	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E09.3411	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E09.3412	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E09.3413	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3419	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.349	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E09.3491	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E09.3492	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E09.3493	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3499	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.35	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E09.351	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E09.3511	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.3512	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E09.3513	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3519	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.352	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula	Diagnosis	ICD-10-CM
E09.3521	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye	Diagnosis	ICD-10-CM
E09.3522	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye	Diagnosis	ICD-10-CM
E09.3523	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral	Diagnosis	ICD-10-CM
E09.3529	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E09.353	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula	Diagnosis	ICD-10-CM
E09.3531	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye	Diagnosis	ICD-10-CM
E09.3532	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye	Diagnosis	ICD-10-CM
E09.3533	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral	Diagnosis	ICD-10-CM
E09.3539	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E09.354	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment	Diagnosis	ICD-10-CM
E09.3541	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right	Diagnosis	ICD-10-CM
E09.3542	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left	Diagnosis	ICD-10-CM
E09.3543	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.3549	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, unspecified eye	Diagnosis	ICD-10-CM
E09.355	Drug or chemical induced diabetes mellitus with stable proliferative diabetic	Diagnosis	ICD-10-CM
E09.3551	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, right eye	Diagnosis	ICD-10-CM
E09.3552	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, left eye	Diagnosis	ICD-10-CM
E09.3553	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, bilateral	Diagnosis	ICD-10-CM
E09.3559	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, unspecified eye	Diagnosis	ICD-10-CM
E09.359	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E09.3591	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E09.3592	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E09.3593	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E09.3599	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E09.36	Drug or chemical induced diabetes mellitus with diabetic cataract	Diagnosis	ICD-10-CM
E09.37	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment	Diagnosis	ICD-10-CM
E09.37X1	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, right eye	Diagnosis	ICD-10-CM
E09.37X2	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, left eye	Diagnosis	ICD-10-CM
E09.37X3	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral	Diagnosis	ICD-10-CM
E09.37X9	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, unspecified eye	Diagnosis	ICD-10-CM
E09.39	Drug or chemical induced diabetes mellitus with other diabetic ophthalmic	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.4	Drug or chemical induced diabetes mellitus with neurological complications	Diagnosis	ICD-10-CM
E09.40	Drug or chemical induced diabetes mellitus with neurological complications with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E09.41	Drug or chemical induced diabetes mellitus with neurological complications with diabetic mononeuropathy	Diagnosis	ICD-10-CM
E09.42	Drug or chemical induced diabetes mellitus with neurological complications with diabetic polyneuropathy	Diagnosis	ICD-10-CM
E09.43	Drug or chemical induced diabetes mellitus with neurological complications with diabetic autonomic (poly)neuropathy	Diagnosis	ICD-10-CM
E09.44	Drug or chemical induced diabetes mellitus with neurological complications with diabetic amyotrophy	Diagnosis	ICD-10-CM
E09.49	Drug or chemical induced diabetes mellitus with neurological complications with other diabetic neurological complication	Diagnosis	ICD-10-CM
E09.5	Drug or chemical induced diabetes mellitus with circulatory complications	Diagnosis	ICD-10-CM
E09.51	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy without gangrene	Diagnosis	ICD-10-CM
E09.52	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy with	Diagnosis	ICD-10-CM
E09.59	Drug or chemical induced diabetes mellitus with other circulatory complications	Diagnosis	ICD-10-CM
E09.6	Drug or chemical induced diabetes mellitus with other specified complications	Diagnosis	ICD-10-CM
E09.61	Drug or chemical induced diabetes mellitus with diabetic arthropathy	Diagnosis	ICD-10-CM
E09.610	Drug or chemical induced diabetes mellitus with diabetic neuropathic arthropathy	Diagnosis	ICD-10-CM
E09.618	Drug or chemical induced diabetes mellitus with other diabetic arthropathy	Diagnosis	ICD-10-CM
E09.62	Drug or chemical induced diabetes mellitus with skin complications	Diagnosis	ICD-10-CM
E09.620	Drug or chemical induced diabetes mellitus with diabetic dermatitis	Diagnosis	ICD-10-CM
E09.621	Drug or chemical induced diabetes mellitus with foot ulcer	Diagnosis	ICD-10-CM
E09.622	Drug or chemical induced diabetes mellitus with other skin ulcer	Diagnosis	ICD-10-CM
E09.628	Drug or chemical induced diabetes mellitus with other skin complications	Diagnosis	ICD-10-CM
E09.63	Drug or chemical induced diabetes mellitus with oral complications	Diagnosis	ICD-10-CM
E09.630	Drug or chemical induced diabetes mellitus with periodontal disease	Diagnosis	ICD-10-CM
E09.638	Drug or chemical induced diabetes mellitus with other oral complications	Diagnosis	ICD-10-CM
E09.64	Drug or chemical induced diabetes mellitus with hypoglycemia	Diagnosis	ICD-10-CM
E09.641	Drug or chemical induced diabetes mellitus with hypoglycemia with coma	Diagnosis	ICD-10-CM
E09.649	Drug or chemical induced diabetes mellitus with hypoglycemia without coma	Diagnosis	ICD-10-CM
E09.65	Drug or chemical induced diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.69	Drug or chemical induced diabetes mellitus with other specified complication	Diagnosis	ICD-10-CM
E09.8	Drug or chemical induced diabetes mellitus with unspecified complications	Diagnosis	ICD-10-CM
E09.9	Drug or chemical induced diabetes mellitus without complications	Diagnosis	ICD-10-CM
E10	Type 1 diabetes mellitus	Diagnosis	ICD-10-CM
E10.1	Type 1 diabetes mellitus with ketoacidosis	Diagnosis	ICD-10-CM
E10.10	Type 1 diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
E10.11	Type 1 diabetes mellitus with ketoacidosis with coma	Diagnosis	ICD-10-CM
E10.2	Type 1 diabetes mellitus with kidney complications	Diagnosis	ICD-10-CM
E10.21	Type 1 diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E10.29	Type 1 diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E10.3	Type 1 diabetes mellitus with ophthalmic complications	Diagnosis	ICD-10-CM
E10.31	Type 1 diabetes mellitus with unspecified diabetic retinopathy	Diagnosis	ICD-10-CM
E10.311	Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E10.319	Type 1 diabetes mellitus with unspecified diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E10.32	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E10.321	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular	Diagnosis	ICD-10-CM
E10.3211	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E10.3212	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E10.3213	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3219	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.329	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without	Diagnosis	ICD-10-CM
E10.3291	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E10.3292	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E10.3293	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3299	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E10.33	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E10.331	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E10.3311	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E10.3312	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E10.3313	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3319	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.339	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E10.3391	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E10.3392	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E10.3393	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3399	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.34	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E10.341	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with	Diagnosis	ICD-10-CM
E10.3411	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E10.3412	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E10.3413	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3419	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.349	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E10.3491	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E10.3492	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E10.3493	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3499	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.35	Type 1 diabetes mellitus with proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E10.351	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E10.3511	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema,	Diagnosis	ICD-10-CM
E10.3512	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema,	Diagnosis	ICD-10-CM
E10.3513	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema,	Diagnosis	ICD-10-CM
E10.3519	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.352	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula	Diagnosis	ICD-10-CM
E10.3521	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye	Diagnosis	ICD-10-CM
E10.3522	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye	Diagnosis	ICD-10-CM
E10.3523	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral	Diagnosis	ICD-10-CM
E10.3529	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E10.353	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula	Diagnosis	ICD-10-CM
E10.3531	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye	Diagnosis	ICD-10-CM
E10.3532	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye	Diagnosis	ICD-10-CM
E10.3533	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E10.3539	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E10.354	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment	Diagnosis	ICD-10-CM
E10.3541	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye	Diagnosis	ICD-10-CM
E10.3542	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye	Diagnosis	ICD-10-CM
E10.3543	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral	Diagnosis	ICD-10-CM
E10.3549	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, unspecified eye	Diagnosis	ICD-10-CM
E10.355	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E10.3551	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, right eye	Diagnosis	ICD-10-CM
E10.3552	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, left eye	Diagnosis	ICD-10-CM
E10.3553	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, bilateral	Diagnosis	ICD-10-CM
E10.3559	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, unspecified eye	Diagnosis	ICD-10-CM
E10.359	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular	Diagnosis	ICD-10-CM
E10.3591	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E10.3592	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular	Diagnosis	ICD-10-CM
E10.3593	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E10.3599	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E10.36	Type 1 diabetes mellitus with diabetic cataract	Diagnosis	ICD-10-CM
E10.37	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment	Diagnosis	ICD-10-CM
E10.37X1	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment,	Diagnosis	ICD-10-CM
E10.37X2	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment,	Diagnosis	ICD-10-CM
E10.37X3	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment,	Diagnosis	ICD-10-CM
E10.37X9	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, unspecified eye	Diagnosis	ICD-10-CM
E10.39	Type 1 diabetes mellitus with other diabetic ophthalmic complication	Diagnosis	ICD-10-CM
E10.4	Type 1 diabetes mellitus with neurological complications	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E10.40	Type 1 diabetes mellitus with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E10.41	Type 1 diabetes mellitus with diabetic mononeuropathy	Diagnosis	ICD-10-CM
E10.42	Type 1 diabetes mellitus with diabetic polyneuropathy	Diagnosis	ICD-10-CM
E10.43	Type 1 diabetes mellitus with diabetic autonomic (poly)neuropathy	Diagnosis	ICD-10-CM
E10.44	Type 1 diabetes mellitus with diabetic amyotrophy	Diagnosis	ICD-10-CM
E10.49	Type 1 diabetes mellitus with other diabetic neurological complication	Diagnosis	ICD-10-CM
E10.5	Type 1 diabetes mellitus with circulatory complications	Diagnosis	ICD-10-CM
E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene	Diagnosis	ICD-10-CM
E10.52	Type 1 diabetes mellitus with diabetic peripheral angiopathy with gangrene	Diagnosis	ICD-10-CM
E10.59	Type 1 diabetes mellitus with other circulatory complications	Diagnosis	ICD-10-CM
E10.6	Type 1 diabetes mellitus with other specified complications	Diagnosis	ICD-10-CM
E10.61	Type 1 diabetes mellitus with diabetic arthropathy	Diagnosis	ICD-10-CM
E10.610	Type 1 diabetes mellitus with diabetic neuropathic arthropathy	Diagnosis	ICD-10-CM
E10.618	Type 1 diabetes mellitus with other diabetic arthropathy	Diagnosis	ICD-10-CM
E10.62	Type 1 diabetes mellitus with skin complications	Diagnosis	ICD-10-CM
E10.620	Type 1 diabetes mellitus with diabetic dermatitis	Diagnosis	ICD-10-CM
E10.621	Type 1 diabetes mellitus with foot ulcer	Diagnosis	ICD-10-CM
E10.622	Type 1 diabetes mellitus with other skin ulcer	Diagnosis	ICD-10-CM
E10.628	Type 1 diabetes mellitus with other skin complications	Diagnosis	ICD-10-CM
E10.63	Type 1 diabetes mellitus with oral complications	Diagnosis	ICD-10-CM
E10.630	Type 1 diabetes mellitus with periodontal disease	Diagnosis	ICD-10-CM
E10.638	Type 1 diabetes mellitus with other oral complications	Diagnosis	ICD-10-CM
E10.64	Type 1 diabetes mellitus with hypoglycemia	Diagnosis	ICD-10-CM
E10.641	Type 1 diabetes mellitus with hypoglycemia with coma	Diagnosis	ICD-10-CM
E10.649	Type 1 diabetes mellitus with hypoglycemia without coma	Diagnosis	ICD-10-CM
E10.65	Type 1 diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E10.69	Type 1 diabetes mellitus with other specified complication	Diagnosis	ICD-10-CM
E10.8	Type 1 diabetes mellitus with unspecified complications	Diagnosis	ICD-10-CM
E10.9	Type 1 diabetes mellitus without complications	Diagnosis	ICD-10-CM
E11	Type 2 diabetes mellitus	Diagnosis	ICD-10-CM
E11.0	Type 2 diabetes mellitus with hyperosmolarity	Diagnosis	ICD-10-CM
E11.00	Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	Diagnosis	ICD-10-CM
E11.01	Type 2 diabetes mellitus with hyperosmolarity with coma	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E11.1	Type 2 diabetes mellitus with ketoacidosis	Diagnosis	ICD-10-CM
E11.10	Type 2 diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
E11.11	Type 2 diabetes mellitus with ketoacidosis with coma	Diagnosis	ICD-10-CM
E11.2	Type 2 diabetes mellitus with kidney complications	Diagnosis	ICD-10-CM
E11.21	Type 2 diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E11.3	Type 2 diabetes mellitus with ophthalmic complications	Diagnosis	ICD-10-CM
E11.31	Type 2 diabetes mellitus with unspecified diabetic retinopathy	Diagnosis	ICD-10-CM
E11.311	Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E11.319	Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E11.32	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E11.321	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular	Diagnosis	ICD-10-CM
E11.3211	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E11.3212	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E11.3213	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3219	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.329	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without	Diagnosis	ICD-10-CM
E11.3291	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E11.3292	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E11.3293	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3299	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.33	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E11.331	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E11.3311	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E11.3312	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E11.3313	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3319	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.339	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E11.3391	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E11.3392	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E11.3393	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3399	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.34	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E11.341	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with	Diagnosis	ICD-10-CM
E11.3411	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E11.3412	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E11.3413	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3419	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.349	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E11.3491	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E11.3492	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E11.3493	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3499	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.35	Type 2 diabetes mellitus with proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E11.351	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E11.3511	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema,	Diagnosis	ICD-10-CM
E11.3512	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema,	Diagnosis	ICD-10-CM
E11.3513	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema,	Diagnosis	ICD-10-CM
E11.3519	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.352	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula	Diagnosis	ICD-10-CM
E11.3521	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye	Diagnosis	ICD-10-CM
E11.3522	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye	Diagnosis	ICD-10-CM
E11.3523	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral	Diagnosis	ICD-10-CM
E11.3529	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E11.353	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula	Diagnosis	ICD-10-CM
E11.3531	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye	Diagnosis	ICD-10-CM
E11.3532	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye	Diagnosis	ICD-10-CM
E11.3533	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral	Diagnosis	ICD-10-CM
E11.3539	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E11.354	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E11.3541	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye	Diagnosis	ICD-10-CM
E11.3542	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye	Diagnosis	ICD-10-CM
E11.3543	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral	Diagnosis	ICD-10-CM
E11.3549	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, unspecified eye	Diagnosis	ICD-10-CM
E11.355	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E11.3551	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, right eye	Diagnosis	ICD-10-CM
E11.3552	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, left eye	Diagnosis	ICD-10-CM
E11.3553	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, bilateral	Diagnosis	ICD-10-CM
E11.3559	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, unspecified eye	Diagnosis	ICD-10-CM
E11.359	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular	Diagnosis	ICD-10-CM
E11.3591	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E11.3592	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular	Diagnosis	ICD-10-CM
E11.3593	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E11.3599	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E11.36	Type 2 diabetes mellitus with diabetic cataract	Diagnosis	ICD-10-CM
E11.37	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment	Diagnosis	ICD-10-CM
E11.37X1	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment,	Diagnosis	ICD-10-CM
E11.37X2	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment,	Diagnosis	ICD-10-CM
E11.37X3	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment,	Diagnosis	ICD-10-CM
E11.37X9	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, unspecified eye	Diagnosis	ICD-10-CM
E11.39	Type 2 diabetes mellitus with other diabetic ophthalmic complication	Diagnosis	ICD-10-CM
E11.4	Type 2 diabetes mellitus with neurological complications	Diagnosis	ICD-10-CM
E11.40	Type 2 diabetes mellitus with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E11.41	Type 2 diabetes mellitus with diabetic mononeuropathy	Diagnosis	ICD-10-CM
E11.42	Type 2 diabetes mellitus with diabetic polyneuropathy	Diagnosis	ICD-10-CM
E11.43	Type 2 diabetes mellitus with diabetic autonomic (poly)neuropathy	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E11.44	Type 2 diabetes mellitus with diabetic amyotrophy	Diagnosis	ICD-10-CM
E11.49	Type 2 diabetes mellitus with other diabetic neurological complication	Diagnosis	ICD-10-CM
E11.5	Type 2 diabetes mellitus with circulatory complications	Diagnosis	ICD-10-CM
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene	Diagnosis	ICD-10-CM
E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene	Diagnosis	ICD-10-CM
E11.59	Type 2 diabetes mellitus with other circulatory complications	Diagnosis	ICD-10-CM
E11.6	Type 2 diabetes mellitus with other specified complications	Diagnosis	ICD-10-CM
E11.61	Type 2 diabetes mellitus with diabetic arthropathy	Diagnosis	ICD-10-CM
E11.610	Type 2 diabetes mellitus with diabetic neuropathic arthropathy	Diagnosis	ICD-10-CM
E11.618	Type 2 diabetes mellitus with other diabetic arthropathy	Diagnosis	ICD-10-CM
E11.62	Type 2 diabetes mellitus with skin complications	Diagnosis	ICD-10-CM
E11.620	Type 2 diabetes mellitus with diabetic dermatitis	Diagnosis	ICD-10-CM
E11.621	Type 2 diabetes mellitus with foot ulcer	Diagnosis	ICD-10-CM
E11.622	Type 2 diabetes mellitus with other skin ulcer	Diagnosis	ICD-10-CM
E11.628	Type 2 diabetes mellitus with other skin complications	Diagnosis	ICD-10-CM
E11.63	Type 2 diabetes mellitus with oral complications	Diagnosis	ICD-10-CM
E11.630	Type 2 diabetes mellitus with periodontal disease	Diagnosis	ICD-10-CM
E11.638	Type 2 diabetes mellitus with other oral complications	Diagnosis	ICD-10-CM
E11.64	Type 2 diabetes mellitus with hypoglycemia	Diagnosis	ICD-10-CM
E11.641	Type 2 diabetes mellitus with hypoglycemia with coma	Diagnosis	ICD-10-CM
E11.649	Type 2 diabetes mellitus with hypoglycemia without coma	Diagnosis	ICD-10-CM
E11.65	Type 2 diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E11.69	Type 2 diabetes mellitus with other specified complication	Diagnosis	ICD-10-CM
E11.8	Type 2 diabetes mellitus with unspecified complications	Diagnosis	ICD-10-CM
E11.9	Type 2 diabetes mellitus without complications	Diagnosis	ICD-10-CM
E13	Other specified diabetes mellitus	Diagnosis	ICD-10-CM
E13.0	Other specified diabetes mellitus with hyperosmolarity	Diagnosis	ICD-10-CM
E13.00	Other specified diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	Diagnosis	ICD-10-CM
E13.01	Other specified diabetes mellitus with hyperosmolarity with coma	Diagnosis	ICD-10-CM
E13.1	Other specified diabetes mellitus with ketoacidosis	Diagnosis	ICD-10-CM
E13.10	Other specified diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
E13.11	Other specified diabetes mellitus with ketoacidosis with coma	Diagnosis	ICD-10-CM
E13.2	Other specified diabetes mellitus with kidney complications	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E13.21	Other specified diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E13.22	Other specified diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E13.29	Other specified diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E13.3	Other specified diabetes mellitus with ophthalmic complications	Diagnosis	ICD-10-CM
E13.31	Other specified diabetes mellitus with unspecified diabetic retinopathy	Diagnosis	ICD-10-CM
E13.311	Other specified diabetes mellitus with unspecified diabetic retinopathy with macular	Diagnosis	ICD-10-CM
E13.319	Other specified diabetes mellitus with unspecified diabetic retinopathy without	Diagnosis	ICD-10-CM
E13.32	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E13.321	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E13.3211	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E13.3212	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E13.3213	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3219	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.329	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E13.3291	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E13.3292	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E13.3293	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3299	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.33	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E13.331	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E13.3311	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E13.3312	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E13.3313	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3319	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.339	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E13.3391	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E13.3392	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E13.3393	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3399	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.34	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E13.341	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E13.3411	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E13.3412	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E13.3413	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3419	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.349	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E13.3491	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E13.3492	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E13.3493	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E13.3499	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.35	Other specified diabetes mellitus with proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E13.351	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular	Diagnosis	ICD-10-CM
E13.3511	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye	Diagnosis	ICD-10-CM
E13.3512	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye	Diagnosis	ICD-10-CM
E13.3513	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3519	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.352	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula	Diagnosis	ICD-10-CM
E13.3521	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye	Diagnosis	ICD-10-CM
E13.3522	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye	Diagnosis	ICD-10-CM
E13.3523	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral	Diagnosis	ICD-10-CM
E13.3529	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E13.353	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula	Diagnosis	ICD-10-CM
E13.3531	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye	Diagnosis	ICD-10-CM
E13.3532	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye	Diagnosis	ICD-10-CM
E13.3533	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral	Diagnosis	ICD-10-CM
E13.3539	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, unspecified eye	Diagnosis	ICD-10-CM
E13.354	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E13.3541	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right	Diagnosis	ICD-10-CM
E13.3542	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left	Diagnosis	ICD-10-CM
E13.3543	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment,	Diagnosis	ICD-10-CM
E13.3549	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment,	Diagnosis	ICD-10-CM
E13.355	Other specified diabetes mellitus with stable proliferative diabetic retinopathy	Diagnosis	ICD-10-CM
E13.3551	Other specified diabetes mellitus with stable proliferative diabetic retinopathy, right	Diagnosis	ICD-10-CM
E13.3552	Other specified diabetes mellitus with stable proliferative diabetic retinopathy, left eye	Diagnosis	ICD-10-CM
E13.3553	Other specified diabetes mellitus with stable proliferative diabetic retinopathy,	Diagnosis	ICD-10-CM
E13.3559	Other specified diabetes mellitus with stable proliferative diabetic retinopathy,	Diagnosis	ICD-10-CM
E13.359	Other specified diabetes mellitus with proliferative diabetic retinopathy without	Diagnosis	ICD-10-CM
E13.3591	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye	Diagnosis	ICD-10-CM
E13.3592	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye	Diagnosis	ICD-10-CM
E13.3593	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral	Diagnosis	ICD-10-CM
E13.3599	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspecified eye	Diagnosis	ICD-10-CM
E13.36	Other specified diabetes mellitus with diabetic cataract	Diagnosis	ICD-10-CM
E13.37	Other specified diabetes mellitus with diabetic macular edema, resolved following	Diagnosis	ICD-10-CM
E13.37X1	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, right eye	Diagnosis	ICD-10-CM
E13.37X2	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, left eye	Diagnosis	ICD-10-CM
E13.37X3	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral	Diagnosis	ICD-10-CM
E13.37X9	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, unspecified eye	Diagnosis	ICD-10-CM
E13.39	Other specified diabetes mellitus with other diabetic ophthalmic complication	Diagnosis	ICD-10-CM
E13.4	Other specified diabetes mellitus with neurological complications	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E13.40	Other specified diabetes mellitus with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E13.41	Other specified diabetes mellitus with diabetic mononeuropathy	Diagnosis	ICD-10-CM
E13.42	Other specified diabetes mellitus with diabetic polyneuropathy	Diagnosis	ICD-10-CM
E13.43	Other specified diabetes mellitus with diabetic autonomic (poly)neuropathy	Diagnosis	ICD-10-CM
E13.44	Other specified diabetes mellitus with diabetic amyotrophy	Diagnosis	ICD-10-CM
E13.49	Other specified diabetes mellitus with other diabetic neurological complication	Diagnosis	ICD-10-CM
E13.5	Other specified diabetes mellitus with circulatory complications	Diagnosis	ICD-10-CM
E13.51	Other specified diabetes mellitus with diabetic peripheral angiopathy without	Diagnosis	ICD-10-CM
E13.52	Other specified diabetes mellitus with diabetic peripheral angiopathy with gangrene	Diagnosis	ICD-10-CM
E13.59	Other specified diabetes mellitus with other circulatory complications	Diagnosis	ICD-10-CM
E13.6	Other specified diabetes mellitus with other specified complications	Diagnosis	ICD-10-CM
E13.61	Other specified diabetes mellitus with diabetic arthropathy	Diagnosis	ICD-10-CM
E13.610	Other specified diabetes mellitus with diabetic neuropathic arthropathy	Diagnosis	ICD-10-CM
E13.618	Other specified diabetes mellitus with other diabetic arthropathy	Diagnosis	ICD-10-CM
E13.62	Other specified diabetes mellitus with skin complications	Diagnosis	ICD-10-CM
E13.620	Other specified diabetes mellitus with diabetic dermatitis	Diagnosis	ICD-10-CM
E13.621	Other specified diabetes mellitus with foot ulcer	Diagnosis	ICD-10-CM
E13.622	Other specified diabetes mellitus with other skin ulcer	Diagnosis	ICD-10-CM
E13.628	Other specified diabetes mellitus with other skin complications	Diagnosis	ICD-10-CM
E13.63	Other specified diabetes mellitus with oral complications	Diagnosis	ICD-10-CM
E13.630	Other specified diabetes mellitus with periodontal disease	Diagnosis	ICD-10-CM
E13.638	Other specified diabetes mellitus with other oral complications	Diagnosis	ICD-10-CM
E13.64	Other specified diabetes mellitus with hypoglycemia	Diagnosis	ICD-10-CM
E13.641	Other specified diabetes mellitus with hypoglycemia with coma	Diagnosis	ICD-10-CM
E13.649	Other specified diabetes mellitus with hypoglycemia without coma	Diagnosis	ICD-10-CM
E13.65	Other specified diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E13.69	Other specified diabetes mellitus with other specified complication	Diagnosis	ICD-10-CM
E13.8	Other specified diabetes mellitus with unspecified complications	Diagnosis	ICD-10-CM
E13.9	Other specified diabetes mellitus without complications	Diagnosis	ICD-10-CM
O24.0	Pre-existing type 1 diabetes mellitus, in pregnancy, childbirth and the puerperium	Diagnosis	ICD-10-CM
O24.01	Pre-existing type 1 diabetes mellitus, in pregnancy	Diagnosis	ICD-10-CM
O24.011	Pre-existing type 1 diabetes mellitus, in pregnancy, first trimester	Diagnosis	ICD-10-CM
O24.012	Pre-existing type 1 diabetes mellitus, in pregnancy, second trimester	Diagnosis	ICD-10-CM
O24.013	Pre-existing type 1 diabetes mellitus, in pregnancy, third trimester	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
O24.019	Pre-existing type 1 diabetes mellitus, in pregnancy, unspecified trimester	Diagnosis	ICD-10-CM
O24.02	Pre-existing type 1 diabetes mellitus, in childbirth	Diagnosis	ICD-10-CM
O24.03	Pre-existing type 1 diabetes mellitus, in the puerperium	Diagnosis	ICD-10-CM
O24.1	Pre-existing type 2 diabetes mellitus, in pregnancy, childbirth and the puerperium	Diagnosis	ICD-10-CM
O24.11	Pre-existing type 2 diabetes mellitus, in pregnancy	Diagnosis	ICD-10-CM
O24.111	Pre-existing type 2 diabetes mellitus, in pregnancy, first trimester	Diagnosis	ICD-10-CM
O24.112	Pre-existing type 2 diabetes mellitus, in pregnancy, second trimester	Diagnosis	ICD-10-CM
O24.113	Pre-existing type 2 diabetes mellitus, in pregnancy, third trimester	Diagnosis	ICD-10-CM
O24.119	Pre-existing type 2 diabetes mellitus, in pregnancy, unspecified trimester	Diagnosis	ICD-10-CM
O24.12	Pre-existing type 2 diabetes mellitus, in childbirth	Diagnosis	ICD-10-CM
O24.13	Pre-existing type 2 diabetes mellitus, in the puerperium	Diagnosis	ICD-10-CM
O24.3	Unspecified pre-existing diabetes mellitus in pregnancy, childbirth and the puerperium	Diagnosis	ICD-10-CM
O24.31	Unspecified pre-existing diabetes mellitus in pregnancy	Diagnosis	ICD-10-CM
O24.311	Unspecified pre-existing diabetes mellitus in pregnancy, first trimester	Diagnosis	ICD-10-CM
O24.312	Unspecified pre-existing diabetes mellitus in pregnancy, second trimester	Diagnosis	ICD-10-CM
O24.313	Unspecified pre-existing diabetes mellitus in pregnancy, third trimester	Diagnosis	ICD-10-CM
O24.319	Unspecified pre-existing diabetes mellitus in pregnancy, unspecified trimester	Diagnosis	ICD-10-CM
O24.32	Unspecified pre-existing diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O24.33	Unspecified pre-existing diabetes mellitus in the puerperium	Diagnosis	ICD-10-CM
O24.4	Gestational diabetes mellitus	Diagnosis	ICD-10-CM
O24.41	Gestational diabetes mellitus in pregnancy	Diagnosis	ICD-10-CM
O24.410	Gestational diabetes mellitus in pregnancy, diet controlled	Diagnosis	ICD-10-CM
O24.414	Gestational diabetes mellitus in pregnancy, insulin controlled	Diagnosis	ICD-10-CM
O24.415	Gestational diabetes mellitus in pregnancy, controlled by oral hypoglycemic drugs	Diagnosis	ICD-10-CM
O24.419	Gestational diabetes mellitus in pregnancy, unspecified control	Diagnosis	ICD-10-CM
O24.42	Gestational diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O24.420	Gestational diabetes mellitus in childbirth, diet controlled	Diagnosis	ICD-10-CM
O24.424	Gestational diabetes mellitus in childbirth, insulin controlled	Diagnosis	ICD-10-CM
O24.425	Gestational diabetes mellitus in childbirth, controlled by oral hypoglycemic drugs	Diagnosis	ICD-10-CM
O24.429	Gestational diabetes mellitus in childbirth, unspecified control	Diagnosis	ICD-10-CM
O24.43	Gestational diabetes mellitus in the puerperium	Diagnosis	ICD-10-CM
O24.430	Gestational diabetes mellitus in the puerperium, diet controlled	Diagnosis	ICD-10-CM
O24.434	Gestational diabetes mellitus in the puerperium, insulin controlled	Diagnosis	ICD-10-CM
O24.435	Gestational diabetes mellitus in puerperium, controlled by oral hypoglycemic drugs	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
O24.439	Gestational diabetes mellitus in the puerperium, unspecified control	Diagnosis	ICD-10-CM
O24.8	Other pre-existing diabetes mellitus in pregnancy, childbirth, and the puerperium	Diagnosis	ICD-10-CM
O24.81	Other pre-existing diabetes mellitus in pregnancy	Diagnosis	ICD-10-CM
O24.811	Other pre-existing diabetes mellitus in pregnancy, first trimester	Diagnosis	ICD-10-CM
O24.812	Other pre-existing diabetes mellitus in pregnancy, second trimester	Diagnosis	ICD-10-CM
O24.813	Other pre-existing diabetes mellitus in pregnancy, third trimester	Diagnosis	ICD-10-CM
O24.819	Other pre-existing diabetes mellitus in pregnancy, unspecified trimester	Diagnosis	ICD-10-CM
O24.82	Other pre-existing diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O24.83	Other pre-existing diabetes mellitus in the puerperium	Diagnosis	ICD-10-CM
O24.9	Unspecified diabetes mellitus in pregnancy, childbirth and the puerperium	Diagnosis	ICD-10-CM
O24.91	Unspecified diabetes mellitus in pregnancy	Diagnosis	ICD-10-CM
O24.911	Unspecified diabetes mellitus in pregnancy, first trimester	Diagnosis	ICD-10-CM
O24.912	Unspecified diabetes mellitus in pregnancy, second trimester	Diagnosis	ICD-10-CM
O24.913	Unspecified diabetes mellitus in pregnancy, third trimester	Diagnosis	ICD-10-CM
O24.919	Unspecified diabetes mellitus in pregnancy, unspecified trimester	Diagnosis	ICD-10-CM
O24.92	Unspecified diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O24.93	Unspecified diabetes mellitus in the puerperium	Diagnosis	ICD-10-CM
Obesity			
E66.01	Morbid (severe) obesity due to excess calories	Diagnosis	ICD-10-CM
E66.09	Other obesity due to excess calories	Diagnosis	ICD-10-CM
E66.1	Drug-induced obesity	Diagnosis	ICD-10-CM
E66.2	Morbid (severe) obesity with alveolar hypoventilation	Diagnosis	ICD-10-CM
E66.8	Other obesity	Diagnosis	ICD-10-CM
E66.9	Obesity, unspecified	Diagnosis	ICD-10-CM
Z68.30	Body mass index [BMI]30.0-30.9, adult	Diagnosis	ICD-10-CM
Z68.31	Body mass index [BMI] 31.0-31.9, adult	Diagnosis	ICD-10-CM
Z68.32	Body mass index [BMI] 32.0-32.9, adult	Diagnosis	ICD-10-CM
Z68.33	Body mass index [BMI] 33.0-33.9, adult	Diagnosis	ICD-10-CM
Z68.34	Body mass index [BMI] 34.0-34.9, adult	Diagnosis	ICD-10-CM
Z68.35	Body mass index [BMI] 35.0-35.9, adult	Diagnosis	ICD-10-CM
Z68.36	Body mass index [BMI] 36.0-36.9, adult	Diagnosis	ICD-10-CM
Z68.37	Body mass index [BMI] 37.0-37.9, adult	Diagnosis	ICD-10-CM
Z68.38	Body mass index [BMI] 38.0-38.9, adult	Diagnosis	ICD-10-CM
Z68.39	Body mass index [BMI] 39.0-39.9, adult	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Z68.41	Body mass index [BMI]40.0-44.9, adult	Diagnosis	ICD-10-CM
Z68.42	Body mass index [BMI] 45.0-49.9, adult	Diagnosis	ICD-10-CM
Z68.43	Body mass index [BMI] 50.0-59.9, adult	Diagnosis	ICD-10-CM
Z68.44	Body mass index [BMI] 60.0-69.9, adult	Diagnosis	ICD-10-CM
Z68.45	Body mass index [BMI] 70 or greater, adult	Diagnosis	ICD-10-CM
Hypertension			
H35.031	Hypertensive retinopathy, right eye	Diagnosis	ICD-10-CM
H35.032	Hypertensive retinopathy, left eye	Diagnosis	ICD-10-CM
H35.033	Hypertensive retinopathy, bilateral	Diagnosis	ICD-10-CM
H35.039	Hypertensive retinopathy, unspecified eye	Diagnosis	ICD-10-CM
I10	Essential (primary) hypertension	Diagnosis	ICD-10-CM
I11.0	Hypertensive heart disease with heart failure	Diagnosis	ICD-10-CM
I11.9	Hypertensive heart disease without heart failure	Diagnosis	ICD-10-CM
I12.0	Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease	Diagnosis	ICD-10-CM
I12.9	Hypertensive chronic kidney disease with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	Diagnosis	ICD-10-CM
I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	Diagnosis	ICD-10-CM
I13.10	Hypertensive heart and chronic kidney disease without heart failure, with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	Diagnosis	ICD-10-CM
I13.11	Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease	Diagnosis	ICD-10-CM
I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease	Diagnosis	ICD-10-CM
I15.0	Renovascular hypertension	Diagnosis	ICD-10-CM
I15.1	Hypertension secondary to other renal disorders	Diagnosis	ICD-10-CM
I15.2	Hypertension secondary to endocrine disorders	Diagnosis	ICD-10-CM
I15.8	Other secondary hypertension	Diagnosis	ICD-10-CM
I15.9	Secondary hypertension, unspecified	Diagnosis	ICD-10-CM
I67.4	Hypertensive encephalopathy	Diagnosis	ICD-10-CM
N26.2	Page kidney	Diagnosis	ICD-10-CM
Hospitalized Stroke/Transient Ishchemic Attack			
G45.0	Vertebro-basilar artery syndrome	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
G45.1	Carotid artery syndrome (hemispheric)	Diagnosis	ICD-10-CM
G45.2	Multiple and bilateral precerebral artery syndromes	Diagnosis	ICD-10-CM
G45.8	Other transient cerebral ischemic attacks and related syndromes	Diagnosis	ICD-10-CM
G45.9	Transient cerebral ischemic attack, unspecified	Diagnosis	ICD-10-CM
G46.0	Middle cerebral artery syndrome	Diagnosis	ICD-10-CM
G46.1	Anterior cerebral artery syndrome	Diagnosis	ICD-10-CM
G46.2	Posterior cerebral artery syndrome	Diagnosis	ICD-10-CM
G46.3	Brain stem stroke syndrome	Diagnosis	ICD-10-CM
G46.4	Cerebellar stroke syndrome	Diagnosis	ICD-10-CM
G46.5	Pure motor lacunar syndrome	Diagnosis	ICD-10-CM
G46.6	Pure sensory lacunar syndrome	Diagnosis	ICD-10-CM
G46.7	Other lacunar syndromes	Diagnosis	ICD-10-CM
G46.8	Other vascular syndromes of brain in cerebrovascular diseases	Diagnosis	ICD-10-CM
G97.31	Intraoperative hemorrhage and hematoma of a nervous system organ or structure complicating a nervous system procedure	Diagnosis	ICD-10-CM
G97.32	Intraoperative hemorrhage and hematoma of a nervous system organ or structure complicating other procedure	Diagnosis	ICD-10-CM
I60.00	Nontraumatic subarachnoid hemorrhage from unspecified carotid siphon and	Diagnosis	ICD-10-CM
I60.01	Nontraumatic subarachnoid hemorrhage from right carotid siphon and bifurcation	Diagnosis	ICD-10-CM
I60.02	Nontraumatic subarachnoid hemorrhage from left carotid siphon and bifurcation	Diagnosis	ICD-10-CM
I60.10	Nontraumatic subarachnoid hemorrhage from unspecified middle cerebral artery	Diagnosis	ICD-10-CM
I60.11	Nontraumatic subarachnoid hemorrhage from right middle cerebral artery	Diagnosis	ICD-10-CM
I60.12	Nontraumatic subarachnoid hemorrhage from left middle cerebral artery	Diagnosis	ICD-10-CM
I60.20	Nontraumatic subarachnoid hemorrhage from unspecified anterior communicating	Diagnosis	ICD-10-CM
I60.21	Nontraumatic subarachnoid hemorrhage from right anterior communicating artery	Diagnosis	ICD-10-CM
I60.22	Nontraumatic subarachnoid hemorrhage from left anterior communicating artery	Diagnosis	ICD-10-CM
I60.30	Nontraumatic subarachnoid hemorrhage from unspecified posterior communicating	Diagnosis	ICD-10-CM
I60.31	Nontraumatic subarachnoid hemorrhage from right posterior communicating artery	Diagnosis	ICD-10-CM
I60.32	Nontraumatic subarachnoid hemorrhage from left posterior communicating artery	Diagnosis	ICD-10-CM
I60.4	Nontraumatic subarachnoid hemorrhage from basilar artery	Diagnosis	ICD-10-CM
I60.50	Nontraumatic subarachnoid hemorrhage from unspecified vertebral artery	Diagnosis	ICD-10-CM
I60.51	Nontraumatic subarachnoid hemorrhage from right vertebral artery	Diagnosis	ICD-10-CM
I60.52	Nontraumatic subarachnoid hemorrhage from left vertebral artery	Diagnosis	ICD-10-CM
I60.6	Nontraumatic subarachnoid hemorrhage from other intracranial arteries	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I60.7	Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery	Diagnosis	ICD-10-CM
I60.8	Other nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I60.9	Nontraumatic subarachnoid hemorrhage, unspecified	Diagnosis	ICD-10-CM
I61.0	Nontraumatic intracerebral hemorrhage in hemisphere, subcortical	Diagnosis	ICD-10-CM
I61.1	Nontraumatic intracerebral hemorrhage in hemisphere, cortical	Diagnosis	ICD-10-CM
I61.2	Nontraumatic intracerebral hemorrhage in hemisphere, unspecified	Diagnosis	ICD-10-CM
I61.3	Nontraumatic intracerebral hemorrhage in brain stem	Diagnosis	ICD-10-CM
I61.4	Nontraumatic intracerebral hemorrhage in cerebellum	Diagnosis	ICD-10-CM
I61.5	Nontraumatic intracerebral hemorrhage, intraventricular	Diagnosis	ICD-10-CM
I61.6	Nontraumatic intracerebral hemorrhage, multiple localized	Diagnosis	ICD-10-CM
I61.8	Other nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I61.9	Nontraumatic intracerebral hemorrhage, unspecified	Diagnosis	ICD-10-CM
I63.00	Cerebral infarction due to thrombosis of unspecified precerebral artery	Diagnosis	ICD-10-CM
I63.011	Cerebral infarction due to thrombosis of right vertebral artery	Diagnosis	ICD-10-CM
I63.012	Cerebral infarction due to thrombosis of left vertebral artery	Diagnosis	ICD-10-CM
I63.013	Cerebral infarction due to thrombosis of bilateral vertebral arteries	Diagnosis	ICD-10-CM
I63.019	Cerebral infarction due to thrombosis of unspecified vertebral artery	Diagnosis	ICD-10-CM
I63.02	Cerebral infarction due to thrombosis of basilar artery	Diagnosis	ICD-10-CM
I63.031	Cerebral infarction due to thrombosis of right carotid artery	Diagnosis	ICD-10-CM
I63.032	Cerebral infarction due to thrombosis of left carotid artery	Diagnosis	ICD-10-CM
I63.039	Cerebral infarction due to thrombosis of unspecified carotid artery	Diagnosis	ICD-10-CM
I63.09	Cerebral infarction due to thrombosis of other precerebral artery	Diagnosis	ICD-10-CM
I63.10	Cerebral infarction due to embolism of unspecified precerebral artery	Diagnosis	ICD-10-CM
I63.111	Cerebral infarction due to embolism of right vertebral artery	Diagnosis	ICD-10-CM
I63.112	Cerebral infarction due to embolism of left vertebral artery	Diagnosis	ICD-10-CM
I63.119	Cerebral infarction due to embolism of unspecified vertebral artery	Diagnosis	ICD-10-CM
I63.12	Cerebral infarction due to embolism of basilar artery	Diagnosis	ICD-10-CM
I63.131	Cerebral infarction due to embolism of right carotid artery	Diagnosis	ICD-10-CM
I63.132	Cerebral infarction due to embolism of left carotid artery	Diagnosis	ICD-10-CM
I63.139	Cerebral infarction due to embolism of unspecified carotid artery	Diagnosis	ICD-10-CM
I63.19	Cerebral infarction due to embolism of other precerebral artery	Diagnosis	ICD-10-CM
I63.20	Cerebral infarction due to unspecified occlusion or stenosis of unspecified precerebral	Diagnosis	ICD-10-CM
I63.211	Cerebral infarction due to unspecified occlusion or stenosis of right vertebral artery	Diagnosis	ICD-10-CM
I63.212	Cerebral infarction due to unspecified occlusion or stenosis of left vertebral artery	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I63.213	Cerebral infarction due to unspecified occlusion or stenosis of bilateral vertebral	Diagnosis	ICD-10-CM
I63.219	Cerebral infarction due to unspecified occlusion or stenosis of unspecified vertebral	Diagnosis	ICD-10-CM
I63.22	Cerebral infarction due to unspecified occlusion or stenosis of basilar artery	Diagnosis	ICD-10-CM
I63.231	Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries	Diagnosis	ICD-10-CM
I63.232	Cerebral infarction due to unspecified occlusion or stenosis of left carotid arteries	Diagnosis	ICD-10-CM
I63.233	Cerebral infarction due to unspecified occlusion or stenosis of bilateral carotid arteries	Diagnosis	ICD-10-CM
I63.239	Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid	Diagnosis	ICD-10-CM
I63.29	Cerebral infarction due to unspecified occlusion or stenosis of other precerebral	Diagnosis	ICD-10-CM
I63.30	Cerebral infarction due to thrombosis of unspecified cerebral artery	Diagnosis	ICD-10-CM
I63.311	Cerebral infarction due to thrombosis of right middle cerebral artery	Diagnosis	ICD-10-CM
I63.312	Cerebral infarction due to thrombosis of left middle cerebral artery	Diagnosis	ICD-10-CM
I63.313	Cerebral infarction due to thrombosis of bilateral middle cerebral arteries	Diagnosis	ICD-10-CM
I63.319	Cerebral infarction due to thrombosis of unspecified middle cerebral artery	Diagnosis	ICD-10-CM
I63.321	Cerebral infarction due to thrombosis of right anterior cerebral artery	Diagnosis	ICD-10-CM
I63.322	Cerebral infarction due to thrombosis of left anterior cerebral artery	Diagnosis	ICD-10-CM
I63.323	Cerebral infarction due to thrombosis of bilateral anterior cerebral arteries	Diagnosis	ICD-10-CM
I63.329	Cerebral infarction due to thrombosis of unspecified anterior cerebral artery	Diagnosis	ICD-10-CM
I63.331	Cerebral infarction due to thrombosis of right posterior cerebral artery	Diagnosis	ICD-10-CM
I63.332	Cerebral infarction due to thrombosis of left posterior cerebral artery	Diagnosis	ICD-10-CM
I63.333	Cerebral infarction due to thrombosis of bilateral posterior cerebral arteries	Diagnosis	ICD-10-CM
I63.339	Cerebral infarction due to thrombosis of unspecified posterior cerebral artery	Diagnosis	ICD-10-CM
I63.341	Cerebral infarction due to thrombosis of right cerebellar artery	Diagnosis	ICD-10-CM
I63.342	Cerebral infarction due to thrombosis of left cerebellar artery	Diagnosis	ICD-10-CM
I63.343	Cerebral infarction due to thrombosis of bilateral cerebellar arteries	Diagnosis	ICD-10-CM
I63.349	Cerebral infarction due to thrombosis of unspecified cerebellar artery	Diagnosis	ICD-10-CM
I63.39	Cerebral infarction due to thrombosis of other cerebral artery	Diagnosis	ICD-10-CM
I63.40	Cerebral infarction due to embolism of unspecified cerebral artery	Diagnosis	ICD-10-CM
I63.411	Cerebral infarction due to embolism of right middle cerebral artery	Diagnosis	ICD-10-CM
I63.412	Cerebral infarction due to embolism of left middle cerebral artery	Diagnosis	ICD-10-CM
I63.413	Cerebral infarction due to embolism of bilateral middle cerebral arteries	Diagnosis	ICD-10-CM
I63.419	Cerebral infarction due to embolism of unspecified middle cerebral artery	Diagnosis	ICD-10-CM
I63.421	Cerebral infarction due to embolism of right anterior cerebral artery	Diagnosis	ICD-10-CM
I63.422	Cerebral infarction due to embolism of left anterior cerebral artery	Diagnosis	ICD-10-CM
I63.423	Cerebral infarction due to embolism of bilateral anterior cerebral arteries	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I63.429	Cerebral infarction due to embolism of unspecified anterior cerebral artery	Diagnosis	ICD-10-CM
I63.431	Cerebral infarction due to embolism of right posterior cerebral artery	Diagnosis	ICD-10-CM
I63.432	Cerebral infarction due to embolism of left posterior cerebral artery	Diagnosis	ICD-10-CM
I63.433	Cerebral infarction due to embolism of bilateral posterior cerebral arteries	Diagnosis	ICD-10-CM
I63.439	Cerebral infarction due to embolism of unspecified posterior cerebral artery	Diagnosis	ICD-10-CM
I63.441	Cerebral infarction due to embolism of right cerebellar artery	Diagnosis	ICD-10-CM
I63.442	Cerebral infarction due to embolism of left cerebellar artery	Diagnosis	ICD-10-CM
I63.443	Cerebral infarction due to embolism of bilateral cerebellar arteries	Diagnosis	ICD-10-CM
I63.449	Cerebral infarction due to embolism of unspecified cerebellar artery	Diagnosis	ICD-10-CM
I63.49	Cerebral infarction due to embolism of other cerebral artery	Diagnosis	ICD-10-CM
I63.50	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral	Diagnosis	ICD-10-CM
I63.511	Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral	Diagnosis	ICD-10-CM
I63.512	Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral	Diagnosis	ICD-10-CM
I63.513	Cerebral infarction due to unspecified occlusion or stenosis of bilateral middle cerebral	Diagnosis	ICD-10-CM
I63.519	Cerebral infarction due to unspecified occlusion or stenosis of unspecified middle cerebral artery	Diagnosis	ICD-10-CM
I63.521	Cerebral infarction due to unspecified occlusion or stenosis of right anterior cerebral	Diagnosis	ICD-10-CM
I63.522	Cerebral infarction due to unspecified occlusion or stenosis of left anterior cerebral	Diagnosis	ICD-10-CM
I63.523	Cerebral infarction due to unspecified occlusion or stenosis of bilateral anterior	Diagnosis	ICD-10-CM
I63.529	Cerebral infarction due to unspecified occlusion or stenosis of unspecified anterior cerebral artery	Diagnosis	ICD-10-CM
I63.531	Cerebral infarction due to unspecified occlusion or stenosis of right posterior cerebral	Diagnosis	ICD-10-CM
I63.532	Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral	Diagnosis	ICD-10-CM
I63.533	Cerebral infarction due to unspecified occlusion or stenosis of bilateral posterior cerebral arteries	Diagnosis	ICD-10-CM
I63.539	Cerebral infarction due to unspecified occlusion or stenosis of unspecified posterior cerebral artery	Diagnosis	ICD-10-CM
I63.541	Cerebral infarction due to unspecified occlusion or stenosis of right cerebellar artery	Diagnosis	ICD-10-CM
I63.542	Cerebral infarction due to unspecified occlusion or stenosis of left cerebellar artery	Diagnosis	ICD-10-CM
I63.543	Cerebral infarction due to unspecified occlusion or stenosis of bilateral cerebellar	Diagnosis	ICD-10-CM
I63.549	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebellar	Diagnosis	ICD-10-CM
I63.59	Cerebral infarction due to unspecified occlusion or stenosis of other cerebral artery	Diagnosis	ICD-10-CM
I63.6	Cerebral infarction due to cerebral venous thrombosis, nonpyogenic	Diagnosis	ICD-10-CM
I63.8	Other cerebral infarction	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I63.9	Cerebral infarction, unspecified	Diagnosis	ICD-10-CM
I66.01	Occlusion and stenosis of right middle cerebral artery	Diagnosis	ICD-10-CM
I66.02	Occlusion and stenosis of left middle cerebral artery	Diagnosis	ICD-10-CM
I66.03	Occlusion and stenosis of bilateral middle cerebral arteries	Diagnosis	ICD-10-CM
I66.09	Occlusion and stenosis of unspecified middle cerebral artery	Diagnosis	ICD-10-CM
I66.11	Occlusion and stenosis of right anterior cerebral artery	Diagnosis	ICD-10-CM
I66.12	Occlusion and stenosis of left anterior cerebral artery	Diagnosis	ICD-10-CM
I66.13	Occlusion and stenosis of bilateral anterior cerebral arteries	Diagnosis	ICD-10-CM
I66.19	Occlusion and stenosis of unspecified anterior cerebral artery	Diagnosis	ICD-10-CM
I66.21	Occlusion and stenosis of right posterior cerebral artery	Diagnosis	ICD-10-CM
I66.22	Occlusion and stenosis of left posterior cerebral artery	Diagnosis	ICD-10-CM
I66.23	Occlusion and stenosis of bilateral posterior cerebral arteries	Diagnosis	ICD-10-CM
I66.29	Occlusion and stenosis of unspecified posterior cerebral artery	Diagnosis	ICD-10-CM
I66.3	Occlusion and stenosis of cerebellar arteries	Diagnosis	ICD-10-CM
I66.8	Occlusion and stenosis of other cerebral arteries	Diagnosis	ICD-10-CM
I66.9	Occlusion and stenosis of unspecified cerebral artery	Diagnosis	ICD-10-CM
I67.841	Reversible cerebrovascular vasoconstriction syndrome	Diagnosis	ICD-10-CM
I67.848	Other cerebrovascular vasospasm and vasoconstriction	Diagnosis	ICD-10-CM
I67.89	Other cerebrovascular disease	Diagnosis	ICD-10-CM
I97.810	Intraoperative cerebrovascular infarction during cardiac surgery	Diagnosis	ICD-10-CM
I97.811	Intraoperative cerebrovascular infarction during other surgery	Diagnosis	ICD-10-CM
I97.820	Postprocedural cerebrovascular infarction following cardiac surgery	Diagnosis	ICD-10-CM
I97.821	Postprocedural cerebrovascular infarction following other surgery	Diagnosis	ICD-10-CM
Coronary Revascularization			
00566	Anesthesia for direct coronary artery bypass grafting; without pump oxygenator	Procedure	CPT-4
00567	Anesthesia for direct coronary artery bypass grafting; with pump oxygenator	Procedure	CPT-4
01921	Anesthesia for angioplasty	Procedure	CPT-4
0210088	Bypass Coronary Artery, One Artery from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0210089	Bypass Coronary Artery, One Artery from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021008C	Bypass Coronary Artery, One Artery from Thoracic Artery with Zooplastic Tissue, Open	Procedure	ICD-10-PCS
021008F	Bypass Coronary Artery, One Artery from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0210098	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0210099	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021009C	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021009F	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02100A8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100A9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100AC	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100AF	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100J8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100J9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100JC	Bypass Coronary Artery, One Artery from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100JF	Bypass Coronary Artery, One Artery from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100K8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100K9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100KC	Bypass Coronary Artery, One Artery from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100KF	Bypass Coronary Artery, One Artery from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100Z8	Bypass Coronary Artery, One Artery from Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02100Z9	Bypass Coronary Artery, One Artery from Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02100ZC	Bypass Coronary Artery, One Artery from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02100ZF	Bypass Coronary Artery, One Artery from Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
0210488	Bypass Coronary Artery, One Artery from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210489	Bypass Coronary Artery, One Artery from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021048C	Bypass Coronary Artery, One Artery from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021048F	Bypass Coronary Artery, One Artery from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210498	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210499	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021049C	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021049F	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104A8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104A9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104AC	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104AF	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104J8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104J9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104JC	Bypass Coronary Artery, One Artery from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104JF	Bypass Coronary Artery, One Artery from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02104K8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104K9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104KC	Bypass Coronary Artery, One Artery from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104KF	Bypass Coronary Artery, One Artery from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104Z8	Bypass Coronary Artery, One Artery from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104Z9	Bypass Coronary Artery, One Artery from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104ZC	Bypass Coronary Artery, One Artery from Thoracic Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02104ZF	Bypass Coronary Artery, One Artery from Abdominal Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0211088	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0211089	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021108C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021108F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0211098	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0211099	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021109C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021109F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02110A8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110A9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02110AC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110AF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110J8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110J9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110JC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110JF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110K8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110K9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110KC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110KF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110Z8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02110Z9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02110ZC	Bypass Coronary Artery, Two Arteries from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02110ZF	Bypass Coronary Artery, Two Arteries from Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
0211488	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211489	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021148C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021148F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211498	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0211499	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021149C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021149F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114A8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114A9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114AC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114AF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114J8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114J9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114JC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114JF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114K8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114K9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114KC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114KF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114Z8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114Z9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114ZC	Bypass Coronary Artery, Two Arteries from Thoracic Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02114ZF	Bypass Coronary Artery, Two Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212088	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0212089	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021208C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021208F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0212098	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0212099	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021209C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021209F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02120A8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120A9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120AC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120AF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120J8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120J9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120JC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120JF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02120K8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120K9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120KC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120KF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120Z8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02120Z9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02120ZC	Bypass Coronary Artery, Three Arteries from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02120ZF	Bypass Coronary Artery, Three Arteries from Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
0212488	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212489	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021248C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021248F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212498	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212499	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021249C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021249F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124A8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124A9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124AC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02124AF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124J8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124J9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124JC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124JF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124K8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124K9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124KC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124KF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124Z8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124Z9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124ZC	Bypass Coronary Artery, Three Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124ZF	Bypass Coronary Artery, Three Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213088	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0213089	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021308C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021308F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0213098	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0213099	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021309C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021309F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02130A8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130A9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130AC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130AF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130J8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130J9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130JC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130JF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130K8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130K9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130KC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130KF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130Z8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary, Open	Procedure	ICD-10-PCS
02130Z9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary, Open	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02130ZC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02130ZF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery, Open	Procedure	ICD-10-PCS
0213488	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213489	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021348C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021348F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213498	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213499	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021349C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021349F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134A8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134A9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134AC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134AF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134J8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134J9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134JC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134JF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02134K8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134K9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134KC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134KF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134Z8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134Z9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134ZC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134ZF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270046	Dilation of Coronary Artery, One Artery, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027004Z	Dilation of Coronary Artery, One Artery with Drug-eluting Intraluminal Device, Open	Procedure	ICD-10-PCS
0270056	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027005Z	Dilation of Coronary Artery, One Artery with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0270066	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027006Z	Dilation of Coronary Artery, One Artery with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0270076	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027007Z	Dilation of Coronary Artery, One Artery with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700D6	Dilation of Coronary Artery, One Artery, Bifurcation, with Intraluminal Device, Open	Procedure	ICD-10-PCS
02700DZ	Dilation of Coronary Artery, One Artery with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02700E6	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700EZ	Dilation of Coronary Artery, One Artery with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700F6	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700FZ	Dilation of Coronary Artery, One Artery with Three Intraluminal Devices, Open	Procedure	ICD-10-PCS
02700G6	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700GZ	Dilation of Coronary Artery, One Artery with Four or More Intraluminal Devices, Open	Procedure	ICD-10-PCS
02700T6	Dilation of Coronary Artery, One Artery, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02700TZ	Dilation of Coronary Artery, One Artery with Radioactive Intraluminal Device, Open	Procedure	ICD-10-PCS
02700Z6	Dilation of Coronary Artery, One Artery, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02700ZZ	Dilation of Coronary Artery, One Artery, Open Approach	Procedure	ICD-10-PCS
0270346	Dilation of Coronary Artery, One Artery, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027034Z	Dilation of Coronary Artery, One Artery with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0270356	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027035Z	Dilation of Coronary Artery, One Artery with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0270366	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027036Z	Dilation of Coronary Artery, One Artery with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0270376	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027037Z	Dilation of Coronary Artery, One Artery with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703D6	Dilation of Coronary Artery, One Artery, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02703DZ	Dilation of Coronary Artery, One Artery with Intraluminal Device, Percutaneous	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02703E6	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703EZ	Dilation of Coronary Artery, One Artery with Two Intraluminal Devices, Percutaneous	Procedure	ICD-10-PCS
02703F6	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703FZ	Dilation of Coronary Artery, One Artery with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703G6	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703GZ	Dilation of Coronary Artery, One Artery with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703T6	Dilation of Coronary Artery, One Artery, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02703TZ	Dilation of Coronary Artery, One Artery with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02703Z6	Dilation of Coronary Artery, One Artery, Bifurcation, Percutaneous Approach	Procedure	ICD-10-PCS
02703ZZ	Dilation of Coronary Artery, One Artery, Percutaneous Approach	Procedure	ICD-10-PCS
0270446	Dilation of Coronary Artery, One Artery, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027044Z	Dilation of Coronary Artery, One Artery with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270456	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027045Z	Dilation of Coronary Artery, One Artery with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270466	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027046Z	Dilation of Coronary Artery, One Artery with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270476	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027047Z	Dilation of Coronary Artery, One Artery with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02704D6	Dilation of Coronary Artery, One Artery, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704DZ	Dilation of Coronary Artery, One Artery with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704E6	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704EZ	Dilation of Coronary Artery, One Artery with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704F6	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704FZ	Dilation of Coronary Artery, One Artery with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704G6	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704GZ	Dilation of Coronary Artery, One Artery with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704T6	Dilation of Coronary Artery, One Artery, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704TZ	Dilation of Coronary Artery, One Artery with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704Z6	Dilation of Coronary Artery, One Artery, Bifurcation, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02704ZZ	Dilation of Coronary Artery, One Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0271046	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027104Z	Dilation of Coronary Artery, Two Arteries with Drug-eluting Intraluminal Device, Open	Procedure	ICD-10-PCS
0271056	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027105Z	Dilation of Coronary Artery, Two Arteries with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0271066	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027106Z	Dilation of Coronary Artery, Two Arteries with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0271076	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027107Z	Dilation of Coronary Artery, Two Arteries with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710D6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Intraluminal Device, Open	Procedure	ICD-10-PCS
02710DZ	Dilation of Coronary Artery, Two Arteries with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02710E6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710EZ	Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices, Open	Procedure	ICD-10-PCS
02710F6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710FZ	Dilation of Coronary Artery, Two Arteries with Three Intraluminal Devices, Open	Procedure	ICD-10-PCS
02710G6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710GZ	Dilation of Coronary Artery, Two Arteries with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710T6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02710TZ	Dilation of Coronary Artery, Two Arteries with Radioactive Intraluminal Device, Open	Procedure	ICD-10-PCS
02710Z6	Dilation of Coronary Artery, Two Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02710ZZ	Dilation of Coronary Artery, Two Arteries, Open Approach	Procedure	ICD-10-PCS
0271346	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027134Z	Dilation of Coronary Artery, Two Arteries with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0271356	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027135Z	Dilation of Coronary Artery, Two Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0271366	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027136Z	Dilation of Coronary Artery, Two Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0271376	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027137Z	Dilation of Coronary Artery, Two Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713D6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02713DZ	Dilation of Coronary Artery, Two Arteries with Intraluminal Device, Percutaneous	Procedure	ICD-10-PCS
02713E6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713EZ	Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713F6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713FZ	Dilation of Coronary Artery, Two Arteries with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713G6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713GZ	Dilation of Coronary Artery, Two Arteries with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713T6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02713TZ	Dilation of Coronary Artery, Two Arteries with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02713Z6	Dilation of Coronary Artery, Two Arteries, Bifurcation, Percutaneous Approach	Procedure	ICD-10-PCS
02713ZZ	Dilation of Coronary Artery, Two Arteries, Percutaneous Approach	Procedure	ICD-10-PCS
0271446	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027144Z	Dilation of Coronary Artery, Two Arteries with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0271456	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027145Z	Dilation of Coronary Artery, Two Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0271466	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027146Z	Dilation of Coronary Artery, Two Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0271476	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027147Z	Dilation of Coronary Artery, Two Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714D6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714DZ	Dilation of Coronary Artery, Two Arteries with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714E6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714EZ	Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714F6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714FZ	Dilation of Coronary Artery, Two Arteries with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714G6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714GZ	Dilation of Coronary Artery, Two Arteries with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714T6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714TZ	Dilation of Coronary Artery, Two Arteries with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714Z6	Dilation of Coronary Artery, Two Arteries, Bifurcation, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02714ZZ	Dilation of Coronary Artery, Two Arteries, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272046	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027204Z	Dilation of Coronary Artery, Three Arteries with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0272056	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027205Z	Dilation of Coronary Artery, Three Arteries with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0272066	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027206Z	Dilation of Coronary Artery, Three Arteries with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0272076	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027207Z	Dilation of Coronary Artery, Three Arteries with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720D6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02720DZ	Dilation of Coronary Artery, Three Arteries with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02720E6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720EZ	Dilation of Coronary Artery, Three Arteries with Two Intraluminal Devices, Open	Procedure	ICD-10-PCS
02720F6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720FZ	Dilation of Coronary Artery, Three Arteries with Three Intraluminal Devices, Open	Procedure	ICD-10-PCS
02720G6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720GZ	Dilation of Coronary Artery, Three Arteries with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720T6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02720TZ	Dilation of Coronary Artery, Three Arteries with Radioactive Intraluminal Device, Open	Procedure	ICD-10-PCS
02720Z6	Dilation of Coronary Artery, Three Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02720ZZ	Dilation of Coronary Artery, Three Arteries, Open Approach	Procedure	ICD-10-PCS
0272346	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027234Z	Dilation of Coronary Artery, Three Arteries with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0272356	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027235Z	Dilation of Coronary Artery, Three Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0272366	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027236Z	Dilation of Coronary Artery, Three Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0272376	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027237Z	Dilation of Coronary Artery, Three Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723D6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02723DZ	Dilation of Coronary Artery, Three Arteries with Intraluminal Device, Percutaneous	Procedure	ICD-10-PCS
02723E6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723EZ	Dilation of Coronary Artery, Three Arteries with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723F6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723FZ	Dilation of Coronary Artery, Three Arteries with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723G6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723GZ	Dilation of Coronary Artery, Three Arteries with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723T6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02723TZ	Dilation of Coronary Artery, Three Arteries with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02723Z6	Dilation of Coronary Artery, Three Arteries, Bifurcation, Percutaneous Approach	Procedure	ICD-10-PCS
02723ZZ	Dilation of Coronary Artery, Three Arteries, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0272446	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027244Z	Dilation of Coronary Artery, Three Arteries with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272456	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027245Z	Dilation of Coronary Artery, Three Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272466	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027246Z	Dilation of Coronary Artery, Three Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272476	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027247Z	Dilation of Coronary Artery, Three Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724D6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724DZ	Dilation of Coronary Artery, Three Arteries with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724E6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724EZ	Dilation of Coronary Artery, Three Arteries with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724F6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724FZ	Dilation of Coronary Artery, Three Arteries with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724G6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724GZ	Dilation of Coronary Artery, Three Arteries with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724T6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02724TZ	Dilation of Coronary Artery, Three Arteries with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724Z6	Dilation of Coronary Artery, Three Arteries, Bifurcation, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02724ZZ	Dilation of Coronary Artery, Three Arteries, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273046	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027304Z	Dilation of Coronary Artery, Four or More Arteries with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
0273056	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027305Z	Dilation of Coronary Artery, Four or More Arteries with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0273066	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027306Z	Dilation of Coronary Artery, Four or More Arteries with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0273076	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027307Z	Dilation of Coronary Artery, Four or More Arteries with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730D6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02730DZ	Dilation of Coronary Artery, Four or More Arteries with Intraluminal Device, Open	Procedure	ICD-10-PCS
02730E6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730EZ	Dilation of Coronary Artery, Four or More Arteries with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730F6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730FZ	Dilation of Coronary Artery, Four or More Arteries with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730G6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02730GZ	Dilation of Coronary Artery, Four or More Arteries with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730T6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02730TZ	Dilation of Coronary Artery, Four or More Arteries with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02730Z6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02730ZZ	Dilation of Coronary Artery, Four or More Arteries, Open Approach	Procedure	ICD-10-PCS
0273346	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027334Z	Dilation of Coronary Artery, Four or More Arteries with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0273356	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027335Z	Dilation of Coronary Artery, Four or More Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0273366	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027336Z	Dilation of Coronary Artery, Four or More Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0273376	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027337Z	Dilation of Coronary Artery, Four or More Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733D6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733DZ	Dilation of Coronary Artery, Four or More Arteries with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733E6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733EZ	Dilation of Coronary Artery, Four or More Arteries with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733F6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02733FZ	Dilation of Coronary Artery, Four or More Arteries with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733G6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733GZ	Dilation of Coronary Artery, Four or More Arteries with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733T6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733TZ	Dilation of Coronary Artery, Four or More Arteries with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733Z6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, Percutaneous	Procedure	ICD-10-PCS
02733ZZ	Dilation of Coronary Artery, Four or More Arteries, Percutaneous Approach	Procedure	ICD-10-PCS
0273446	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027344Z	Dilation of Coronary Artery, Four or More Arteries with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273456	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027345Z	Dilation of Coronary Artery, Four or More Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273466	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027346Z	Dilation of Coronary Artery, Four or More Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273476	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027347Z	Dilation of Coronary Artery, Four or More Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734D6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734DZ	Dilation of Coronary Artery, Four or More Arteries with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734E6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02734EZ	Dilation of Coronary Artery, Four or More Arteries with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734F6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734FZ	Dilation of Coronary Artery, Four or More Arteries with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734G6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734GZ	Dilation of Coronary Artery, Four or More Arteries with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734T6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734TZ	Dilation of Coronary Artery, Four or More Arteries with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734Z6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734ZZ	Dilation of Coronary Artery, Four or More Arteries, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02C00Z6	Extirpation of Matter from Coronary Artery, One Artery, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02C00ZZ	Extirpation of Matter from Coronary Artery, One Artery, Open Approach	Procedure	ICD-10-PCS
02C10Z6	Extirpation of Matter from Coronary Artery, Two Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02C10ZZ	Extirpation of Matter from Coronary Artery, Two Arteries, Open Approach	Procedure	ICD-10-PCS
02C20Z6	Extirpation of Matter from Coronary Artery, Three Arteries, Bifurcation, Open	Procedure	ICD-10-PCS
02C20ZZ	Extirpation of Matter from Coronary Artery, Three Arteries, Open Approach	Procedure	ICD-10-PCS
02C30Z6	Extirpation of Matter from Coronary Artery, Four or More Arteries, Bifurcation, Open	Procedure	ICD-10-PCS
02C30ZZ	Extirpation of Matter from Coronary Artery, Four or More Arteries, Open Approach	Procedure	ICD-10-PCS
33508	Endoscopy, surgical, including video-assisted harvest of vein(s) for coronary artery bypass procedure (List separately in addition to code for primary procedure)	Procedure	CPT-4
33510	Coronary artery bypass, vein only; single coronary venous graft	Procedure	CPT-4
33511	Coronary artery bypass, vein only; 2 coronary venous grafts	Procedure	CPT-4
33512	Coronary artery bypass, vein only; 3 coronary venous grafts	Procedure	CPT-4
33513	Coronary artery bypass, vein only; 4 coronary venous grafts	Procedure	CPT-4
33514	Coronary artery bypass, vein only; 5 coronary venous grafts	Procedure	CPT-4
33516	Coronary artery bypass, vein only; 6 or more coronary venous grafts	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
33517	Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)	Procedure	CPT-4
33518	Coronary artery bypass, using venous graft(s) and arterial graft(s); 2 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33519	Coronary artery bypass, using venous graft(s) and arterial graft(s); 3 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33520	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Single Graft	Procedure	CPT-4
33521	Coronary artery bypass, using venous graft(s) and arterial graft(s); 4 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33522	Coronary artery bypass, using venous graft(s) and arterial graft(s); 5 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33523	Coronary artery bypass, using venous graft(s) and arterial graft(s); 6 or more venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33525	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Two	Procedure	CPT-4
33528	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Three Or More Coronary Grafts	Procedure	CPT-4
33530	Reoperation, coronary artery bypass procedure or valve procedure, more than 1 month after original operation (List separately in addition to code for primary procedure)	Procedure	CPT-4
33533	Coronary artery bypass, using arterial graft(s); single arterial graft	Procedure	CPT-4
33534	Coronary artery bypass, using arterial graft(s); 2 coronary arterial grafts	Procedure	CPT-4
33535	Coronary artery bypass, using arterial graft(s); 3 coronary arterial grafts	Procedure	CPT-4
33536	Coronary artery bypass, using arterial graft(s); 4 or more coronary arterial grafts	Procedure	CPT-4
33570	CORONARY ANGIOPLASTY W/BYPASS	Procedure	CPT-4
33572	Coronary endarterectomy, open, any method, of left anterior descending, circumflex, or right coronary artery performed in conjunction with coronary artery bypass graft procedure, each vessel (List separately in addition to primary procedure)	Procedure	CPT-4
35500	Harvest of upper extremity vein, 1 segment, for lower extremity or coronary artery bypass procedure (List separately in addition to code for primary procedure)	Procedure	CPT-4
35600	Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure (List separately in addition to code for primary procedure)	Procedure	CPT-4
37236	Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; initial artery	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
37237	Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; each additional artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
37246	Transluminal balloon angioplasty (except lower extremity artery(ies) for occlusive disease, intracranial, coronary, pulmonary, or dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same artery; initial artery	Procedure	CPT-4
37247	Transluminal balloon angioplasty (except lower extremity artery(ies) for occlusive disease, intracranial, coronary, pulmonary, or dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same artery; each additional artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
4110F	Internal mammary artery graft performed for primary, isolated coronary artery bypass graft procedure (CABG)	Procedure	CPT-2
75972	Percutaneous Transluminal Angioplasty, Unilateral;	Procedure	CPT-4
75973	Percutaneous Transluminal Angioplasty, Unilateral;	Procedure	CPT-4
75974	Percutaneous Transluminal Angioplasty, Bilateral, Single Catheter;	Procedure	CPT-4
75975	Percutaneous Transluminal Angioplasty, Bilateral, Single Catheter;	Procedure	CPT-4
75976	Percutaneous Transluminal Angioplasty, Bilateral, Dual Catheters;	Procedure	CPT-4
75977	Percutaneous Transluminal Angioplasty, Bilateral, Dual Catheters;	Procedure	CPT-4
92920	Percutaneous transluminal coronary angioplasty; single major coronary artery or	Procedure	CPT-4
92921	Percutaneous transluminal coronary angioplasty; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92924	Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; single major coronary artery or branch	Procedure	CPT-4
92925	Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92928	Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
92929	Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92933	Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch	Procedure	CPT-4
92934	Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92937	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel	Procedure	CPT-4
92938	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; each additional branch subtended by the bypass graft (List separately in addition to code for primary procedure)	Procedure	CPT-4
92941	Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel	Procedure	CPT-4
92943	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; single vessel	Procedure	CPT-4
92944	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; each additional coronary artery, coronary artery branch, or bypass graft (List separately in addition to code for primary procedure)	Procedure	CPT-4
92982	Percutaneous transluminal coronary balloon angioplasty; single vessel	Procedure	CPT-4
92984	Percutaneous transluminal coronary balloon angioplasty; each additional vessel (List separately in addition to code for primary procedure)	Procedure	CPT-4
92995	Percutaneous transluminal coronary atherectomy, by mechanical or other method, with or without balloon angioplasty; single vessel	Procedure	CPT-4
92996	Percutaneous transluminal coronary atherectomy, by mechanical or other method, with or without balloon angioplasty; each additional vessel (List separately in addition to code for primary procedure)	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C1034	Catheter, coronary angioplasty, surpass superfusion catheter, long 30 surpass superfusion catheter	Procedure	HCPCS
C1100	Guide wire, percutaneous transluminal coronary angioplasty, medtronic ave gt1 guide wire, medtronic ave gt2 fusion guide wire, interventional technologies trackwire, interventional technologies trackwire support, interventional technologies trackwire extra support	Procedure	HCPCS
C1101	Catheter, percutaneous transluminal coronary angioplasty guide, medtronic ave 5f, 6f, 7f, 8f, 9f zuma guide catheter, medtronic ave z2 5f, 6f, 7f, 8f, 9f zuma guide catheter, medtronic ave vector guide catheter, medtronic ave vector x guide catheter. note: only the medtronic ave z2 zuma guide catheters are effective october 1, 2000. the medtronic ave zuma guide catheters were effective august 1, 2000.	Procedure	HCPCS
C1366	Guide wire, percutaneous transluminal coronary angioplasty, hi-torque iron man, hi-torque balance middleweight, hi-torque all star, hi-torque balance heavyweight, hi-torque balance trak	Procedure	HCPCS
C1367	Guide wire, percutaneous transluminal coronary angioplasty, hi-torque cross it, hi-torque cross-it 100xt, hi-torque cross-it 200xt, hi-torque cross-it 300xt, hi-torque wiggle	Procedure	HCPCS
C1725	Catheter, transluminal angioplasty, nonlaser (may include guidance, infusion/perfusion capability)	Procedure	HCPCS
C1885	Catheter, transluminal angioplasty, laser	Procedure	HCPCS
C1930	Catheter, percutaneous transluminal coronary angioplasty, coyote dilatation catheter 20mm/30mm/40mm	Procedure	HCPCS
C1933	Catheter, opti-plast centurion 5.5f pta catheter (shaft length 50 cm to 120 cm), opti-plast xl 5.5f pta catheter (shaft length 75 cm to 120 cm), opti-plast pta catheter (5.5 fr), tru trac 5fr percutaneous transluminal angioplasty balloon dilatation catheter, optiplast xt 5 fr percutaneous transluminal angioplasty catheter (various sizes)	Procedure	HCPCS
C1948	Catheter, pursuit balloon angioplasty catheter, cook accent balloon angioplasty	Procedure	HCPCS
C1981	Catheter ,coronary angioplasty balloon, adante, bonnie, bonnie 15mm, bonnie monorail 30mm or 40mm, bonnie sliding rail, bypass speedy, chubby, chubby sliding rail, coyote 20mm, coyote 9/15/25mm, maxxum, nc ranger, nc ranger 9mm, ranger 20mm, long ranger 30mm or 40mm, nc ranger 16/18mm, nc ranger 22/25/30mm, nc big ranger, quantum ranger, quantum ranger 1/4 sizes, quantum ranger 9/16/18mm, quantum ranger 22/30mm, quantum ranger 25mm, ranger lp 20/30/40, viva/long viva, ace - 1cm, ace - 2cm, ace graft, long ace, pivot cobra (10, 14, 18, 30, 40mm in lengths) note: only the bonnie monorail 30mm or	Procedure	HCPCS
C2605	Catheter, spectranetics extreme laser catheter, spectranetics extreme 0.9mm coronary angioplasty catheter (model 110-001)	Procedure	HCPCS
C2623	Catheter, transluminal angioplasty, drug-coated, nonlaser	Procedure	HCPCS

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Code	Description	Code Category	Code Type
C3551	Guide wire, percutaneous transluminal coronary angioplasty, choice, luge, patriot, pt graphix intermediate, trooper, mailman 182/300 cm, glidewire gold guidewire, platinum plus guidewire, platinum plus guidewire with glidex hydrophilic coating, jagwire single-use high performance guide wire, merit medical systems extender guidewire, merit medical systems tomcat ptca guidewire, platinum plus guidewire (0.014 and 0.018 in diameters)	Procedure	HCPCS
C8526	Optiplast xt 5f percutaneous transluminal angioplasty catheter (various sizes)	Procedure	HCPCS
C9600	Percutaneous transcatheter placement of drug eluting intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch	Procedure	HCPCS
C9601	Percutaneous transcatheter placement of drug-eluting intracoronary stent(s), with coronary angioplasty when performed; each additional branch of a major coronary artery (list separately in addition to code for primary procedure)	Procedure	HCPCS
C9602	Percutaneous transluminal coronary atherectomy, with drug eluting intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch	Procedure	HCPCS
C9603	Percutaneous transluminal coronary atherectomy, with drug-eluting intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery (list separately in addition to code for primary procedure)	Procedure	HCPCS
C9604	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of drug-eluting intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel	Procedure	HCPCS
C9605	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of drug-eluting intracoronary stent, atherectomy and angioplasty, including distal protection when performed; each additional branch subtended by the bypass graft (list separately in addition to code for primary procedure)	Procedure	HCPCS
C9606	Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel	Procedure	HCPCS
C9607	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty; single vessel	Procedure	HCPCS
C9608	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty; each additional coronary artery, coronary artery branch, or bypass graft (list separately in addition to code for primary procedure)	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
G8158	Patient documented to have received coronary artery bypass graft with use of internal mammary artery	Procedure	HCPCS
G8159	Patient documented to have received coronary artery bypass graft without use of internal mammary artery	Procedure	HCPCS
G8160	Clinician documented that patient was not an eligible candidate for coronary artery bypass graft with use of internal mammary artery measure	Procedure	HCPCS
G8161	Patient with isolated coronary artery bypass graft documented to have received pre-operative beta-blockade	Procedure	HCPCS
G8162	Patient with isolated coronary artery bypass graft not documented to have received preoperative beta-blockade	Procedure	HCPCS
G8163	Clinician documented that patient with isolated coronary artery bypass graft was not an eligible candidate for pre-operative beta-blockade measure	Procedure	HCPCS
G8164	Patient with isolated coronary artery bypass graft documented to have prolonged	Procedure	HCPCS
G8165	Patient with isolated coronary artery bypass graft not documented to have prolonged intubation	Procedure	HCPCS
G8166	Patient with isolated coronary artery bypass graft documented to have required surgical re-exploration	Procedure	HCPCS
G8167	Patient with isolated coronary artery bypass graft did not require surgical re-	Procedure	HCPCS
G8170	Patient with isolated coronary artery bypass graft documented to have been discharged on aspirin or clopidogrel	Procedure	HCPCS
G8171	Patient with isolated coronary artery bypass graft not documented to have been discharged on aspirin or clopidogrel	Procedure	HCPCS
G8172	Clinician documented that patient with isolated coronary artery bypass graft was not an eligible candidate for antiplatelet therapy at discharge measure	Procedure	HCPCS
G8497	All quality actions for the applicable measures in the coronary artery bypass graft (CABG) measures group have been performed for this patient	Procedure	HCPCS
G8544	I intend to report the coronary artery bypass graft (CABG) measures group	Procedure	HCPCS
S2205	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using arterial graft(s), single coronary arterial graft	Procedure	HCPCS
S2206	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using arterial graft(s), two coronary arterial grafts	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
S2207	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using venous graft only, single coronary venous graft	Procedure	HCPCS
S2208	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using single arterial and venous graft(s), single venous graft	Procedure	HCPCS
S2209	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using two arterial grafts and single venous graft	Procedure	HCPCS
Atrial Fibrillation			
I48.0	Paroxysmal atrial fibrillation	Diagnosis	ICD-10-CM
I48.1	Persistent atrial fibrillation	Diagnosis	ICD-10-CM
I48.2	Chronic atrial fibrillation	Diagnosis	ICD-10-CM
I48.91	Unspecified atrial fibrillation	Diagnosis	ICD-10-CM
Congestive Heart Failure			
I50.1	Left ventricular failure, unspecified	Diagnosis	ICD-10-CM
I50.20	Unspecified systolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.21	Acute systolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.22	Chronic systolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.23	Acute on chronic systolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.30	Unspecified diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.31	Acute diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.32	Chronic diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.33	Acute on chronic diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.40	Unspecified combined systolic (congestive) and diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.41	Acute combined systolic (congestive) and diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.42	Chronic combined systolic (congestive) and diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.43	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure	Diagnosis	ICD-10-CM
I50.810	Right heart failure, unspecified	Diagnosis	ICD-10-CM
I50.811	Acute right heart failure	Diagnosis	ICD-10-CM
I50.812	Chronic right heart failure	Diagnosis	ICD-10-CM
I50.813	Acute on chronic right heart failure	Diagnosis	ICD-10-CM
I50.814	Right heart failure due to left heart failure	Diagnosis	ICD-10-CM
I50.82	Biventricular heart failure	Diagnosis	ICD-10-CM

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Code	Description	Code Category	Code Type
I50.83	High output heart failure	Diagnosis	ICD-10-CM
I50.84	End stage heart failure	Diagnosis	ICD-10-CM
I50.89	Other heart failure	Diagnosis	ICD-10-CM
I50.9	Heart failure, unspecified	Diagnosis	ICD-10-CM
Hospitalized Acute Myocardial Infarction			
I21.01	ST elevation (STEMI) myocardial infarction involving left main coronary artery	Diagnosis	ICD-10-CM
I21.02	ST elevation (STEMI) myocardial infarction involving left anterior descending coronary	Diagnosis	ICD-10-CM
I21.09	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior	Diagnosis	ICD-10-CM
I21.11	ST elevation (STEMI) myocardial infarction involving right coronary artery	Diagnosis	ICD-10-CM
I21.19	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior	Diagnosis	ICD-10-CM
I21.21	ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery	Diagnosis	ICD-10-CM
I21.29	ST elevation (STEMI) myocardial infarction involving other sites	Diagnosis	ICD-10-CM
I21.3	ST elevation (STEMI) myocardial infarction of unspecified site	Diagnosis	ICD-10-CM
I21.4	Non-ST elevation (NSTEMI) myocardial infarction	Diagnosis	ICD-10-CM
I21.9	Acute myocardial infarction, unspecified	Diagnosis	ICD-10-CM
I21.A1	Myocardial infarction type 2	Diagnosis	ICD-10-CM
I21.A9	Other myocardial infarction type	Diagnosis	ICD-10-CM
I22.0	Subsequent ST elevation (STEMI) myocardial infarction of anterior wall	Diagnosis	ICD-10-CM
I22.1	Subsequent ST elevation (STEMI) myocardial infarction of inferior wall	Diagnosis	ICD-10-CM
I22.2	Subsequent non-ST elevation (NSTEMI) myocardial infarction	Diagnosis	ICD-10-CM
I22.8	Subsequent ST elevation (STEMI) myocardial infarction of other sites	Diagnosis	ICD-10-CM
I22.9	Subsequent ST elevation (STEMI) myocardial infarction of unspecified site	Diagnosis	ICD-10-CM
Other Cerebrovascular Disease			
G45.0	Vertebro-basilar artery syndrome	Diagnosis	ICD-10-CM
G45.1	Carotid artery syndrome (hemispheric)	Diagnosis	ICD-10-CM
G45.2	Multiple and bilateral precerebral artery syndromes	Diagnosis	ICD-10-CM
G45.4	Transient global amnesia	Diagnosis	ICD-10-CM
G45.8	Other transient cerebral ischemic attacks and related syndromes	Diagnosis	ICD-10-CM
G45.9	Transient cerebral ischemic attack, unspecified	Diagnosis	ICD-10-CM
G46.0	Middle cerebral artery syndrome	Diagnosis	ICD-10-CM
G46.1	Anterior cerebral artery syndrome	Diagnosis	ICD-10-CM
G46.2	Posterior cerebral artery syndrome	Diagnosis	ICD-10-CM
G46.3	Brain stem stroke syndrome	Diagnosis	ICD-10-CM
G46.4	Cerebellar stroke syndrome	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
G46.5	Pure motor lacunar syndrome	Diagnosis	ICD-10-CM
G46.6	Pure sensory lacunar syndrome	Diagnosis	ICD-10-CM
G46.7	Other lacunar syndromes	Diagnosis	ICD-10-CM
G46.8	Other vascular syndromes of brain in cerebrovascular diseases	Diagnosis	ICD-10-CM
I62.00	Nontraumatic subdural hemorrhage, unspecified	Diagnosis	ICD-10-CM
I62.01	Nontraumatic acute subdural hemorrhage	Diagnosis	ICD-10-CM
I62.02	Nontraumatic subacute subdural hemorrhage	Diagnosis	ICD-10-CM
I62.03	Nontraumatic chronic subdural hemorrhage	Diagnosis	ICD-10-CM
I62.1	Nontraumatic extradural hemorrhage	Diagnosis	ICD-10-CM
I62.9	Nontraumatic intracranial hemorrhage, unspecified	Diagnosis	ICD-10-CM
I65.01	Occlusion and stenosis of right vertebral artery	Diagnosis	ICD-10-CM
I65.02	Occlusion and stenosis of left vertebral artery	Diagnosis	ICD-10-CM
I65.03	Occlusion and stenosis of bilateral vertebral arteries	Diagnosis	ICD-10-CM
I65.09	Occlusion and stenosis of unspecified vertebral artery	Diagnosis	ICD-10-CM
I65.1	Occlusion and stenosis of basilar artery	Diagnosis	ICD-10-CM
I65.21	Occlusion and stenosis of right carotid artery	Diagnosis	ICD-10-CM
I65.22	Occlusion and stenosis of left carotid artery	Diagnosis	ICD-10-CM
I65.23	Occlusion and stenosis of bilateral carotid arteries	Diagnosis	ICD-10-CM
I65.29	Occlusion and stenosis of unspecified carotid artery	Diagnosis	ICD-10-CM
I65.8	Occlusion and stenosis of other precerebral arteries	Diagnosis	ICD-10-CM
I65.9	Occlusion and stenosis of unspecified precerebral artery	Diagnosis	ICD-10-CM
I68.0	Cerebral amyloid angiopathy	Diagnosis	ICD-10-CM
I68.2	Cerebral arteritis in other diseases classified elsewhere	Diagnosis	ICD-10-CM
I68.8	Other cerebrovascular disorders in diseases classified elsewhere	Diagnosis	ICD-10-CM
I69.00	Unspecified sequelae of nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.010	Attention and concentration deficit following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.011	Memory deficit following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.012	Visuospatial deficit and spatial neglect following nontraumatic subarachnoid	Diagnosis	ICD-10-CM
I69.013	Psychomotor deficit following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.014	Frontal lobe and executive function deficit following nontraumatic subarachnoid	Diagnosis	ICD-10-CM
I69.015	Cognitive social or emotional deficit following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.018	Other symptoms and signs involving cognitive functions following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.019	Unspecified symptoms and signs involving cognitive functions following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.020	Aphasia following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.021	Dysphasia following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.022	Dysarthria following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.023	Fluency disorder following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.028	Other speech and language deficits following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.031	Monoplegia of upper limb following nontraumatic subarachnoid hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.032	Monoplegia of upper limb following nontraumatic subarachnoid hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.033	Monoplegia of upper limb following nontraumatic subarachnoid hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.034	Monoplegia of upper limb following nontraumatic subarachnoid hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.039	Monoplegia of upper limb following nontraumatic subarachnoid hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.041	Monoplegia of lower limb following nontraumatic subarachnoid hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.042	Monoplegia of lower limb following nontraumatic subarachnoid hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.043	Monoplegia of lower limb following nontraumatic subarachnoid hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.044	Monoplegia of lower limb following nontraumatic subarachnoid hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.049	Monoplegia of lower limb following nontraumatic subarachnoid hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.051	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.052	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.053	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.054	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.059	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.061	Other paralytic syndrome following nontraumatic subarachnoid hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.062	Other paralytic syndrome following nontraumatic subarachnoid hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.063	Other paralytic syndrome following nontraumatic subarachnoid hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.064	Other paralytic syndrome following nontraumatic subarachnoid hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.065	Other paralytic syndrome following nontraumatic subarachnoid hemorrhage, bilateral	Diagnosis	ICD-10-CM
I69.069	Other paralytic syndrome following nontraumatic subarachnoid hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.090	Apraxia following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.091	Dysphagia following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.092	Facial weakness following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.093	Ataxia following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.098	Other sequelae following nontraumatic subarachnoid hemorrhage	Diagnosis	ICD-10-CM
I69.10	Unspecified sequelae of nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.110	Attention and concentration deficit following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.111	Memory deficit following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.112	Visuospatial deficit and spatial neglect following nontraumatic intracerebral	Diagnosis	ICD-10-CM
I69.113	Psychomotor deficit following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.114	Frontal lobe and executive function deficit following nontraumatic intracerebral	Diagnosis	ICD-10-CM
I69.115	Cognitive social or emotional deficit following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.118	Other symptoms and signs involving cognitive functions following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.119	Unspecified symptoms and signs involving cognitive functions following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.120	Aphasia following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.121	Dysphasia following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.122	Dysarthria following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.123	Fluency disorder following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.128	Other speech and language deficits following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.131	Monoplegia of upper limb following nontraumatic intracerebral hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.132	Monoplegia of upper limb following nontraumatic intracerebral hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.133	Monoplegia of upper limb following nontraumatic intracerebral hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.134	Monoplegia of upper limb following nontraumatic intracerebral hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.139	Monoplegia of upper limb following nontraumatic intracerebral hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.141	Monoplegia of lower limb following nontraumatic intracerebral hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.142	Monoplegia of lower limb following nontraumatic intracerebral hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.143	Monoplegia of lower limb following nontraumatic intracerebral hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.144	Monoplegia of lower limb following nontraumatic intracerebral hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.149	Monoplegia of lower limb following nontraumatic intracerebral hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.151	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.152	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.153	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.154	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.159	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.161	Other paralytic syndrome following nontraumatic intracerebral hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.162	Other paralytic syndrome following nontraumatic intracerebral hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.163	Other paralytic syndrome following nontraumatic intracerebral hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.164	Other paralytic syndrome following nontraumatic intracerebral hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.165	Other paralytic syndrome following nontraumatic intracerebral hemorrhage, bilateral	Diagnosis	ICD-10-CM
I69.169	Other paralytic syndrome following nontraumatic intracerebral hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.190	Apraxia following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.191	Dysphagia following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.192	Facial weakness following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.193	Ataxia following nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.198	Other sequelae of nontraumatic intracerebral hemorrhage	Diagnosis	ICD-10-CM
I69.20	Unspecified sequelae of other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.210	Attention and concentration deficit following other nontraumatic intracranial	Diagnosis	ICD-10-CM
I69.211	Memory deficit following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.212	Visuospatial deficit and spatial neglect following other nontraumatic intracranial	Diagnosis	ICD-10-CM
I69.213	Psychomotor deficit following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.214	Frontal lobe and executive function deficit following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.215	Cognitive social or emotional deficit following other nontraumatic intracranial	Diagnosis	ICD-10-CM
I69.218	Other symptoms and signs involving cognitive functions following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.219	Unspecified symptoms and signs involving cognitive functions following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.220	Aphasia following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.221	Dysphasia following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.222	Dysarthria following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.223	Fluency disorder following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.228	Other speech and language deficits following other nontraumatic intracranial	Diagnosis	ICD-10-CM
I69.231	Monoplegia of upper limb following other nontraumatic intracranial hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.232	Monoplegia of upper limb following other nontraumatic intracranial hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.233	Monoplegia of upper limb following other nontraumatic intracranial hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.234	Monoplegia of upper limb following other nontraumatic intracranial hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.239	Monoplegia of upper limb following other nontraumatic intracranial hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.241	Monoplegia of lower limb following other nontraumatic intracranial hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.242	Monoplegia of lower limb following other nontraumatic intracranial hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.243	Monoplegia of lower limb following other nontraumatic intracranial hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.244	Monoplegia of lower limb following other nontraumatic intracranial hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.249	Monoplegia of lower limb following other nontraumatic intracranial hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.251	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.252	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.253	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.254	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.259	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.261	Other paralytic syndrome following other nontraumatic intracranial hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.262	Other paralytic syndrome following other nontraumatic intracranial hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.263	Other paralytic syndrome following other nontraumatic intracranial hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.264	Other paralytic syndrome following other nontraumatic intracranial hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.265	Other paralytic syndrome following other nontraumatic intracranial hemorrhage,	Diagnosis	ICD-10-CM
I69.269	Other paralytic syndrome following other nontraumatic intracranial hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.290	Apraxia following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.291	Dysphagia following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.292	Facial weakness following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.293	Ataxia following other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.298	Other sequelae of other nontraumatic intracranial hemorrhage	Diagnosis	ICD-10-CM
I69.30	Unspecified sequelae of cerebral infarction	Diagnosis	ICD-10-CM
I69.310	Attention and concentration deficit following cerebral infarction	Diagnosis	ICD-10-CM
I69.311	Memory deficit following cerebral infarction	Diagnosis	ICD-10-CM
I69.312	Visuospatial deficit and spatial neglect following cerebral infarction	Diagnosis	ICD-10-CM
I69.313	Psychomotor deficit following cerebral infarction	Diagnosis	ICD-10-CM
I69.314	Frontal lobe and executive function deficit following cerebral infarction	Diagnosis	ICD-10-CM
I69.315	Cognitive social or emotional deficit following cerebral infarction	Diagnosis	ICD-10-CM
I69.318	Other symptoms and signs involving cognitive functions following cerebral infarction	Diagnosis	ICD-10-CM
I69.319	Unspecified symptoms and signs involving cognitive functions following cerebral	Diagnosis	ICD-10-CM
I69.320	Aphasia following cerebral infarction	Diagnosis	ICD-10-CM
I69.321	Dysphasia following cerebral infarction	Diagnosis	ICD-10-CM
I69.322	Dysarthria following cerebral infarction	Diagnosis	ICD-10-CM
I69.323	Fluency disorder following cerebral infarction	Diagnosis	ICD-10-CM
I69.328	Other speech and language deficits following cerebral infarction	Diagnosis	ICD-10-CM
I69.331	Monoplegia of upper limb following cerebral infarction affecting right dominant side	Diagnosis	ICD-10-CM
I69.332	Monoplegia of upper limb following cerebral infarction affecting left dominant side	Diagnosis	ICD-10-CM
I69.333	Monoplegia of upper limb following cerebral infarction affecting right non-dominant	Diagnosis	ICD-10-CM
I69.334	Monoplegia of upper limb following cerebral infarction affecting left non-dominant	Diagnosis	ICD-10-CM
I69.339	Monoplegia of upper limb following cerebral infarction affecting unspecified side	Diagnosis	ICD-10-CM
I69.341	Monoplegia of lower limb following cerebral infarction affecting right dominant side	Diagnosis	ICD-10-CM
I69.342	Monoplegia of lower limb following cerebral infarction affecting left dominant side	Diagnosis	ICD-10-CM
I69.343	Monoplegia of lower limb following cerebral infarction affecting right non-dominant	Diagnosis	ICD-10-CM
I69.344	Monoplegia of lower limb following cerebral infarction affecting left non-dominant	Diagnosis	ICD-10-CM
I69.349	Monoplegia of lower limb following cerebral infarction affecting unspecified side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.351	Hemiplegia and hemiparesis following cerebral infarction affecting right dominant side	Diagnosis	ICD-10-CM
I69.352	Hemiplegia and hemiparesis following cerebral infarction affecting left dominant side	Diagnosis	ICD-10-CM
I69.353	Hemiplegia and hemiparesis following cerebral infarction affecting right non-dominant	Diagnosis	ICD-10-CM
I69.354	Hemiplegia and hemiparesis following cerebral infarction affecting left non-dominant	Diagnosis	ICD-10-CM
I69.359	Hemiplegia and hemiparesis following cerebral infarction affecting unspecified side	Diagnosis	ICD-10-CM
I69.361	Other paralytic syndrome following cerebral infarction affecting right dominant side	Diagnosis	ICD-10-CM
I69.362	Other paralytic syndrome following cerebral infarction affecting left dominant side	Diagnosis	ICD-10-CM
I69.363	Other paralytic syndrome following cerebral infarction affecting right non-dominant	Diagnosis	ICD-10-CM
I69.364	Other paralytic syndrome following cerebral infarction affecting left non-dominant	Diagnosis	ICD-10-CM
I69.365	Other paralytic syndrome following cerebral infarction, bilateral	Diagnosis	ICD-10-CM
I69.369	Other paralytic syndrome following cerebral infarction affecting unspecified side	Diagnosis	ICD-10-CM
I69.390	Apraxia following cerebral infarction	Diagnosis	ICD-10-CM
I69.391	Dysphagia following cerebral infarction	Diagnosis	ICD-10-CM
I69.392	Facial weakness following cerebral infarction	Diagnosis	ICD-10-CM
I69.393	Ataxia following cerebral infarction	Diagnosis	ICD-10-CM
I69.398	Other sequelae of cerebral infarction	Diagnosis	ICD-10-CM
I69.80	Unspecified sequelae of other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.810	Attention and concentration deficit following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.811	Memory deficit following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.812	Visuospatial deficit and spatial neglect following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.813	Psychomotor deficit following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.814	Frontal lobe and executive function deficit following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.815	Cognitive social or emotional deficit following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.818	Other symptoms and signs involving cognitive functions following other	Diagnosis	ICD-10-CM
I69.819	Unspecified symptoms and signs involving cognitive functions following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.820	Aphasia following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.821	Dysphasia following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.822	Dysarthria following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.823	Fluency disorder following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.828	Other speech and language deficits following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.831	Monoplegia of upper limb following other cerebrovascular disease affecting right	Diagnosis	ICD-10-CM
I69.832	Monoplegia of upper limb following other cerebrovascular disease affecting left	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.833	Monoplegia of upper limb following other cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.834	Monoplegia of upper limb following other cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.839	Monoplegia of upper limb following other cerebrovascular disease affecting	Diagnosis	ICD-10-CM
I69.841	Monoplegia of lower limb following other cerebrovascular disease affecting right	Diagnosis	ICD-10-CM
I69.842	Monoplegia of lower limb following other cerebrovascular disease affecting left	Diagnosis	ICD-10-CM
I69.843	Monoplegia of lower limb following other cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.844	Monoplegia of lower limb following other cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.849	Monoplegia of lower limb following other cerebrovascular disease affecting	Diagnosis	ICD-10-CM
I69.851	Hemiplegia and hemiparesis following other cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.852	Hemiplegia and hemiparesis following other cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.853	Hemiplegia and hemiparesis following other cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.854	Hemiplegia and hemiparesis following other cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.859	Hemiplegia and hemiparesis following other cerebrovascular disease affecting	Diagnosis	ICD-10-CM
I69.861	Other paralytic syndrome following other cerebrovascular disease affecting right	Diagnosis	ICD-10-CM
I69.862	Other paralytic syndrome following other cerebrovascular disease affecting left	Diagnosis	ICD-10-CM
I69.863	Other paralytic syndrome following other cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.864	Other paralytic syndrome following other cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.865	Other paralytic syndrome following other cerebrovascular disease, bilateral	Diagnosis	ICD-10-CM
I69.869	Other paralytic syndrome following other cerebrovascular disease affecting	Diagnosis	ICD-10-CM
I69.890	Apraxia following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.891	Dysphagia following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.892	Facial weakness following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.893	Ataxia following other cerebrovascular disease	Diagnosis	ICD-10-CM
I69.898	Other sequelae of other cerebrovascular disease	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.90	Unspecified sequelae of unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.910	Attention and concentration deficit following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.911	Memory deficit following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.912	Visuospatial deficit and spatial neglect following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.913	Psychomotor deficit following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.914	Frontal lobe and executive function deficit following unspecified cerebrovascular	Diagnosis	ICD-10-CM
I69.915	Cognitive social or emotional deficit following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.918	Other symptoms and signs involving cognitive functions following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.919	Unspecified symptoms and signs involving cognitive functions following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.920	Aphasia following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.921	Dysphasia following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.922	Dysarthria following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.923	Fluency disorder following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.928	Other speech and language deficits following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.931	Monoplegia of upper limb following unspecified cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.932	Monoplegia of upper limb following unspecified cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.933	Monoplegia of upper limb following unspecified cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.934	Monoplegia of upper limb following unspecified cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.939	Monoplegia of upper limb following unspecified cerebrovascular disease affecting unspecified side	Diagnosis	ICD-10-CM
I69.941	Monoplegia of lower limb following unspecified cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.942	Monoplegia of lower limb following unspecified cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.943	Monoplegia of lower limb following unspecified cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.944	Monoplegia of lower limb following unspecified cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.949	Monoplegia of lower limb following unspecified cerebrovascular disease affecting unspecified side	Diagnosis	ICD-10-CM
I69.951	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.952	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.953	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.954	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.959	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting unspecified side	Diagnosis	ICD-10-CM
I69.961	Other paralytic syndrome following unspecified cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.962	Other paralytic syndrome following unspecified cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.963	Other paralytic syndrome following unspecified cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.964	Other paralytic syndrome following unspecified cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.965	Other paralytic syndrome following unspecified cerebrovascular disease, bilateral	Diagnosis	ICD-10-CM
I69.969	Other paralytic syndrome following unspecified cerebrovascular disease affecting unspecified side	Diagnosis	ICD-10-CM
I69.990	Apraxia following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.991	Dysphagia following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.992	Facial weakness following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.993	Ataxia following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
I69.998	Other sequelae following unspecified cerebrovascular disease	Diagnosis	ICD-10-CM
Chronic Obstructive Pulmonary Disease (COPD)			
J41.0	Simple chronic bronchitis	Diagnosis	ICD-10-CM
J41.1	Mucopurulent chronic bronchitis	Diagnosis	ICD-10-CM
J41.8	Mixed simple and mucopurulent chronic bronchitis	Diagnosis	ICD-10-CM
J42	Unspecified chronic bronchitis	Diagnosis	ICD-10-CM
J43	Emphysema	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J43.0	Unilateral pulmonary emphysema [MacLeod's syndrome]	Diagnosis	ICD-10-CM
J43.1	Panlobular emphysema	Diagnosis	ICD-10-CM
J43.2	Centrilobular emphysema	Diagnosis	ICD-10-CM
J43.8	Other emphysema	Diagnosis	ICD-10-CM
J43.9	Emphysema, unspecified	Diagnosis	ICD-10-CM
J44.0	Chronic obstructive pulmonary disease with (acute) lower respiratory infection	Diagnosis	ICD-10-CM
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation	Diagnosis	ICD-10-CM
J44.9	Chronic obstructive pulmonary disease, unspecified	Diagnosis	ICD-10-CM
Asthma without COPD			
J45.20	Mild intermittent asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.21	Mild intermittent asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.22	Mild intermittent asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.30	Mild persistent asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.31	Mild persistent asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.32	Mild persistent asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.40	Moderate persistent asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.41	Moderate persistent asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.42	Moderate persistent asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.50	Severe persistent asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.51	Severe persistent asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.52	Severe persistent asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.901	Unspecified asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.902	Unspecified asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.909	Unspecified asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.990	Exercise induced bronchospasm	Diagnosis	ICD-10-CM
J45.991	Cough variant asthma	Diagnosis	ICD-10-CM
J45.998	Other asthma	Diagnosis	ICD-10-CM
Chronic Liver Disease			
K70	Alcoholic liver disease	Diagnosis	ICD-10-CM
K70.0	Alcoholic fatty liver	Diagnosis	ICD-10-CM
K70.1	Alcoholic hepatitis	Diagnosis	ICD-10-CM
K70.10	Alcoholic hepatitis without ascites	Diagnosis	ICD-10-CM
K70.11	Alcoholic hepatitis with ascites	Diagnosis	ICD-10-CM
K70.2	Alcoholic fibrosis and sclerosis of liver	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
K70.3	Alcoholic cirrhosis of liver	Diagnosis	ICD-10-CM
K70.30	Alcoholic cirrhosis of liver without ascites	Diagnosis	ICD-10-CM
K70.31	Alcoholic cirrhosis of liver with ascites	Diagnosis	ICD-10-CM
K70.4	Alcoholic hepatic failure	Diagnosis	ICD-10-CM
K70.40	Alcoholic hepatic failure without coma	Diagnosis	ICD-10-CM
K70.41	Alcoholic hepatic failure with coma	Diagnosis	ICD-10-CM
K70.9	Alcoholic liver disease, unspecified	Diagnosis	ICD-10-CM
K71	Toxic liver disease	Diagnosis	ICD-10-CM
K71.0	Toxic liver disease with cholestasis	Diagnosis	ICD-10-CM
K71.1	Toxic liver disease with hepatic necrosis	Diagnosis	ICD-10-CM
K71.10	Toxic liver disease with hepatic necrosis, without coma	Diagnosis	ICD-10-CM
K71.11	Toxic liver disease with hepatic necrosis, with coma	Diagnosis	ICD-10-CM
K71.2	Toxic liver disease with acute hepatitis	Diagnosis	ICD-10-CM
K71.3	Toxic liver disease with chronic persistent hepatitis	Diagnosis	ICD-10-CM
K71.4	Toxic liver disease with chronic lobular hepatitis	Diagnosis	ICD-10-CM
K71.5	Toxic liver disease with chronic active hepatitis	Diagnosis	ICD-10-CM
K71.50	Toxic liver disease with chronic active hepatitis without ascites	Diagnosis	ICD-10-CM
K71.51	Toxic liver disease with chronic active hepatitis with ascites	Diagnosis	ICD-10-CM
K71.6	Toxic liver disease with hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM
K71.7	Toxic liver disease with fibrosis and cirrhosis of liver	Diagnosis	ICD-10-CM
K71.8	Toxic liver disease with other disorders of liver	Diagnosis	ICD-10-CM
K71.9	Toxic liver disease, unspecified	Diagnosis	ICD-10-CM
K72	Hepatic failure, not elsewhere classified	Diagnosis	ICD-10-CM
K72.0	Acute and subacute hepatic failure	Diagnosis	ICD-10-CM
K72.00	Acute and subacute hepatic failure without coma	Diagnosis	ICD-10-CM
K72.01	Acute and subacute hepatic failure with coma	Diagnosis	ICD-10-CM
K72.1	Chronic hepatic failure	Diagnosis	ICD-10-CM
K72.10	Chronic hepatic failure without coma	Diagnosis	ICD-10-CM
K72.11	Chronic hepatic failure with coma	Diagnosis	ICD-10-CM
K72.9	Hepatic failure, unspecified	Diagnosis	ICD-10-CM
K72.90	Hepatic failure, unspecified without coma	Diagnosis	ICD-10-CM
K72.91	Hepatic failure, unspecified with coma	Diagnosis	ICD-10-CM
K73	Chronic hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM
K73.0	Chronic persistent hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
K73.1	Chronic lobular hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM
K73.2	Chronic active hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM
K73.8	Other chronic hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM
K73.9	Chronic hepatitis, unspecified	Diagnosis	ICD-10-CM
K74	Fibrosis and cirrhosis of liver	Diagnosis	ICD-10-CM
K74.0	Hepatic fibrosis	Diagnosis	ICD-10-CM
K74.00	Hepatic fibrosis, unspecified	Diagnosis	ICD-10-CM
K74.01	Hepatic fibrosis, early fibrosis	Diagnosis	ICD-10-CM
K74.02	Hepatic fibrosis, advanced fibrosis	Diagnosis	ICD-10-CM
K74.1	Hepatic sclerosis	Diagnosis	ICD-10-CM
K74.2	Hepatic fibrosis with hepatic sclerosis	Diagnosis	ICD-10-CM
K74.3	Primary biliary cirrhosis	Diagnosis	ICD-10-CM
K74.4	Secondary biliary cirrhosis	Diagnosis	ICD-10-CM
K74.5	Biliary cirrhosis, unspecified	Diagnosis	ICD-10-CM
K74.6	Other and unspecified cirrhosis of liver	Diagnosis	ICD-10-CM
K74.60	Unspecified cirrhosis of liver	Diagnosis	ICD-10-CM
K74.69	Other cirrhosis of liver	Diagnosis	ICD-10-CM
K75	Other inflammatory liver diseases	Diagnosis	ICD-10-CM
K75.0	Abscess of liver	Diagnosis	ICD-10-CM
K75.1	Phlebitis of portal vein	Diagnosis	ICD-10-CM
K75.2	Nonspecific reactive hepatitis	Diagnosis	ICD-10-CM
K75.3	Granulomatous hepatitis, not elsewhere classified	Diagnosis	ICD-10-CM
K75.4	Autoimmune hepatitis	Diagnosis	ICD-10-CM
K75.8	Other specified inflammatory liver diseases	Diagnosis	ICD-10-CM
K75.81	Nonalcoholic steatohepatitis (NASH)	Diagnosis	ICD-10-CM
K75.89	Other specified inflammatory liver diseases	Diagnosis	ICD-10-CM
K75.9	Inflammatory liver disease, unspecified	Diagnosis	ICD-10-CM
K76	Other diseases of liver	Diagnosis	ICD-10-CM
K76.0	Fatty (change of) liver, not elsewhere classified	Diagnosis	ICD-10-CM
K76.1	Chronic passive congestion of liver	Diagnosis	ICD-10-CM
K76.2	Central hemorrhagic necrosis of liver	Diagnosis	ICD-10-CM
K76.3	Infarction of liver	Diagnosis	ICD-10-CM
K76.4	Peliosis hepatis	Diagnosis	ICD-10-CM
K76.5	Hepatic veno-occlusive disease	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
K76.6	Portal hypertension	Diagnosis	ICD-10-CM
K76.7	Hepatorenal syndrome	Diagnosis	ICD-10-CM
K76.8	Other specified diseases of liver	Diagnosis	ICD-10-CM
K76.81	Hepatopulmonary syndrome	Diagnosis	ICD-10-CM
K76.89	Other specified diseases of liver	Diagnosis	ICD-10-CM
K76.9	Liver disease, unspecified	Diagnosis	ICD-10-CM
K77	Liver disorders in diseases classified elsewhere	Diagnosis	ICD-10-CM
Chronic Kidney Disease			
A18.11	Tuberculosis of kidney and ureter	Diagnosis	ICD-10-CM
A52.75	Syphilis of kidney and ureter	Diagnosis	ICD-10-CM
B52.0	Plasmodium malariae malaria with nephropathy	Diagnosis	ICD-10-CM
C64.1	Malignant neoplasm of right kidney, except renal pelvis	Diagnosis	ICD-10-CM
C64.2	Malignant neoplasm of left kidney, except renal pelvis	Diagnosis	ICD-10-CM
C64.9	Malignant neoplasm of unspecified kidney, except renal pelvis	Diagnosis	ICD-10-CM
C68.9	Malignant neoplasm of urinary organ, unspecified	Diagnosis	ICD-10-CM
D30.00	Benign neoplasm of unspecified kidney	Diagnosis	ICD-10-CM
D30.01	Benign neoplasm of right kidney	Diagnosis	ICD-10-CM
D30.02	Benign neoplasm of left kidney	Diagnosis	ICD-10-CM
D41.00	Neoplasm of uncertain behavior of unspecified kidney	Diagnosis	ICD-10-CM
D41.01	Neoplasm of uncertain behavior of right kidney	Diagnosis	ICD-10-CM
D41.02	Neoplasm of uncertain behavior of left kidney	Diagnosis	ICD-10-CM
D41.10	Neoplasm of uncertain behavior of unspecified renal pelvis	Diagnosis	ICD-10-CM
D41.11	Neoplasm of uncertain behavior of right renal pelvis	Diagnosis	ICD-10-CM
D41.12	Neoplasm of uncertain behavior of left renal pelvis	Diagnosis	ICD-10-CM
D41.20	Neoplasm of uncertain behavior of unspecified ureter	Diagnosis	ICD-10-CM
D41.21	Neoplasm of uncertain behavior of right ureter	Diagnosis	ICD-10-CM
D41.22	Neoplasm of uncertain behavior of left ureter	Diagnosis	ICD-10-CM
D59.3	Hemolytic-uremic syndrome	Diagnosis	ICD-10-CM
E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy	Diagnosis	ICD-10-CM
E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication	Diagnosis	ICD-10-CM
E08.65	Diabetes mellitus due to underlying condition with hyperglycemia	Diagnosis	ICD-10-CM
E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E10.21	Type 1 diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E10.29	Type 1 diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E10.65	Type 1 diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E11.21	Type 2 diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E11.65	Type 2 diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E13.21	Other specified diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E13.22	Other specified diabetes mellitus with diabetic chronic kidney disease	Diagnosis	ICD-10-CM
E13.29	Other specified diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E74.8	Other specified disorders of carbohydrate metabolism	Diagnosis	ICD-10-CM
I12.0	Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease	Diagnosis	ICD-10-CM
I13.11	Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease	Diagnosis	ICD-10-CM
I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease	Diagnosis	ICD-10-CM
I70.1	Atherosclerosis of renal artery	Diagnosis	ICD-10-CM
I72.2	Aneurysm of renal artery	Diagnosis	ICD-10-CM
K76.7	Hepatorenal syndrome	Diagnosis	ICD-10-CM
M10.30	Gout due to renal impairment, unspecified site	Diagnosis	ICD-10-CM
M10.311	Gout due to renal impairment, right shoulder	Diagnosis	ICD-10-CM
M10.312	Gout due to renal impairment, left shoulder	Diagnosis	ICD-10-CM
M10.319	Gout due to renal impairment, unspecified shoulder	Diagnosis	ICD-10-CM
M10.321	Gout due to renal impairment, right elbow	Diagnosis	ICD-10-CM
M10.322	Gout due to renal impairment, left elbow	Diagnosis	ICD-10-CM
M10.329	Gout due to renal impairment, unspecified elbow	Diagnosis	ICD-10-CM
M10.331	Gout due to renal impairment, right wrist	Diagnosis	ICD-10-CM
M10.332	Gout due to renal impairment, left wrist	Diagnosis	ICD-10-CM
M10.339	Gout due to renal impairment, unspecified wrist	Diagnosis	ICD-10-CM
M10.341	Gout due to renal impairment, right hand	Diagnosis	ICD-10-CM
M10.342	Gout due to renal impairment, left hand	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M10.349	Gout due to renal impairment, unspecified hand	Diagnosis	ICD-10-CM
M10.351	Gout due to renal impairment, right hip	Diagnosis	ICD-10-CM
M10.352	Gout due to renal impairment, left hip	Diagnosis	ICD-10-CM
M10.359	Gout due to renal impairment, unspecified hip	Diagnosis	ICD-10-CM
M10.361	Gout due to renal impairment, right knee	Diagnosis	ICD-10-CM
M10.362	Gout due to renal impairment, left knee	Diagnosis	ICD-10-CM
M10.369	Gout due to renal impairment, unspecified knee	Diagnosis	ICD-10-CM
M10.371	Gout due to renal impairment, right ankle and foot	Diagnosis	ICD-10-CM
M10.372	Gout due to renal impairment, left ankle and foot	Diagnosis	ICD-10-CM
M10.379	Gout due to renal impairment, unspecified ankle and foot	Diagnosis	ICD-10-CM
M10.38	Gout due to renal impairment, vertebrae	Diagnosis	ICD-10-CM
M10.39	Gout due to renal impairment, multiple sites	Diagnosis	ICD-10-CM
M32.14	Glomerular disease in systemic lupus erythematosus	Diagnosis	ICD-10-CM
M32.15	Tubulo-interstitial nephropathy in systemic lupus erythematosus	Diagnosis	ICD-10-CM
M35.04	Sicca syndrome with tubulo-interstitial nephropathy	Diagnosis	ICD-10-CM
N00.0	Acute nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N00.1	Acute nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N00.2	Acute nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N00.3	Acute nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N00.4	Acute nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N00.5	Acute nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N00.6	Acute nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N00.7	Acute nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N00.8	Acute nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N00.9	Acute nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N01.0	Rapidly progressive nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N01.1	Rapidly progressive nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N01.2	Rapidly progressive nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N01.3	Rapidly progressive nephritic syndrome with diffuse mesangial proliferative	Diagnosis	ICD-10-CM
N01.4	Rapidly progressive nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N01.5	Rapidly progressive nephritic syndrome with diffuse mesangiocapillary	Diagnosis	ICD-10-CM
N01.6	Rapidly progressive nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N01.7	Rapidly progressive nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
N01.8	Rapidly progressive nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N01.9	Rapidly progressive nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N02.0	Recurrent and persistent hematuria with minor glomerular abnormality	Diagnosis	ICD-10-CM
N02.1	Recurrent and persistent hematuria with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N02.2	Recurrent and persistent hematuria with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N02.3	Recurrent and persistent hematuria with diffuse mesangial proliferative	Diagnosis	ICD-10-CM
N02.4	Recurrent and persistent hematuria with diffuse endocapillary proliferative	Diagnosis	ICD-10-CM
N02.5	Recurrent and persistent hematuria with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N02.6	Recurrent and persistent hematuria with dense deposit disease	Diagnosis	ICD-10-CM
N02.7	Recurrent and persistent hematuria with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N02.8	Recurrent and persistent hematuria with other morphologic changes	Diagnosis	ICD-10-CM
N02.9	Recurrent and persistent hematuria with unspecified morphologic changes	Diagnosis	ICD-10-CM
N03.0	Chronic nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N03.1	Chronic nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N03.2	Chronic nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N03.3	Chronic nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N03.4	Chronic nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N03.5	Chronic nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N03.6	Chronic nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N03.7	Chronic nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N03.8	Chronic nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N03.9	Chronic nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N04.0	Nephrotic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N04.1	Nephrotic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N04.2	Nephrotic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N04.3	Nephrotic syndrome with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N04.4	Nephrotic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N04.5	Nephrotic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N04.6	Nephrotic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N04.7	Nephrotic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N04.8	Nephrotic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N04.9	Nephrotic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N05.0	Unspecified nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N05.1	Unspecified nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
N05.2	Unspecified nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N05.3	Unspecified nephritic syndrome with diffuse mesangial proliferative	Diagnosis	ICD-10-CM
N05.4	Unspecified nephritic syndrome with diffuse endocapillary proliferative	Diagnosis	ICD-10-CM
N05.5	Unspecified nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N05.6	Unspecified nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N05.7	Unspecified nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N05.8	Unspecified nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N05.9	Unspecified nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N06.0	Isolated proteinuria with minor glomerular abnormality	Diagnosis	ICD-10-CM
N06.1	Isolated proteinuria with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N06.2	Isolated proteinuria with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N06.3	Isolated proteinuria with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N06.4	Isolated proteinuria with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N06.5	Isolated proteinuria with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N06.6	Isolated proteinuria with dense deposit disease	Diagnosis	ICD-10-CM
N06.7	Isolated proteinuria with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N06.8	Isolated proteinuria with other morphologic lesion	Diagnosis	ICD-10-CM
N06.9	Isolated proteinuria with unspecified morphologic lesion	Diagnosis	ICD-10-CM
N07.0	Hereditary nephropathy, not elsewhere classified with minor glomerular abnormality	Diagnosis	ICD-10-CM
N07.1	Hereditary nephropathy, not elsewhere classified with focal and segmental glomerular	Diagnosis	ICD-10-CM
N07.2	Hereditary nephropathy, not elsewhere classified with diffuse membranous	Diagnosis	ICD-10-CM
N07.3	Hereditary nephropathy, not elsewhere classified with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N07.4	Hereditary nephropathy, not elsewhere classified with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N07.5	Hereditary nephropathy, not elsewhere classified with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N07.6	Hereditary nephropathy, not elsewhere classified with dense deposit disease	Diagnosis	ICD-10-CM
N07.7	Hereditary nephropathy, not elsewhere classified with diffuse crescentic	Diagnosis	ICD-10-CM
N07.8	Hereditary nephropathy, not elsewhere classified with other morphologic lesions	Diagnosis	ICD-10-CM
N07.9	Hereditary nephropathy, not elsewhere classified with unspecified morphologic lesions	Diagnosis	ICD-10-CM
N08	Glomerular disorders in diseases classified elsewhere	Diagnosis	ICD-10-CM
N13.0	Hydronephrosis with ureteropelvic junction obstruction	Diagnosis	ICD-10-CM
N13.1	Hydronephrosis with ureteral stricture, not elsewhere classified	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
N13.2	Hydronephrosis with renal and ureteral calculous obstruction	Diagnosis	ICD-10-CM
N13.30	Unspecified hydronephrosis	Diagnosis	ICD-10-CM
N13.39	Other hydronephrosis	Diagnosis	ICD-10-CM
N14.0	Analgesic nephropathy	Diagnosis	ICD-10-CM
N14.1	Nephropathy induced by other drugs, medicaments and biological substances	Diagnosis	ICD-10-CM
N14.2	Nephropathy induced by unspecified drug, medicament or biological substance	Diagnosis	ICD-10-CM
N14.3	Nephropathy induced by heavy metals	Diagnosis	ICD-10-CM
N14.4	Toxic nephropathy, not elsewhere classified	Diagnosis	ICD-10-CM
N15.0	Balkan nephropathy	Diagnosis	ICD-10-CM
N15.8	Other specified renal tubulo-interstitial diseases	Diagnosis	ICD-10-CM
N15.9	Renal tubulo-interstitial disease, unspecified	Diagnosis	ICD-10-CM
N16	Renal tubulo-interstitial disorders in diseases classified elsewhere	Diagnosis	ICD-10-CM
N17.0	Acute kidney failure with tubular necrosis	Diagnosis	ICD-10-CM
N17.1	Acute kidney failure with acute cortical necrosis	Diagnosis	ICD-10-CM
N17.2	Acute kidney failure with medullary necrosis	Diagnosis	ICD-10-CM
N17.8	Other acute kidney failure	Diagnosis	ICD-10-CM
N17.9	Acute kidney failure, unspecified	Diagnosis	ICD-10-CM
N18.1	Chronic kidney disease, stage 1	Diagnosis	ICD-10-CM
N18.2	Chronic kidney disease, stage 2 (mild)	Diagnosis	ICD-10-CM
N18.3	Chronic kidney disease, stage 3 (moderate)	Diagnosis	ICD-10-CM
N18.4	Chronic kidney disease, stage 4 (severe)	Diagnosis	ICD-10-CM
N18.5	Chronic kidney disease, stage 5	Diagnosis	ICD-10-CM
N18.6	End stage renal disease	Diagnosis	ICD-10-CM
N18.9	Chronic kidney disease, unspecified	Diagnosis	ICD-10-CM
N19	Unspecified kidney failure	Diagnosis	ICD-10-CM
N25.0	Renal osteodystrophy	Diagnosis	ICD-10-CM
N25.1	Nephrogenic diabetes insipidus	Diagnosis	ICD-10-CM
N25.81	Secondary hyperparathyroidism of renal origin	Diagnosis	ICD-10-CM
N25.89	Other disorders resulting from impaired renal tubular function	Diagnosis	ICD-10-CM
N25.9	Disorder resulting from impaired renal tubular function, unspecified	Diagnosis	ICD-10-CM
N26.1	Atrophy of kidney (terminal)	Diagnosis	ICD-10-CM
N26.9	Renal sclerosis, unspecified	Diagnosis	ICD-10-CM
Q61.02	Congenital multiple renal cysts	Diagnosis	ICD-10-CM
Q61.11	Cystic dilatation of collecting ducts	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Q61.19	Other polycystic kidney, infantile type	Diagnosis	ICD-10-CM
Q61.2	Polycystic kidney, adult type	Diagnosis	ICD-10-CM
Q61.3	Polycystic kidney, unspecified	Diagnosis	ICD-10-CM
Q61.4	Renal dysplasia	Diagnosis	ICD-10-CM
Q61.5	Medullary cystic kidney	Diagnosis	ICD-10-CM
Q61.8	Other cystic kidney diseases	Diagnosis	ICD-10-CM
Q62.0	Congenital hydronephrosis	Diagnosis	ICD-10-CM
Q62.10	Congenital occlusion of ureter, unspecified	Diagnosis	ICD-10-CM
Q62.11	Congenital occlusion of ureteropelvic junction	Diagnosis	ICD-10-CM
Q62.12	Congenital occlusion of ureterovesical orifice	Diagnosis	ICD-10-CM
Q62.2	Congenital megaureter	Diagnosis	ICD-10-CM
Q62.31	Congenital ureterocele, orthotopic	Diagnosis	ICD-10-CM
Q62.32	Cecoureterocele	Diagnosis	ICD-10-CM
Q62.39	Other obstructive defects of renal pelvis and ureter	Diagnosis	ICD-10-CM
R94.4	Abnormal results of kidney function studies	Diagnosis	ICD-10-CM
Any Malignant Neoplasm			
B08.72	Yaba pox virus disease	Diagnosis	ICD-10-CM
C00.0	Malignant neoplasm of external upper lip	Diagnosis	ICD-10-CM
C00.1	Malignant neoplasm of external lower lip	Diagnosis	ICD-10-CM
C00.2	Malignant neoplasm of external lip, unspecified	Diagnosis	ICD-10-CM
C00.3	Malignant neoplasm of upper lip, inner aspect	Diagnosis	ICD-10-CM
C00.4	Malignant neoplasm of lower lip, inner aspect	Diagnosis	ICD-10-CM
C00.5	Malignant neoplasm of lip, unspecified, inner aspect	Diagnosis	ICD-10-CM
C00.6	Malignant neoplasm of commissure of lip, unspecified	Diagnosis	ICD-10-CM
C00.8	Malignant neoplasm of overlapping sites of lip	Diagnosis	ICD-10-CM
C00.9	Malignant neoplasm of lip, unspecified	Diagnosis	ICD-10-CM
C01	Malignant neoplasm of base of tongue	Diagnosis	ICD-10-CM
C02.0	Malignant neoplasm of dorsal surface of tongue	Diagnosis	ICD-10-CM
C02.1	Malignant neoplasm of border of tongue	Diagnosis	ICD-10-CM
C02.2	Malignant neoplasm of ventral surface of tongue	Diagnosis	ICD-10-CM
C02.3	Malignant neoplasm of anterior two-thirds of tongue, part unspecified	Diagnosis	ICD-10-CM
C02.4	Malignant neoplasm of lingual tonsil	Diagnosis	ICD-10-CM
C02.8	Malignant neoplasm of overlapping sites of tongue	Diagnosis	ICD-10-CM
C02.9	Malignant neoplasm of tongue, unspecified	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C03.0	Malignant neoplasm of upper gum	Diagnosis	ICD-10-CM
C03.1	Malignant neoplasm of lower gum	Diagnosis	ICD-10-CM
C03.9	Malignant neoplasm of gum, unspecified	Diagnosis	ICD-10-CM
C04.0	Malignant neoplasm of anterior floor of mouth	Diagnosis	ICD-10-CM
C04.1	Malignant neoplasm of lateral floor of mouth	Diagnosis	ICD-10-CM
C04.8	Malignant neoplasm of overlapping sites of floor of mouth	Diagnosis	ICD-10-CM
C04.9	Malignant neoplasm of floor of mouth, unspecified	Diagnosis	ICD-10-CM
C05.0	Malignant neoplasm of hard palate	Diagnosis	ICD-10-CM
C05.1	Malignant neoplasm of soft palate	Diagnosis	ICD-10-CM
C05.2	Malignant neoplasm of uvula	Diagnosis	ICD-10-CM
C05.8	Malignant neoplasm of overlapping sites of palate	Diagnosis	ICD-10-CM
C05.9	Malignant neoplasm of palate, unspecified	Diagnosis	ICD-10-CM
C06.0	Malignant neoplasm of cheek mucosa	Diagnosis	ICD-10-CM
C06.1	Malignant neoplasm of vestibule of mouth	Diagnosis	ICD-10-CM
C06.2	Malignant neoplasm of retromolar area	Diagnosis	ICD-10-CM
C06.80	Malignant neoplasm of overlapping sites of unspecified parts of mouth	Diagnosis	ICD-10-CM
C06.89	Malignant neoplasm of overlapping sites of other parts of mouth	Diagnosis	ICD-10-CM
C06.9	Malignant neoplasm of mouth, unspecified	Diagnosis	ICD-10-CM
C07	Malignant neoplasm of parotid gland	Diagnosis	ICD-10-CM
C08.0	Malignant neoplasm of submandibular gland	Diagnosis	ICD-10-CM
C08.1	Malignant neoplasm of sublingual gland	Diagnosis	ICD-10-CM
C08.9	Malignant neoplasm of major salivary gland, unspecified	Diagnosis	ICD-10-CM
C09.0	Malignant neoplasm of tonsillar fossa	Diagnosis	ICD-10-CM
C09.1	Malignant neoplasm of tonsillar pillar (anterior) (posterior)	Diagnosis	ICD-10-CM
C09.8	Malignant neoplasm of overlapping sites of tonsil	Diagnosis	ICD-10-CM
C09.9	Malignant neoplasm of tonsil, unspecified	Diagnosis	ICD-10-CM
C10.0	Malignant neoplasm of vallecula	Diagnosis	ICD-10-CM
C10.1	Malignant neoplasm of anterior surface of epiglottis	Diagnosis	ICD-10-CM
C10.2	Malignant neoplasm of lateral wall of oropharynx	Diagnosis	ICD-10-CM
C10.3	Malignant neoplasm of posterior wall of oropharynx	Diagnosis	ICD-10-CM
C10.4	Malignant neoplasm of branchial cleft	Diagnosis	ICD-10-CM
C10.8	Malignant neoplasm of overlapping sites of oropharynx	Diagnosis	ICD-10-CM
C10.9	Malignant neoplasm of oropharynx, unspecified	Diagnosis	ICD-10-CM
C11.0	Malignant neoplasm of superior wall of nasopharynx	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C11.1	Malignant neoplasm of posterior wall of nasopharynx	Diagnosis	ICD-10-CM
C11.2	Malignant neoplasm of lateral wall of nasopharynx	Diagnosis	ICD-10-CM
C11.3	Malignant neoplasm of anterior wall of nasopharynx	Diagnosis	ICD-10-CM
C11.8	Malignant neoplasm of overlapping sites of nasopharynx	Diagnosis	ICD-10-CM
C11.9	Malignant neoplasm of nasopharynx, unspecified	Diagnosis	ICD-10-CM
C12	Malignant neoplasm of pyriform sinus	Diagnosis	ICD-10-CM
C13.0	Malignant neoplasm of postcricoid region	Diagnosis	ICD-10-CM
C13.1	Malignant neoplasm of aryepiglottic fold, hypopharyngeal aspect	Diagnosis	ICD-10-CM
C13.2	Malignant neoplasm of posterior wall of hypopharynx	Diagnosis	ICD-10-CM
C13.8	Malignant neoplasm of overlapping sites of hypopharynx	Diagnosis	ICD-10-CM
C13.9	Malignant neoplasm of hypopharynx, unspecified	Diagnosis	ICD-10-CM
C14.0	Malignant neoplasm of pharynx, unspecified	Diagnosis	ICD-10-CM
C14.2	Malignant neoplasm of Waldeyer's ring	Diagnosis	ICD-10-CM
C14.8	Malignant neoplasm of overlapping sites of lip, oral cavity and pharynx	Diagnosis	ICD-10-CM
C15.3	Malignant neoplasm of upper third of esophagus	Diagnosis	ICD-10-CM
C15.4	Malignant neoplasm of middle third of esophagus	Diagnosis	ICD-10-CM
C15.5	Malignant neoplasm of lower third of esophagus	Diagnosis	ICD-10-CM
C15.8	Malignant neoplasm of overlapping sites of esophagus	Diagnosis	ICD-10-CM
C15.9	Malignant neoplasm of esophagus, unspecified	Diagnosis	ICD-10-CM
C16.0	Malignant neoplasm of cardia	Diagnosis	ICD-10-CM
C16.1	Malignant neoplasm of fundus of stomach	Diagnosis	ICD-10-CM
C16.2	Malignant neoplasm of body of stomach	Diagnosis	ICD-10-CM
C16.3	Malignant neoplasm of pyloric antrum	Diagnosis	ICD-10-CM
C16.4	Malignant neoplasm of pylorus	Diagnosis	ICD-10-CM
C16.5	Malignant neoplasm of lesser curvature of stomach, unspecified	Diagnosis	ICD-10-CM
C16.6	Malignant neoplasm of greater curvature of stomach, unspecified	Diagnosis	ICD-10-CM
C16.8	Malignant neoplasm of overlapping sites of stomach	Diagnosis	ICD-10-CM
C16.9	Malignant neoplasm of stomach, unspecified	Diagnosis	ICD-10-CM
C17.0	Malignant neoplasm of duodenum	Diagnosis	ICD-10-CM
C17.1	Malignant neoplasm of jejunum	Diagnosis	ICD-10-CM
C17.2	Malignant neoplasm of ileum	Diagnosis	ICD-10-CM
C17.3	Meckel's diverticulum, malignant	Diagnosis	ICD-10-CM
C17.8	Malignant neoplasm of overlapping sites of small intestine	Diagnosis	ICD-10-CM
C17.9	Malignant neoplasm of small intestine, unspecified	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C18.0	Malignant neoplasm of cecum	Diagnosis	ICD-10-CM
C18.1	Malignant neoplasm of appendix	Diagnosis	ICD-10-CM
C18.2	Malignant neoplasm of ascending colon	Diagnosis	ICD-10-CM
C18.3	Malignant neoplasm of hepatic flexure	Diagnosis	ICD-10-CM
C18.4	Malignant neoplasm of transverse colon	Diagnosis	ICD-10-CM
C18.5	Malignant neoplasm of splenic flexure	Diagnosis	ICD-10-CM
C18.6	Malignant neoplasm of descending colon	Diagnosis	ICD-10-CM
C18.7	Malignant neoplasm of sigmoid colon	Diagnosis	ICD-10-CM
C18.8	Malignant neoplasm of overlapping sites of colon	Diagnosis	ICD-10-CM
C18.9	Malignant neoplasm of colon, unspecified	Diagnosis	ICD-10-CM
C19	Malignant neoplasm of rectosigmoid junction	Diagnosis	ICD-10-CM
C20	Malignant neoplasm of rectum	Diagnosis	ICD-10-CM
C21.0	Malignant neoplasm of anus, unspecified	Diagnosis	ICD-10-CM
C21.1	Malignant neoplasm of anal canal	Diagnosis	ICD-10-CM
C21.2	Malignant neoplasm of cloacogenic zone	Diagnosis	ICD-10-CM
C21.8	Malignant neoplasm of overlapping sites of rectum, anus and anal canal	Diagnosis	ICD-10-CM
C22.0	Liver cell carcinoma	Diagnosis	ICD-10-CM
C22.1	Intrahepatic bile duct carcinoma	Diagnosis	ICD-10-CM
C22.2	Hepatoblastoma	Diagnosis	ICD-10-CM
C22.3	Angiosarcoma of liver	Diagnosis	ICD-10-CM
C22.4	Other sarcomas of liver	Diagnosis	ICD-10-CM
C22.7	Other specified carcinomas of liver	Diagnosis	ICD-10-CM
C22.8	Malignant neoplasm of liver, primary, unspecified as to type	Diagnosis	ICD-10-CM
C22.9	Malignant neoplasm of liver, not specified as primary or secondary	Diagnosis	ICD-10-CM
C23	Malignant neoplasm of gallbladder	Diagnosis	ICD-10-CM
C24.0	Malignant neoplasm of extrahepatic bile duct	Diagnosis	ICD-10-CM
C24.1	Malignant neoplasm of ampulla of Vater	Diagnosis	ICD-10-CM
C24.8	Malignant neoplasm of overlapping sites of biliary tract	Diagnosis	ICD-10-CM
C24.9	Malignant neoplasm of biliary tract, unspecified	Diagnosis	ICD-10-CM
C25.0	Malignant neoplasm of head of pancreas	Diagnosis	ICD-10-CM
C25.1	Malignant neoplasm of body of pancreas	Diagnosis	ICD-10-CM
C25.2	Malignant neoplasm of tail of pancreas	Diagnosis	ICD-10-CM
C25.3	Malignant neoplasm of pancreatic duct	Diagnosis	ICD-10-CM
C25.4	Malignant neoplasm of endocrine pancreas	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C25.7	Malignant neoplasm of other parts of pancreas	Diagnosis	ICD-10-CM
C25.8	Malignant neoplasm of overlapping sites of pancreas	Diagnosis	ICD-10-CM
C25.9	Malignant neoplasm of pancreas, unspecified	Diagnosis	ICD-10-CM
C26.0	Malignant neoplasm of intestinal tract, part unspecified	Diagnosis	ICD-10-CM
C26.1	Malignant neoplasm of spleen	Diagnosis	ICD-10-CM
C26.9	Malignant neoplasm of ill-defined sites within the digestive system	Diagnosis	ICD-10-CM
C30.0	Malignant neoplasm of nasal cavity	Diagnosis	ICD-10-CM
C30.1	Malignant neoplasm of middle ear	Diagnosis	ICD-10-CM
C31.0	Malignant neoplasm of maxillary sinus	Diagnosis	ICD-10-CM
C31.1	Malignant neoplasm of ethmoidal sinus	Diagnosis	ICD-10-CM
C31.2	Malignant neoplasm of frontal sinus	Diagnosis	ICD-10-CM
C31.3	Malignant neoplasm of sphenoid sinus	Diagnosis	ICD-10-CM
C31.8	Malignant neoplasm of overlapping sites of accessory sinuses	Diagnosis	ICD-10-CM
C31.9	Malignant neoplasm of accessory sinus, unspecified	Diagnosis	ICD-10-CM
C32.0	Malignant neoplasm of glottis	Diagnosis	ICD-10-CM
C32.1	Malignant neoplasm of supraglottis	Diagnosis	ICD-10-CM
C32.2	Malignant neoplasm of subglottis	Diagnosis	ICD-10-CM
C32.3	Malignant neoplasm of laryngeal cartilage	Diagnosis	ICD-10-CM
C32.8	Malignant neoplasm of overlapping sites of larynx	Diagnosis	ICD-10-CM
C32.9	Malignant neoplasm of larynx, unspecified	Diagnosis	ICD-10-CM
C33	Malignant neoplasm of trachea	Diagnosis	ICD-10-CM
C34.00	Malignant neoplasm of unspecified main bronchus	Diagnosis	ICD-10-CM
C34.01	Malignant neoplasm of right main bronchus	Diagnosis	ICD-10-CM
C34.02	Malignant neoplasm of left main bronchus	Diagnosis	ICD-10-CM
C34.10	Malignant neoplasm of upper lobe, unspecified bronchus or lung	Diagnosis	ICD-10-CM
C34.11	Malignant neoplasm of upper lobe, right bronchus or lung	Diagnosis	ICD-10-CM
C34.12	Malignant neoplasm of upper lobe, left bronchus or lung	Diagnosis	ICD-10-CM
C34.2	Malignant neoplasm of middle lobe, bronchus or lung	Diagnosis	ICD-10-CM
C34.30	Malignant neoplasm of lower lobe, unspecified bronchus or lung	Diagnosis	ICD-10-CM
C34.31	Malignant neoplasm of lower lobe, right bronchus or lung	Diagnosis	ICD-10-CM
C34.32	Malignant neoplasm of lower lobe, left bronchus or lung	Diagnosis	ICD-10-CM
C34.80	Malignant neoplasm of overlapping sites of unspecified bronchus and lung	Diagnosis	ICD-10-CM
C34.81	Malignant neoplasm of overlapping sites of right bronchus and lung	Diagnosis	ICD-10-CM
C34.82	Malignant neoplasm of overlapping sites of left bronchus and lung	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C34.90	Malignant neoplasm of unspecified part of unspecified bronchus or lung	Diagnosis	ICD-10-CM
C34.91	Malignant neoplasm of unspecified part of right bronchus or lung	Diagnosis	ICD-10-CM
C34.92	Malignant neoplasm of unspecified part of left bronchus or lung	Diagnosis	ICD-10-CM
C37	Malignant neoplasm of thymus	Diagnosis	ICD-10-CM
C38.0	Malignant neoplasm of heart	Diagnosis	ICD-10-CM
C38.1	Malignant neoplasm of anterior mediastinum	Diagnosis	ICD-10-CM
C38.2	Malignant neoplasm of posterior mediastinum	Diagnosis	ICD-10-CM
C38.3	Malignant neoplasm of mediastinum, part unspecified	Diagnosis	ICD-10-CM
C38.4	Malignant neoplasm of pleura	Diagnosis	ICD-10-CM
C38.8	Malignant neoplasm of overlapping sites of heart, mediastinum and pleura	Diagnosis	ICD-10-CM
C39.0	Malignant neoplasm of upper respiratory tract, part unspecified	Diagnosis	ICD-10-CM
C39.9	Malignant neoplasm of lower respiratory tract, part unspecified	Diagnosis	ICD-10-CM
C40.00	Malignant neoplasm of scapula and long bones of unspecified upper limb	Diagnosis	ICD-10-CM
C40.01	Malignant neoplasm of scapula and long bones of right upper limb	Diagnosis	ICD-10-CM
C40.02	Malignant neoplasm of scapula and long bones of left upper limb	Diagnosis	ICD-10-CM
C40.10	Malignant neoplasm of short bones of unspecified upper limb	Diagnosis	ICD-10-CM
C40.11	Malignant neoplasm of short bones of right upper limb	Diagnosis	ICD-10-CM
C40.12	Malignant neoplasm of short bones of left upper limb	Diagnosis	ICD-10-CM
C40.20	Malignant neoplasm of long bones of unspecified lower limb	Diagnosis	ICD-10-CM
C40.21	Malignant neoplasm of long bones of right lower limb	Diagnosis	ICD-10-CM
C40.22	Malignant neoplasm of long bones of left lower limb	Diagnosis	ICD-10-CM
C40.30	Malignant neoplasm of short bones of unspecified lower limb	Diagnosis	ICD-10-CM
C40.31	Malignant neoplasm of short bones of right lower limb	Diagnosis	ICD-10-CM
C40.32	Malignant neoplasm of short bones of left lower limb	Diagnosis	ICD-10-CM
C40.80	Malignant neoplasm of overlapping sites of bone and articular cartilage of unspecified	Diagnosis	ICD-10-CM
C40.81	Malignant neoplasm of overlapping sites of bone and articular cartilage of right limb	Diagnosis	ICD-10-CM
C40.82	Malignant neoplasm of overlapping sites of bone and articular cartilage of left limb	Diagnosis	ICD-10-CM
C40.90	Malignant neoplasm of unspecified bones and articular cartilage of unspecified limb	Diagnosis	ICD-10-CM
C40.91	Malignant neoplasm of unspecified bones and articular cartilage of right limb	Diagnosis	ICD-10-CM
C40.92	Malignant neoplasm of unspecified bones and articular cartilage of left limb	Diagnosis	ICD-10-CM
C41.0	Malignant neoplasm of bones of skull and face	Diagnosis	ICD-10-CM
C41.1	Malignant neoplasm of mandible	Diagnosis	ICD-10-CM
C41.2	Malignant neoplasm of vertebral column	Diagnosis	ICD-10-CM
C41.3	Malignant neoplasm of ribs, sternum and clavicle	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C41.4	Malignant neoplasm of pelvic bones, sacrum and coccyx	Diagnosis	ICD-10-CM
C41.9	Malignant neoplasm of bone and articular cartilage, unspecified	Diagnosis	ICD-10-CM
C43.0	Malignant melanoma of lip	Diagnosis	ICD-10-CM
C43.10	Malignant melanoma of unspecified eyelid, including canthus	Diagnosis	ICD-10-CM
C43.11	Malignant melanoma of right eyelid, including canthus	Diagnosis	ICD-10-CM
C43.12	Malignant melanoma of left eyelid, including canthus	Diagnosis	ICD-10-CM
C43.20	Malignant melanoma of unspecified ear and external auricular canal	Diagnosis	ICD-10-CM
C43.21	Malignant melanoma of right ear and external auricular canal	Diagnosis	ICD-10-CM
C43.22	Malignant melanoma of left ear and external auricular canal	Diagnosis	ICD-10-CM
C43.30	Malignant melanoma of unspecified part of face	Diagnosis	ICD-10-CM
C43.31	Malignant melanoma of nose	Diagnosis	ICD-10-CM
C43.39	Malignant melanoma of other parts of face	Diagnosis	ICD-10-CM
C43.4	Malignant melanoma of scalp and neck	Diagnosis	ICD-10-CM
C43.51	Malignant melanoma of anal skin	Diagnosis	ICD-10-CM
C43.52	Malignant melanoma of skin of breast	Diagnosis	ICD-10-CM
C43.59	Malignant melanoma of other part of trunk	Diagnosis	ICD-10-CM
C43.60	Malignant melanoma of unspecified upper limb, including shoulder	Diagnosis	ICD-10-CM
C43.61	Malignant melanoma of right upper limb, including shoulder	Diagnosis	ICD-10-CM
C43.62	Malignant melanoma of left upper limb, including shoulder	Diagnosis	ICD-10-CM
C43.70	Malignant melanoma of unspecified lower limb, including hip	Diagnosis	ICD-10-CM
C43.71	Malignant melanoma of right lower limb, including hip	Diagnosis	ICD-10-CM
C43.72	Malignant melanoma of left lower limb, including hip	Diagnosis	ICD-10-CM
C43.8	Malignant melanoma of overlapping sites of skin	Diagnosis	ICD-10-CM
C43.9	Malignant melanoma of skin, unspecified	Diagnosis	ICD-10-CM
C44.00	Unspecified malignant neoplasm of skin of lip	Diagnosis	ICD-10-CM
C44.01	Basal cell carcinoma of skin of lip	Diagnosis	ICD-10-CM
C44.02	Squamous cell carcinoma of skin of lip	Diagnosis	ICD-10-CM
C44.09	Other specified malignant neoplasm of skin of lip	Diagnosis	ICD-10-CM
C44.101	Unspecified malignant neoplasm of skin of unspecified eyelid, including canthus	Diagnosis	ICD-10-CM
C44.102	Unspecified malignant neoplasm of skin of right eyelid, including canthus	Diagnosis	ICD-10-CM
C44.109	Unspecified malignant neoplasm of skin of left eyelid, including canthus	Diagnosis	ICD-10-CM
C44.111	Basal cell carcinoma of skin of unspecified eyelid, including canthus	Diagnosis	ICD-10-CM
C44.112	Basal cell carcinoma of skin of right eyelid, including canthus	Diagnosis	ICD-10-CM
C44.119	Basal cell carcinoma of skin of left eyelid, including canthus	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C44.121	Squamous cell carcinoma of skin of unspecified eyelid, including canthus	Diagnosis	ICD-10-CM
C44.122	Squamous cell carcinoma of skin of right eyelid, including canthus	Diagnosis	ICD-10-CM
C44.129	Squamous cell carcinoma of skin of left eyelid, including canthus	Diagnosis	ICD-10-CM
C44.191	Other specified malignant neoplasm of skin of unspecified eyelid, including canthus	Diagnosis	ICD-10-CM
C44.192	Other specified malignant neoplasm of skin of right eyelid, including canthus	Diagnosis	ICD-10-CM
C44.199	Other specified malignant neoplasm of skin of left eyelid, including canthus	Diagnosis	ICD-10-CM
C44.201	Unspecified malignant neoplasm of skin of unspecified ear and external auricular canal	Diagnosis	ICD-10-CM
C44.202	Unspecified malignant neoplasm of skin of right ear and external auricular canal	Diagnosis	ICD-10-CM
C44.209	Unspecified malignant neoplasm of skin of left ear and external auricular canal	Diagnosis	ICD-10-CM
C44.211	Basal cell carcinoma of skin of unspecified ear and external auricular canal	Diagnosis	ICD-10-CM
C44.212	Basal cell carcinoma of skin of right ear and external auricular canal	Diagnosis	ICD-10-CM
C44.219	Basal cell carcinoma of skin of left ear and external auricular canal	Diagnosis	ICD-10-CM
C44.221	Squamous cell carcinoma of skin of unspecified ear and external auricular canal	Diagnosis	ICD-10-CM
C44.222	Squamous cell carcinoma of skin of right ear and external auricular canal	Diagnosis	ICD-10-CM
C44.229	Squamous cell carcinoma of skin of left ear and external auricular canal	Diagnosis	ICD-10-CM
C44.291	Other specified malignant neoplasm of skin of unspecified ear and external auricular	Diagnosis	ICD-10-CM
C44.292	Other specified malignant neoplasm of skin of right ear and external auricular canal	Diagnosis	ICD-10-CM
C44.299	Other specified malignant neoplasm of skin of left ear and external auricular canal	Diagnosis	ICD-10-CM
C44.300	Unspecified malignant neoplasm of skin of unspecified part of face	Diagnosis	ICD-10-CM
C44.301	Unspecified malignant neoplasm of skin of nose	Diagnosis	ICD-10-CM
C44.309	Unspecified malignant neoplasm of skin of other parts of face	Diagnosis	ICD-10-CM
C44.310	Basal cell carcinoma of skin of unspecified parts of face	Diagnosis	ICD-10-CM
C44.311	Basal cell carcinoma of skin of nose	Diagnosis	ICD-10-CM
C44.319	Basal cell carcinoma of skin of other parts of face	Diagnosis	ICD-10-CM
C44.320	Squamous cell carcinoma of skin of unspecified parts of face	Diagnosis	ICD-10-CM
C44.321	Squamous cell carcinoma of skin of nose	Diagnosis	ICD-10-CM
C44.329	Squamous cell carcinoma of skin of other parts of face	Diagnosis	ICD-10-CM
C44.390	Other specified malignant neoplasm of skin of unspecified parts of face	Diagnosis	ICD-10-CM
C44.391	Other specified malignant neoplasm of skin of nose	Diagnosis	ICD-10-CM
C44.399	Other specified malignant neoplasm of skin of other parts of face	Diagnosis	ICD-10-CM
C44.40	Unspecified malignant neoplasm of skin of scalp and neck	Diagnosis	ICD-10-CM
C44.41	Basal cell carcinoma of skin of scalp and neck	Diagnosis	ICD-10-CM
C44.42	Squamous cell carcinoma of skin of scalp and neck	Diagnosis	ICD-10-CM
C44.49	Other specified malignant neoplasm of skin of scalp and neck	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C44.500	Unspecified malignant neoplasm of anal skin	Diagnosis	ICD-10-CM
C44.501	Unspecified malignant neoplasm of skin of breast	Diagnosis	ICD-10-CM
C44.509	Unspecified malignant neoplasm of skin of other part of trunk	Diagnosis	ICD-10-CM
C44.510	Basal cell carcinoma of anal skin	Diagnosis	ICD-10-CM
C44.511	Basal cell carcinoma of skin of breast	Diagnosis	ICD-10-CM
C44.519	Basal cell carcinoma of skin of other part of trunk	Diagnosis	ICD-10-CM
C44.520	Squamous cell carcinoma of anal skin	Diagnosis	ICD-10-CM
C44.521	Squamous cell carcinoma of skin of breast	Diagnosis	ICD-10-CM
C44.529	Squamous cell carcinoma of skin of other part of trunk	Diagnosis	ICD-10-CM
C44.590	Other specified malignant neoplasm of anal skin	Diagnosis	ICD-10-CM
C44.591	Other specified malignant neoplasm of skin of breast	Diagnosis	ICD-10-CM
C44.599	Other specified malignant neoplasm of skin of other part of trunk	Diagnosis	ICD-10-CM
C44.601	Unspecified malignant neoplasm of skin of unspecified upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.602	Unspecified malignant neoplasm of skin of right upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.609	Unspecified malignant neoplasm of skin of left upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.611	Basal cell carcinoma of skin of unspecified upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.612	Basal cell carcinoma of skin of right upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.619	Basal cell carcinoma of skin of left upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.621	Squamous cell carcinoma of skin of unspecified upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.622	Squamous cell carcinoma of skin of right upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.629	Squamous cell carcinoma of skin of left upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.691	Other specified malignant neoplasm of skin of unspecified upper limb, including	Diagnosis	ICD-10-CM
C44.692	Other specified malignant neoplasm of skin of right upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.699	Other specified malignant neoplasm of skin of left upper limb, including shoulder	Diagnosis	ICD-10-CM
C44.701	Unspecified malignant neoplasm of skin of unspecified lower limb, including hip	Diagnosis	ICD-10-CM
C44.702	Unspecified malignant neoplasm of skin of right lower limb, including hip	Diagnosis	ICD-10-CM
C44.709	Unspecified malignant neoplasm of skin of left lower limb, including hip	Diagnosis	ICD-10-CM
C44.711	Basal cell carcinoma of skin of unspecified lower limb, including hip	Diagnosis	ICD-10-CM
C44.712	Basal cell carcinoma of skin of right lower limb, including hip	Diagnosis	ICD-10-CM
C44.719	Basal cell carcinoma of skin of left lower limb, including hip	Diagnosis	ICD-10-CM
C44.721	Squamous cell carcinoma of skin of unspecified lower limb, including hip	Diagnosis	ICD-10-CM
C44.722	Squamous cell carcinoma of skin of right lower limb, including hip	Diagnosis	ICD-10-CM
C44.729	Squamous cell carcinoma of skin of left lower limb, including hip	Diagnosis	ICD-10-CM
C44.791	Other specified malignant neoplasm of skin of unspecified lower limb, including hip	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C44.792	Other specified malignant neoplasm of skin of right lower limb, including hip	Diagnosis	ICD-10-CM
C44.799	Other specified malignant neoplasm of skin of left lower limb, including hip	Diagnosis	ICD-10-CM
C44.80	Unspecified malignant neoplasm of overlapping sites of skin	Diagnosis	ICD-10-CM
C44.81	Basal cell carcinoma of overlapping sites of skin	Diagnosis	ICD-10-CM
C44.82	Squamous cell carcinoma of overlapping sites of skin	Diagnosis	ICD-10-CM
C44.89	Other specified malignant neoplasm of overlapping sites of skin	Diagnosis	ICD-10-CM
C44.90	Unspecified malignant neoplasm of skin, unspecified	Diagnosis	ICD-10-CM
C44.91	Basal cell carcinoma of skin, unspecified	Diagnosis	ICD-10-CM
C44.92	Squamous cell carcinoma of skin, unspecified	Diagnosis	ICD-10-CM
C44.99	Other specified malignant neoplasm of skin, unspecified	Diagnosis	ICD-10-CM
C45.0	Mesothelioma of pleura	Diagnosis	ICD-10-CM
C45.1	Mesothelioma of peritoneum	Diagnosis	ICD-10-CM
C45.2	Mesothelioma of pericardium	Diagnosis	ICD-10-CM
C45.7	Mesothelioma of other sites	Diagnosis	ICD-10-CM
C45.9	Mesothelioma, unspecified	Diagnosis	ICD-10-CM
C46.0	Kaposi's sarcoma of skin	Diagnosis	ICD-10-CM
C46.1	Kaposi's sarcoma of soft tissue	Diagnosis	ICD-10-CM
C46.2	Kaposi's sarcoma of palate	Diagnosis	ICD-10-CM
C46.3	Kaposi's sarcoma of lymph nodes	Diagnosis	ICD-10-CM
C46.4	Kaposi's sarcoma of gastrointestinal sites	Diagnosis	ICD-10-CM
C46.50	Kaposi's sarcoma of unspecified lung	Diagnosis	ICD-10-CM
C46.51	Kaposi's sarcoma of right lung	Diagnosis	ICD-10-CM
C46.52	Kaposi's sarcoma of left lung	Diagnosis	ICD-10-CM
C46.7	Kaposi's sarcoma of other sites	Diagnosis	ICD-10-CM
C46.9	Kaposi's sarcoma, unspecified	Diagnosis	ICD-10-CM
C47.0	Malignant neoplasm of peripheral nerves of head, face and neck	Diagnosis	ICD-10-CM
C47.10	Malignant neoplasm of peripheral nerves of unspecified upper limb, including shoulder	Diagnosis	ICD-10-CM
C47.11	Malignant neoplasm of peripheral nerves of right upper limb, including shoulder	Diagnosis	ICD-10-CM
C47.12	Malignant neoplasm of peripheral nerves of left upper limb, including shoulder	Diagnosis	ICD-10-CM
C47.20	Malignant neoplasm of peripheral nerves of unspecified lower limb, including hip	Diagnosis	ICD-10-CM
C47.21	Malignant neoplasm of peripheral nerves of right lower limb, including hip	Diagnosis	ICD-10-CM
C47.22	Malignant neoplasm of peripheral nerves of left lower limb, including hip	Diagnosis	ICD-10-CM
C47.3	Malignant neoplasm of peripheral nerves of thorax	Diagnosis	ICD-10-CM
C47.4	Malignant neoplasm of peripheral nerves of abdomen	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C47.5	Malignant neoplasm of peripheral nerves of pelvis	Diagnosis	ICD-10-CM
C47.6	Malignant neoplasm of peripheral nerves of trunk, unspecified	Diagnosis	ICD-10-CM
C47.8	Malignant neoplasm of overlapping sites of peripheral nerves and autonomic nervous	Diagnosis	ICD-10-CM
C47.9	Malignant neoplasm of peripheral nerves and autonomic nervous system, unspecified	Diagnosis	ICD-10-CM
C48.0	Malignant neoplasm of retroperitoneum	Diagnosis	ICD-10-CM
C48.1	Malignant neoplasm of specified parts of peritoneum	Diagnosis	ICD-10-CM
C48.2	Malignant neoplasm of peritoneum, unspecified	Diagnosis	ICD-10-CM
C48.8	Malignant neoplasm of overlapping sites of retroperitoneum and peritoneum	Diagnosis	ICD-10-CM
C49.0	Malignant neoplasm of connective and soft tissue of head, face and neck	Diagnosis	ICD-10-CM
C49.10	Malignant neoplasm of connective and soft tissue of unspecified upper limb, including	Diagnosis	ICD-10-CM
C49.11	Malignant neoplasm of connective and soft tissue of right upper limb, including	Diagnosis	ICD-10-CM
C49.12	Malignant neoplasm of connective and soft tissue of left upper limb, including	Diagnosis	ICD-10-CM
C49.20	Malignant neoplasm of connective and soft tissue of unspecified lower limb, including	Diagnosis	ICD-10-CM
C49.21	Malignant neoplasm of connective and soft tissue of right lower limb, including hip	Diagnosis	ICD-10-CM
C49.22	Malignant neoplasm of connective and soft tissue of left lower limb, including hip	Diagnosis	ICD-10-CM
C49.3	Malignant neoplasm of connective and soft tissue of thorax	Diagnosis	ICD-10-CM
C49.4	Malignant neoplasm of connective and soft tissue of abdomen	Diagnosis	ICD-10-CM
C49.5	Malignant neoplasm of connective and soft tissue of pelvis	Diagnosis	ICD-10-CM
C49.6	Malignant neoplasm of connective and soft tissue of trunk, unspecified	Diagnosis	ICD-10-CM
C49.8	Malignant neoplasm of overlapping sites of connective and soft tissue	Diagnosis	ICD-10-CM
C49.9	Malignant neoplasm of connective and soft tissue, unspecified	Diagnosis	ICD-10-CM
C49.A0	Gastrointestinal stromal tumor, unspecified site	Diagnosis	ICD-10-CM
C49.A1	Gastrointestinal stromal tumor of esophagus	Diagnosis	ICD-10-CM
C49.A2	Gastrointestinal stromal tumor of stomach	Diagnosis	ICD-10-CM
C49.A3	Gastrointestinal stromal tumor of small intestine	Diagnosis	ICD-10-CM
C49.A4	Gastrointestinal stromal tumor of large intestine	Diagnosis	ICD-10-CM
C49.A5	Gastrointestinal stromal tumor of rectum	Diagnosis	ICD-10-CM
C49.A9	Gastrointestinal stromal tumor of other sites	Diagnosis	ICD-10-CM
C50.011	Malignant neoplasm of nipple and areola, right female breast	Diagnosis	ICD-10-CM
C50.012	Malignant neoplasm of nipple and areola, left female breast	Diagnosis	ICD-10-CM
C50.019	Malignant neoplasm of nipple and areola, unspecified female breast	Diagnosis	ICD-10-CM
C50.021	Malignant neoplasm of nipple and areola, right male breast	Diagnosis	ICD-10-CM
C50.022	Malignant neoplasm of nipple and areola, left male breast	Diagnosis	ICD-10-CM
C50.029	Malignant neoplasm of nipple and areola, unspecified male breast	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C50.111	Malignant neoplasm of central portion of right female breast	Diagnosis	ICD-10-CM
C50.112	Malignant neoplasm of central portion of left female breast	Diagnosis	ICD-10-CM
C50.119	Malignant neoplasm of central portion of unspecified female breast	Diagnosis	ICD-10-CM
C50.121	Malignant neoplasm of central portion of right male breast	Diagnosis	ICD-10-CM
C50.122	Malignant neoplasm of central portion of left male breast	Diagnosis	ICD-10-CM
C50.129	Malignant neoplasm of central portion of unspecified male breast	Diagnosis	ICD-10-CM
C50.211	Malignant neoplasm of upper-inner quadrant of right female breast	Diagnosis	ICD-10-CM
C50.212	Malignant neoplasm of upper-inner quadrant of left female breast	Diagnosis	ICD-10-CM
C50.219	Malignant neoplasm of upper-inner quadrant of unspecified female breast	Diagnosis	ICD-10-CM
C50.221	Malignant neoplasm of upper-inner quadrant of right male breast	Diagnosis	ICD-10-CM
C50.222	Malignant neoplasm of upper-inner quadrant of left male breast	Diagnosis	ICD-10-CM
C50.229	Malignant neoplasm of upper-inner quadrant of unspecified male breast	Diagnosis	ICD-10-CM
C50.311	Malignant neoplasm of lower-inner quadrant of right female breast	Diagnosis	ICD-10-CM
C50.312	Malignant neoplasm of lower-inner quadrant of left female breast	Diagnosis	ICD-10-CM
C50.319	Malignant neoplasm of lower-inner quadrant of unspecified female breast	Diagnosis	ICD-10-CM
C50.321	Malignant neoplasm of lower-inner quadrant of right male breast	Diagnosis	ICD-10-CM
C50.322	Malignant neoplasm of lower-inner quadrant of left male breast	Diagnosis	ICD-10-CM
C50.329	Malignant neoplasm of lower-inner quadrant of unspecified male breast	Diagnosis	ICD-10-CM
C50.411	Malignant neoplasm of upper-outer quadrant of right female breast	Diagnosis	ICD-10-CM
C50.412	Malignant neoplasm of upper-outer quadrant of left female breast	Diagnosis	ICD-10-CM
C50.419	Malignant neoplasm of upper-outer quadrant of unspecified female breast	Diagnosis	ICD-10-CM
C50.421	Malignant neoplasm of upper-outer quadrant of right male breast	Diagnosis	ICD-10-CM
C50.422	Malignant neoplasm of upper-outer quadrant of left male breast	Diagnosis	ICD-10-CM
C50.429	Malignant neoplasm of upper-outer quadrant of unspecified male breast	Diagnosis	ICD-10-CM
C50.511	Malignant neoplasm of lower-outer quadrant of right female breast	Diagnosis	ICD-10-CM
C50.512	Malignant neoplasm of lower-outer quadrant of left female breast	Diagnosis	ICD-10-CM
C50.519	Malignant neoplasm of lower-outer quadrant of unspecified female breast	Diagnosis	ICD-10-CM
C50.521	Malignant neoplasm of lower-outer quadrant of right male breast	Diagnosis	ICD-10-CM
C50.522	Malignant neoplasm of lower-outer quadrant of left male breast	Diagnosis	ICD-10-CM
C50.529	Malignant neoplasm of lower-outer quadrant of unspecified male breast	Diagnosis	ICD-10-CM
C50.611	Malignant neoplasm of axillary tail of right female breast	Diagnosis	ICD-10-CM
C50.612	Malignant neoplasm of axillary tail of left female breast	Diagnosis	ICD-10-CM
C50.619	Malignant neoplasm of axillary tail of unspecified female breast	Diagnosis	ICD-10-CM
C50.621	Malignant neoplasm of axillary tail of right male breast	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C50.622	Malignant neoplasm of axillary tail of left male breast	Diagnosis	ICD-10-CM
C50.629	Malignant neoplasm of axillary tail of unspecified male breast	Diagnosis	ICD-10-CM
C50.811	Malignant neoplasm of overlapping sites of right female breast	Diagnosis	ICD-10-CM
C50.812	Malignant neoplasm of overlapping sites of left female breast	Diagnosis	ICD-10-CM
C50.819	Malignant neoplasm of overlapping sites of unspecified female breast	Diagnosis	ICD-10-CM
C50.821	Malignant neoplasm of overlapping sites of right male breast	Diagnosis	ICD-10-CM
C50.822	Malignant neoplasm of overlapping sites of left male breast	Diagnosis	ICD-10-CM
C50.829	Malignant neoplasm of overlapping sites of unspecified male breast	Diagnosis	ICD-10-CM
C50.911	Malignant neoplasm of unspecified site of right female breast	Diagnosis	ICD-10-CM
C50.912	Malignant neoplasm of unspecified site of left female breast	Diagnosis	ICD-10-CM
C50.919	Malignant neoplasm of unspecified site of unspecified female breast	Diagnosis	ICD-10-CM
C50.921	Malignant neoplasm of unspecified site of right male breast	Diagnosis	ICD-10-CM
C50.922	Malignant neoplasm of unspecified site of left male breast	Diagnosis	ICD-10-CM
C50.929	Malignant neoplasm of unspecified site of unspecified male breast	Diagnosis	ICD-10-CM
C51.0	Malignant neoplasm of labium majus	Diagnosis	ICD-10-CM
C51.1	Malignant neoplasm of labium minus	Diagnosis	ICD-10-CM
C51.2	Malignant neoplasm of clitoris	Diagnosis	ICD-10-CM
C51.8	Malignant neoplasm of overlapping sites of vulva	Diagnosis	ICD-10-CM
C51.9	Malignant neoplasm of vulva, unspecified	Diagnosis	ICD-10-CM
C52	Malignant neoplasm of vagina	Diagnosis	ICD-10-CM
C53.0	Malignant neoplasm of endocervix	Diagnosis	ICD-10-CM
C53.1	Malignant neoplasm of exocervix	Diagnosis	ICD-10-CM
C53.8	Malignant neoplasm of overlapping sites of cervix uteri	Diagnosis	ICD-10-CM
C53.9	Malignant neoplasm of cervix uteri, unspecified	Diagnosis	ICD-10-CM
C54.0	Malignant neoplasm of isthmus uteri	Diagnosis	ICD-10-CM
C54.1	Malignant neoplasm of endometrium	Diagnosis	ICD-10-CM
C54.2	Malignant neoplasm of myometrium	Diagnosis	ICD-10-CM
C54.3	Malignant neoplasm of fundus uteri	Diagnosis	ICD-10-CM
C54.8	Malignant neoplasm of overlapping sites of corpus uteri	Diagnosis	ICD-10-CM
C54.9	Malignant neoplasm of corpus uteri, unspecified	Diagnosis	ICD-10-CM
C55	Malignant neoplasm of uterus, part unspecified	Diagnosis	ICD-10-CM
C56.1	Malignant neoplasm of right ovary	Diagnosis	ICD-10-CM
C56.2	Malignant neoplasm of left ovary	Diagnosis	ICD-10-CM
C56.9	Malignant neoplasm of unspecified ovary	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C57.00	Malignant neoplasm of unspecified fallopian tube	Diagnosis	ICD-10-CM
C57.01	Malignant neoplasm of right fallopian tube	Diagnosis	ICD-10-CM
C57.02	Malignant neoplasm of left fallopian tube	Diagnosis	ICD-10-CM
C57.10	Malignant neoplasm of unspecified broad ligament	Diagnosis	ICD-10-CM
C57.11	Malignant neoplasm of right broad ligament	Diagnosis	ICD-10-CM
C57.12	Malignant neoplasm of left broad ligament	Diagnosis	ICD-10-CM
C57.20	Malignant neoplasm of unspecified round ligament	Diagnosis	ICD-10-CM
C57.21	Malignant neoplasm of right round ligament	Diagnosis	ICD-10-CM
C57.22	Malignant neoplasm of left round ligament	Diagnosis	ICD-10-CM
C57.3	Malignant neoplasm of parametrium	Diagnosis	ICD-10-CM
C57.4	Malignant neoplasm of uterine adnexa, unspecified	Diagnosis	ICD-10-CM
C57.7	Malignant neoplasm of other specified female genital organs	Diagnosis	ICD-10-CM
C57.8	Malignant neoplasm of overlapping sites of female genital organs	Diagnosis	ICD-10-CM
C57.9	Malignant neoplasm of female genital organ, unspecified	Diagnosis	ICD-10-CM
C58	Malignant neoplasm of placenta	Diagnosis	ICD-10-CM
C60.0	Malignant neoplasm of prepuce	Diagnosis	ICD-10-CM
C60.1	Malignant neoplasm of glans penis	Diagnosis	ICD-10-CM
C60.2	Malignant neoplasm of body of penis	Diagnosis	ICD-10-CM
C60.8	Malignant neoplasm of overlapping sites of penis	Diagnosis	ICD-10-CM
C60.9	Malignant neoplasm of penis, unspecified	Diagnosis	ICD-10-CM
C61	Malignant neoplasm of prostate	Diagnosis	ICD-10-CM
C62.00	Malignant neoplasm of unspecified undescended testis	Diagnosis	ICD-10-CM
C62.01	Malignant neoplasm of undescended right testis	Diagnosis	ICD-10-CM
C62.02	Malignant neoplasm of undescended left testis	Diagnosis	ICD-10-CM
C62.10	Malignant neoplasm of unspecified descended testis	Diagnosis	ICD-10-CM
C62.11	Malignant neoplasm of descended right testis	Diagnosis	ICD-10-CM
C62.12	Malignant neoplasm of descended left testis	Diagnosis	ICD-10-CM
C62.90	Malignant neoplasm of unspecified testis, unspecified whether descended or	Diagnosis	ICD-10-CM
C62.91	Malignant neoplasm of right testis, unspecified whether descended or undescended	Diagnosis	ICD-10-CM
C62.92	Malignant neoplasm of left testis, unspecified whether descended or undescended	Diagnosis	ICD-10-CM
C63.00	Malignant neoplasm of unspecified epididymis	Diagnosis	ICD-10-CM
C63.01	Malignant neoplasm of right epididymis	Diagnosis	ICD-10-CM
C63.02	Malignant neoplasm of left epididymis	Diagnosis	ICD-10-CM
C63.10	Malignant neoplasm of unspecified spermatic cord	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C63.11	Malignant neoplasm of right spermatic cord	Diagnosis	ICD-10-CM
C63.12	Malignant neoplasm of left spermatic cord	Diagnosis	ICD-10-CM
C63.2	Malignant neoplasm of scrotum	Diagnosis	ICD-10-CM
C63.7	Malignant neoplasm of other specified male genital organs	Diagnosis	ICD-10-CM
C63.8	Malignant neoplasm of overlapping sites of male genital organs	Diagnosis	ICD-10-CM
C63.9	Malignant neoplasm of male genital organ, unspecified	Diagnosis	ICD-10-CM
C64.1	Malignant neoplasm of right kidney, except renal pelvis	Diagnosis	ICD-10-CM
C64.2	Malignant neoplasm of left kidney, except renal pelvis	Diagnosis	ICD-10-CM
C64.9	Malignant neoplasm of unspecified kidney, except renal pelvis	Diagnosis	ICD-10-CM
C65.1	Malignant neoplasm of right renal pelvis	Diagnosis	ICD-10-CM
C65.2	Malignant neoplasm of left renal pelvis	Diagnosis	ICD-10-CM
C65.9	Malignant neoplasm of unspecified renal pelvis	Diagnosis	ICD-10-CM
C66.1	Malignant neoplasm of right ureter	Diagnosis	ICD-10-CM
C66.2	Malignant neoplasm of left ureter	Diagnosis	ICD-10-CM
C66.9	Malignant neoplasm of unspecified ureter	Diagnosis	ICD-10-CM
C67.0	Malignant neoplasm of trigone of bladder	Diagnosis	ICD-10-CM
C67.1	Malignant neoplasm of dome of bladder	Diagnosis	ICD-10-CM
C67.2	Malignant neoplasm of lateral wall of bladder	Diagnosis	ICD-10-CM
C67.3	Malignant neoplasm of anterior wall of bladder	Diagnosis	ICD-10-CM
C67.4	Malignant neoplasm of posterior wall of bladder	Diagnosis	ICD-10-CM
C67.5	Malignant neoplasm of bladder neck	Diagnosis	ICD-10-CM
C67.6	Malignant neoplasm of ureteric orifice	Diagnosis	ICD-10-CM
C67.7	Malignant neoplasm of urachus	Diagnosis	ICD-10-CM
C67.8	Malignant neoplasm of overlapping sites of bladder	Diagnosis	ICD-10-CM
C67.9	Malignant neoplasm of bladder, unspecified	Diagnosis	ICD-10-CM
C68.0	Malignant neoplasm of urethra	Diagnosis	ICD-10-CM
C68.1	Malignant neoplasm of paraurethral glands	Diagnosis	ICD-10-CM
C68.8	Malignant neoplasm of overlapping sites of urinary organs	Diagnosis	ICD-10-CM
C68.9	Malignant neoplasm of urinary organ, unspecified	Diagnosis	ICD-10-CM
C69.00	Malignant neoplasm of unspecified conjunctiva	Diagnosis	ICD-10-CM
C69.01	Malignant neoplasm of right conjunctiva	Diagnosis	ICD-10-CM
C69.02	Malignant neoplasm of left conjunctiva	Diagnosis	ICD-10-CM
C69.10	Malignant neoplasm of unspecified cornea	Diagnosis	ICD-10-CM
C69.11	Malignant neoplasm of right cornea	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C69.12	Malignant neoplasm of left cornea	Diagnosis	ICD-10-CM
C69.20	Malignant neoplasm of unspecified retina	Diagnosis	ICD-10-CM
C69.21	Malignant neoplasm of right retina	Diagnosis	ICD-10-CM
C69.22	Malignant neoplasm of left retina	Diagnosis	ICD-10-CM
C69.30	Malignant neoplasm of unspecified choroid	Diagnosis	ICD-10-CM
C69.31	Malignant neoplasm of right choroid	Diagnosis	ICD-10-CM
C69.32	Malignant neoplasm of left choroid	Diagnosis	ICD-10-CM
C69.40	Malignant neoplasm of unspecified ciliary body	Diagnosis	ICD-10-CM
C69.41	Malignant neoplasm of right ciliary body	Diagnosis	ICD-10-CM
C69.42	Malignant neoplasm of left ciliary body	Diagnosis	ICD-10-CM
C69.50	Malignant neoplasm of unspecified lacrimal gland and duct	Diagnosis	ICD-10-CM
C69.51	Malignant neoplasm of right lacrimal gland and duct	Diagnosis	ICD-10-CM
C69.52	Malignant neoplasm of left lacrimal gland and duct	Diagnosis	ICD-10-CM
C69.60	Malignant neoplasm of unspecified orbit	Diagnosis	ICD-10-CM
C69.61	Malignant neoplasm of right orbit	Diagnosis	ICD-10-CM
C69.62	Malignant neoplasm of left orbit	Diagnosis	ICD-10-CM
C69.80	Malignant neoplasm of overlapping sites of unspecified eye and adnexa	Diagnosis	ICD-10-CM
C69.81	Malignant neoplasm of overlapping sites of right eye and adnexa	Diagnosis	ICD-10-CM
C69.82	Malignant neoplasm of overlapping sites of left eye and adnexa	Diagnosis	ICD-10-CM
C69.90	Malignant neoplasm of unspecified site of unspecified eye	Diagnosis	ICD-10-CM
C69.91	Malignant neoplasm of unspecified site of right eye	Diagnosis	ICD-10-CM
C69.92	Malignant neoplasm of unspecified site of left eye	Diagnosis	ICD-10-CM
C70.0	Malignant neoplasm of cerebral meninges	Diagnosis	ICD-10-CM
C70.1	Malignant neoplasm of spinal meninges	Diagnosis	ICD-10-CM
C70.9	Malignant neoplasm of meninges, unspecified	Diagnosis	ICD-10-CM
C71.0	Malignant neoplasm of cerebrum, except lobes and ventricles	Diagnosis	ICD-10-CM
C71.1	Malignant neoplasm of frontal lobe	Diagnosis	ICD-10-CM
C71.2	Malignant neoplasm of temporal lobe	Diagnosis	ICD-10-CM
C71.3	Malignant neoplasm of parietal lobe	Diagnosis	ICD-10-CM
C71.4	Malignant neoplasm of occipital lobe	Diagnosis	ICD-10-CM
C71.5	Malignant neoplasm of cerebral ventricle	Diagnosis	ICD-10-CM
C71.6	Malignant neoplasm of cerebellum	Diagnosis	ICD-10-CM
C71.7	Malignant neoplasm of brain stem	Diagnosis	ICD-10-CM
C71.8	Malignant neoplasm of overlapping sites of brain	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C71.9	Malignant neoplasm of brain, unspecified	Diagnosis	ICD-10-CM
C72.0	Malignant neoplasm of spinal cord	Diagnosis	ICD-10-CM
C72.1	Malignant neoplasm of cauda equina	Diagnosis	ICD-10-CM
C72.20	Malignant neoplasm of unspecified olfactory nerve	Diagnosis	ICD-10-CM
C72.21	Malignant neoplasm of right olfactory nerve	Diagnosis	ICD-10-CM
C72.22	Malignant neoplasm of left olfactory nerve	Diagnosis	ICD-10-CM
C72.30	Malignant neoplasm of unspecified optic nerve	Diagnosis	ICD-10-CM
C72.31	Malignant neoplasm of right optic nerve	Diagnosis	ICD-10-CM
C72.32	Malignant neoplasm of left optic nerve	Diagnosis	ICD-10-CM
C72.40	Malignant neoplasm of unspecified acoustic nerve	Diagnosis	ICD-10-CM
C72.41	Malignant neoplasm of right acoustic nerve	Diagnosis	ICD-10-CM
C72.42	Malignant neoplasm of left acoustic nerve	Diagnosis	ICD-10-CM
C72.50	Malignant neoplasm of unspecified cranial nerve	Diagnosis	ICD-10-CM
C72.59	Malignant neoplasm of other cranial nerves	Diagnosis	ICD-10-CM
C72.9	Malignant neoplasm of central nervous system, unspecified	Diagnosis	ICD-10-CM
C73	Malignant neoplasm of thyroid gland	Diagnosis	ICD-10-CM
C74.00	Malignant neoplasm of cortex of unspecified adrenal gland	Diagnosis	ICD-10-CM
C74.01	Malignant neoplasm of cortex of right adrenal gland	Diagnosis	ICD-10-CM
C74.02	Malignant neoplasm of cortex of left adrenal gland	Diagnosis	ICD-10-CM
C74.10	Malignant neoplasm of medulla of unspecified adrenal gland	Diagnosis	ICD-10-CM
C74.11	Malignant neoplasm of medulla of right adrenal gland	Diagnosis	ICD-10-CM
C74.12	Malignant neoplasm of medulla of left adrenal gland	Diagnosis	ICD-10-CM
C74.90	Malignant neoplasm of unspecified part of unspecified adrenal gland	Diagnosis	ICD-10-CM
C74.91	Malignant neoplasm of unspecified part of right adrenal gland	Diagnosis	ICD-10-CM
C74.92	Malignant neoplasm of unspecified part of left adrenal gland	Diagnosis	ICD-10-CM
C75.0	Malignant neoplasm of parathyroid gland	Diagnosis	ICD-10-CM
C75.1	Malignant neoplasm of pituitary gland	Diagnosis	ICD-10-CM
C75.2	Malignant neoplasm of craniopharyngeal duct	Diagnosis	ICD-10-CM
C75.3	Malignant neoplasm of pineal gland	Diagnosis	ICD-10-CM
C75.4	Malignant neoplasm of carotid body	Diagnosis	ICD-10-CM
C75.5	Malignant neoplasm of aortic body and other paraganglia	Diagnosis	ICD-10-CM
C75.8	Malignant neoplasm with pluriglandular involvement, unspecified	Diagnosis	ICD-10-CM
C75.9	Malignant neoplasm of endocrine gland, unspecified	Diagnosis	ICD-10-CM
C76.0	Malignant neoplasm of head, face and neck	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C76.1	Malignant neoplasm of thorax	Diagnosis	ICD-10-CM
C76.2	Malignant neoplasm of abdomen	Diagnosis	ICD-10-CM
C76.3	Malignant neoplasm of pelvis	Diagnosis	ICD-10-CM
C76.40	Malignant neoplasm of unspecified upper limb	Diagnosis	ICD-10-CM
C76.41	Malignant neoplasm of right upper limb	Diagnosis	ICD-10-CM
C76.42	Malignant neoplasm of left upper limb	Diagnosis	ICD-10-CM
C76.50	Malignant neoplasm of unspecified lower limb	Diagnosis	ICD-10-CM
C76.51	Malignant neoplasm of right lower limb	Diagnosis	ICD-10-CM
C76.52	Malignant neoplasm of left lower limb	Diagnosis	ICD-10-CM
C76.8	Malignant neoplasm of other specified ill-defined sites	Diagnosis	ICD-10-CM
C77.0	Secondary and unspecified malignant neoplasm of lymph nodes of head, face and neck	Diagnosis	ICD-10-CM
C77.1	Secondary and unspecified malignant neoplasm of intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C77.2	Secondary and unspecified malignant neoplasm of intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C77.3	Secondary and unspecified malignant neoplasm of axilla and upper limb lymph nodes	Diagnosis	ICD-10-CM
C77.4	Secondary and unspecified malignant neoplasm of inguinal and lower limb lymph	Diagnosis	ICD-10-CM
C77.5	Secondary and unspecified malignant neoplasm of intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C77.8	Secondary and unspecified malignant neoplasm of lymph nodes of multiple regions	Diagnosis	ICD-10-CM
C77.9	Secondary and unspecified malignant neoplasm of lymph node, unspecified	Diagnosis	ICD-10-CM
C78.00	Secondary malignant neoplasm of unspecified lung	Diagnosis	ICD-10-CM
C78.01	Secondary malignant neoplasm of right lung	Diagnosis	ICD-10-CM
C78.02	Secondary malignant neoplasm of left lung	Diagnosis	ICD-10-CM
C78.1	Secondary malignant neoplasm of mediastinum	Diagnosis	ICD-10-CM
C78.2	Secondary malignant neoplasm of pleura	Diagnosis	ICD-10-CM
C78.30	Secondary malignant neoplasm of unspecified respiratory organ	Diagnosis	ICD-10-CM
C78.39	Secondary malignant neoplasm of other respiratory organs	Diagnosis	ICD-10-CM
C78.4	Secondary malignant neoplasm of small intestine	Diagnosis	ICD-10-CM
C78.5	Secondary malignant neoplasm of large intestine and rectum	Diagnosis	ICD-10-CM
C78.6	Secondary malignant neoplasm of retroperitoneum and peritoneum	Diagnosis	ICD-10-CM
C78.7	Secondary malignant neoplasm of liver and intrahepatic bile duct	Diagnosis	ICD-10-CM
C78.80	Secondary malignant neoplasm of unspecified digestive organ	Diagnosis	ICD-10-CM
C78.89	Secondary malignant neoplasm of other digestive organs	Diagnosis	ICD-10-CM
C79.00	Secondary malignant neoplasm of unspecified kidney and renal pelvis	Diagnosis	ICD-10-CM
C79.01	Secondary malignant neoplasm of right kidney and renal pelvis	Diagnosis	ICD-10-CM
C79.02	Secondary malignant neoplasm of left kidney and renal pelvis	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C79.10	Secondary malignant neoplasm of unspecified urinary organs	Diagnosis	ICD-10-CM
C79.11	Secondary malignant neoplasm of bladder	Diagnosis	ICD-10-CM
C79.19	Secondary malignant neoplasm of other urinary organs	Diagnosis	ICD-10-CM
C79.2	Secondary malignant neoplasm of skin	Diagnosis	ICD-10-CM
C79.31	Secondary malignant neoplasm of brain	Diagnosis	ICD-10-CM
C79.32	Secondary malignant neoplasm of cerebral meninges	Diagnosis	ICD-10-CM
C79.40	Secondary malignant neoplasm of unspecified part of nervous system	Diagnosis	ICD-10-CM
C79.49	Secondary malignant neoplasm of other parts of nervous system	Diagnosis	ICD-10-CM
C79.51	Secondary malignant neoplasm of bone	Diagnosis	ICD-10-CM
C79.52	Secondary malignant neoplasm of bone marrow	Diagnosis	ICD-10-CM
C79.60	Secondary malignant neoplasm of unspecified ovary	Diagnosis	ICD-10-CM
C79.61	Secondary malignant neoplasm of right ovary	Diagnosis	ICD-10-CM
C79.62	Secondary malignant neoplasm of left ovary	Diagnosis	ICD-10-CM
C79.70	Secondary malignant neoplasm of unspecified adrenal gland	Diagnosis	ICD-10-CM
C79.71	Secondary malignant neoplasm of right adrenal gland	Diagnosis	ICD-10-CM
C79.72	Secondary malignant neoplasm of left adrenal gland	Diagnosis	ICD-10-CM
C79.81	Secondary malignant neoplasm of breast	Diagnosis	ICD-10-CM
C79.82	Secondary malignant neoplasm of genital organs	Diagnosis	ICD-10-CM
C79.89	Secondary malignant neoplasm of other specified sites	Diagnosis	ICD-10-CM
C79.9	Secondary malignant neoplasm of unspecified site	Diagnosis	ICD-10-CM
C80.0	Disseminated malignant neoplasm, unspecified	Diagnosis	ICD-10-CM
C80.1	Malignant (primary) neoplasm, unspecified	Diagnosis	ICD-10-CM
C80.2	Malignant neoplasm associated with transplanted organ	Diagnosis	ICD-10-CM
C81.00	Nodular lymphocyte predominant Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C81.01	Nodular lymphocyte predominant Hodgkin lymphoma, lymph nodes of head, face, and	Diagnosis	ICD-10-CM
C81.02	Nodular lymphocyte predominant Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.03	Nodular lymphocyte predominant Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C81.04	Nodular lymphocyte predominant Hodgkin lymphoma, lymph nodes of axilla and	Diagnosis	ICD-10-CM
C81.05	Nodular lymphocyte predominant Hodgkin lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C81.06	Nodular lymphocyte predominant Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.07	Nodular lymphocyte predominant Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C81.08	Nodular lymphocyte predominant Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.09	Nodular lymphocyte predominant Hodgkin lymphoma, extranodal and solid organ	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C81.10	Nodular sclerosis Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C81.11	Nodular sclerosis Hodgkin lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C81.12	Nodular sclerosis Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.13	Nodular sclerosis Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C81.14	Nodular sclerosis Hodgkin lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C81.15	Nodular sclerosis Hodgkin lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C81.16	Nodular sclerosis Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.17	Nodular sclerosis Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C81.18	Nodular sclerosis Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.19	Nodular sclerosis Hodgkin lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C81.20	Mixed cellularity Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C81.21	Mixed cellularity Hodgkin lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C81.22	Mixed cellularity Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.23	Mixed cellularity Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C81.24	Mixed cellularity Hodgkin lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C81.25	Mixed cellularity Hodgkin lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C81.26	Mixed cellularity Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.27	Mixed cellularity Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C81.28	Mixed cellularity Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.29	Mixed cellularity Hodgkin lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C81.30	Lymphocyte depleted Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C81.31	Lymphocyte depleted Hodgkin lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C81.32	Lymphocyte depleted Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.33	Lymphocyte depleted Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C81.34	Lymphocyte depleted Hodgkin lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C81.35	Lymphocyte depleted Hodgkin lymphoma, lymph nodes of inguinal region and lower	Diagnosis	ICD-10-CM
C81.36	Lymphocyte depleted Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.37	Lymphocyte depleted Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C81.38	Lymphocyte depleted Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.39	Lymphocyte depleted Hodgkin lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C81.40	Lymphocyte-rich Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C81.41	Lymphocyte-rich Hodgkin lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C81.42	Lymphocyte-rich Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.43	Lymphocyte-rich Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C81.44	Lymphocyte-rich Hodgkin lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C81.45	Lymphocyte-rich Hodgkin lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C81.46	Lymphocyte-rich Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.47	Lymphocyte-rich Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C81.48	Lymphocyte-rich Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.49	Lymphocyte-rich Hodgkin lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C81.70	Other Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C81.71	Other Hodgkin lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C81.72	Other Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.73	Other Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C81.74	Other Hodgkin lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C81.75	Other Hodgkin lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C81.76	Other Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.77	Other Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C81.78	Other Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.79	Other Hodgkin lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C81.90	Hodgkin lymphoma, unspecified, unspecified site	Diagnosis	ICD-10-CM
C81.91	Hodgkin lymphoma, unspecified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C81.92	Hodgkin lymphoma, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C81.93	Hodgkin lymphoma, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C81.94	Hodgkin lymphoma, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C81.95	Hodgkin lymphoma, unspecified, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C81.96	Hodgkin lymphoma, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C81.97	Hodgkin lymphoma, unspecified, spleen	Diagnosis	ICD-10-CM
C81.98	Hodgkin lymphoma, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C81.99	Hodgkin lymphoma, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.00	Follicular lymphoma grade I, unspecified site	Diagnosis	ICD-10-CM
C82.01	Follicular lymphoma grade I, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.02	Follicular lymphoma grade I, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.03	Follicular lymphoma grade I, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.04	Follicular lymphoma grade I, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.05	Follicular lymphoma grade I, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.06	Follicular lymphoma grade I, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.07	Follicular lymphoma grade I, spleen	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C82.08	Follicular lymphoma grade I, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.09	Follicular lymphoma grade I, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.10	Follicular lymphoma grade II, unspecified site	Diagnosis	ICD-10-CM
C82.11	Follicular lymphoma grade II, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.12	Follicular lymphoma grade II, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.13	Follicular lymphoma grade II, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.14	Follicular lymphoma grade II, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.15	Follicular lymphoma grade II, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.16	Follicular lymphoma grade II, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.17	Follicular lymphoma grade II, spleen	Diagnosis	ICD-10-CM
C82.18	Follicular lymphoma grade II, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.19	Follicular lymphoma grade II, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.20	Follicular lymphoma grade III, unspecified, unspecified site	Diagnosis	ICD-10-CM
C82.21	Follicular lymphoma grade III, unspecified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.22	Follicular lymphoma grade III, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.23	Follicular lymphoma grade III, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.24	Follicular lymphoma grade III, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.25	Follicular lymphoma grade III, unspecified, lymph nodes of inguinal region and lower	Diagnosis	ICD-10-CM
C82.26	Follicular lymphoma grade III, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.27	Follicular lymphoma grade III, unspecified, spleen	Diagnosis	ICD-10-CM
C82.28	Follicular lymphoma grade III, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.29	Follicular lymphoma grade III, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.30	Follicular lymphoma grade IIIa, unspecified site	Diagnosis	ICD-10-CM
C82.31	Follicular lymphoma grade IIIa, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.32	Follicular lymphoma grade IIIa, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.33	Follicular lymphoma grade IIIa, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.34	Follicular lymphoma grade IIIa, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.35	Follicular lymphoma grade IIIa, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.36	Follicular lymphoma grade IIIa, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.37	Follicular lymphoma grade IIIa, spleen	Diagnosis	ICD-10-CM
C82.38	Follicular lymphoma grade IIIa, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.39	Follicular lymphoma grade IIIa, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.40	Follicular lymphoma grade IIIb, unspecified site	Diagnosis	ICD-10-CM
C82.41	Follicular lymphoma grade IIIb, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C82.42	Follicular lymphoma grade IIIb, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.43	Follicular lymphoma grade IIIb, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.44	Follicular lymphoma grade IIIb, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.45	Follicular lymphoma grade IIIb, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.46	Follicular lymphoma grade IIIb, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.47	Follicular lymphoma grade IIIb, spleen	Diagnosis	ICD-10-CM
C82.48	Follicular lymphoma grade IIIb, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.49	Follicular lymphoma grade IIIb, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.50	Diffuse follicle center lymphoma, unspecified site	Diagnosis	ICD-10-CM
C82.51	Diffuse follicle center lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.52	Diffuse follicle center lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.53	Diffuse follicle center lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.54	Diffuse follicle center lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.55	Diffuse follicle center lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.56	Diffuse follicle center lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.57	Diffuse follicle center lymphoma, spleen	Diagnosis	ICD-10-CM
C82.58	Diffuse follicle center lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.59	Diffuse follicle center lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.60	Cutaneous follicle center lymphoma, unspecified site	Diagnosis	ICD-10-CM
C82.61	Cutaneous follicle center lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.62	Cutaneous follicle center lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.63	Cutaneous follicle center lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.64	Cutaneous follicle center lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.65	Cutaneous follicle center lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.66	Cutaneous follicle center lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.67	Cutaneous follicle center lymphoma, spleen	Diagnosis	ICD-10-CM
C82.68	Cutaneous follicle center lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.69	Cutaneous follicle center lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.80	Other types of follicular lymphoma, unspecified site	Diagnosis	ICD-10-CM
C82.81	Other types of follicular lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.82	Other types of follicular lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.83	Other types of follicular lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.84	Other types of follicular lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.85	Other types of follicular lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C82.86	Other types of follicular lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.87	Other types of follicular lymphoma, spleen	Diagnosis	ICD-10-CM
C82.88	Other types of follicular lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.89	Other types of follicular lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C82.90	Follicular lymphoma, unspecified, unspecified site	Diagnosis	ICD-10-CM
C82.91	Follicular lymphoma, unspecified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C82.92	Follicular lymphoma, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C82.93	Follicular lymphoma, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C82.94	Follicular lymphoma, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C82.95	Follicular lymphoma, unspecified, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C82.96	Follicular lymphoma, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C82.97	Follicular lymphoma, unspecified, spleen	Diagnosis	ICD-10-CM
C82.98	Follicular lymphoma, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C82.99	Follicular lymphoma, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C83.00	Small cell B-cell lymphoma, unspecified site	Diagnosis	ICD-10-CM
C83.01	Small cell B-cell lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.02	Small cell B-cell lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.03	Small cell B-cell lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C83.04	Small cell B-cell lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.05	Small cell B-cell lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C83.06	Small cell B-cell lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.07	Small cell B-cell lymphoma, spleen	Diagnosis	ICD-10-CM
C83.08	Small cell B-cell lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.09	Small cell B-cell lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C83.10	Mantle cell lymphoma, unspecified site	Diagnosis	ICD-10-CM
C83.11	Mantle cell lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.12	Mantle cell lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.13	Mantle cell lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C83.14	Mantle cell lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.15	Mantle cell lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C83.16	Mantle cell lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.17	Mantle cell lymphoma, spleen	Diagnosis	ICD-10-CM
C83.18	Mantle cell lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.19	Mantle cell lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C83.30	Diffuse large B-cell lymphoma, unspecified site	Diagnosis	ICD-10-CM
C83.31	Diffuse large B-cell lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.32	Diffuse large B-cell lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.33	Diffuse large B-cell lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C83.34	Diffuse large B-cell lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.35	Diffuse large B-cell lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C83.36	Diffuse large B-cell lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.37	Diffuse large B-cell lymphoma, spleen	Diagnosis	ICD-10-CM
C83.38	Diffuse large B-cell lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.39	Diffuse large B-cell lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C83.50	Lymphoblastic (diffuse) lymphoma, unspecified site	Diagnosis	ICD-10-CM
C83.51	Lymphoblastic (diffuse) lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.52	Lymphoblastic (diffuse) lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.53	Lymphoblastic (diffuse) lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C83.54	Lymphoblastic (diffuse) lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.55	Lymphoblastic (diffuse) lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C83.56	Lymphoblastic (diffuse) lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.57	Lymphoblastic (diffuse) lymphoma, spleen	Diagnosis	ICD-10-CM
C83.58	Lymphoblastic (diffuse) lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.59	Lymphoblastic (diffuse) lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C83.70	Burkitt lymphoma, unspecified site	Diagnosis	ICD-10-CM
C83.71	Burkitt lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.72	Burkitt lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.73	Burkitt lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C83.74	Burkitt lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.75	Burkitt lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C83.76	Burkitt lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.77	Burkitt lymphoma, spleen	Diagnosis	ICD-10-CM
C83.78	Burkitt lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.79	Burkitt lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C83.80	Other non-follicular lymphoma, unspecified site	Diagnosis	ICD-10-CM
C83.81	Other non-follicular lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.82	Other non-follicular lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.83	Other non-follicular lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C83.84	Other non-follicular lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.85	Other non-follicular lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C83.86	Other non-follicular lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.87	Other non-follicular lymphoma, spleen	Diagnosis	ICD-10-CM
C83.88	Other non-follicular lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.89	Other non-follicular lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C83.90	Non-follicular (diffuse) lymphoma, unspecified, unspecified site	Diagnosis	ICD-10-CM
C83.91	Non-follicular (diffuse) lymphoma, unspecified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C83.92	Non-follicular (diffuse) lymphoma, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C83.93	Non-follicular (diffuse) lymphoma, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C83.94	Non-follicular (diffuse) lymphoma, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C83.95	Non-follicular (diffuse) lymphoma, unspecified, lymph nodes of inguinal region and	Diagnosis	ICD-10-CM
C83.96	Non-follicular (diffuse) lymphoma, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C83.97	Non-follicular (diffuse) lymphoma, unspecified, spleen	Diagnosis	ICD-10-CM
C83.98	Non-follicular (diffuse) lymphoma, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C83.99	Non-follicular (diffuse) lymphoma, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.00	Mycosis fungoides, unspecified site	Diagnosis	ICD-10-CM
C84.01	Mycosis fungoides, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.02	Mycosis fungoides, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.03	Mycosis fungoides, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.04	Mycosis fungoides, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.05	Mycosis fungoides, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C84.06	Mycosis fungoides, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.07	Mycosis fungoides, spleen	Diagnosis	ICD-10-CM
C84.08	Mycosis fungoides, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.09	Mycosis fungoides, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.10	Sezary disease, unspecified site	Diagnosis	ICD-10-CM
C84.11	Sezary disease, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.12	Sezary disease, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.13	Sezary disease, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.14	Sezary disease, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.15	Sezary disease, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C84.16	Sezary disease, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.17	Sezary disease, spleen	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C84.18	Sezary disease, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.19	Sezary disease, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.40	Peripheral T-cell lymphoma, not classified, unspecified site	Diagnosis	ICD-10-CM
C84.41	Peripheral T-cell lymphoma, not classified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.42	Peripheral T-cell lymphoma, not classified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.43	Peripheral T-cell lymphoma, not classified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.44	Peripheral T-cell lymphoma, not classified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.45	Peripheral T-cell lymphoma, not classified, lymph nodes of inguinal region and lower	Diagnosis	ICD-10-CM
C84.46	Peripheral T-cell lymphoma, not classified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.47	Peripheral T-cell lymphoma, not classified, spleen	Diagnosis	ICD-10-CM
C84.48	Peripheral T-cell lymphoma, not classified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.49	Peripheral T-cell lymphoma, not classified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.60	Anaplastic large cell lymphoma, ALK-positive, unspecified site	Diagnosis	ICD-10-CM
C84.61	Anaplastic large cell lymphoma, ALK-positive, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.62	Anaplastic large cell lymphoma, ALK-positive, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.63	Anaplastic large cell lymphoma, ALK-positive, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.64	Anaplastic large cell lymphoma, ALK-positive, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.65	Anaplastic large cell lymphoma, ALK-positive, lymph nodes of inguinal region and	Diagnosis	ICD-10-CM
C84.66	Anaplastic large cell lymphoma, ALK-positive, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.67	Anaplastic large cell lymphoma, ALK-positive, spleen	Diagnosis	ICD-10-CM
C84.68	Anaplastic large cell lymphoma, ALK-positive, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.69	Anaplastic large cell lymphoma, ALK-positive, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.70	Anaplastic large cell lymphoma, ALK-negative, unspecified site	Diagnosis	ICD-10-CM
C84.71	Anaplastic large cell lymphoma, ALK-negative, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.72	Anaplastic large cell lymphoma, ALK-negative, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.73	Anaplastic large cell lymphoma, ALK-negative, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.74	Anaplastic large cell lymphoma, ALK-negative, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.75	Anaplastic large cell lymphoma, ALK-negative, lymph nodes of inguinal region and	Diagnosis	ICD-10-CM
C84.76	Anaplastic large cell lymphoma, ALK-negative, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.77	Anaplastic large cell lymphoma, ALK-negative, spleen	Diagnosis	ICD-10-CM
C84.78	Anaplastic large cell lymphoma, ALK-negative, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.79	Anaplastic large cell lymphoma, ALK-negative, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.90	Mature T/NK-cell lymphomas, unspecified, unspecified site	Diagnosis	ICD-10-CM
C84.91	Mature T/NK-cell lymphomas, unspecified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C84.92	Mature T/NK-cell lymphomas, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.93	Mature T/NK-cell lymphomas, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.94	Mature T/NK-cell lymphomas, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.95	Mature T/NK-cell lymphomas, unspecified, lymph nodes of inguinal region and lower	Diagnosis	ICD-10-CM
C84.96	Mature T/NK-cell lymphomas, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.97	Mature T/NK-cell lymphomas, unspecified, spleen	Diagnosis	ICD-10-CM
C84.98	Mature T/NK-cell lymphomas, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.99	Mature T/NK-cell lymphomas, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.A0	Cutaneous T-cell lymphoma, unspecified, unspecified site	Diagnosis	ICD-10-CM
C84.A1	Cutaneous T-cell lymphoma, unspecified lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.A2	Cutaneous T-cell lymphoma, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.A3	Cutaneous T-cell lymphoma, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.A4	Cutaneous T-cell lymphoma, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.A5	Cutaneous T-cell lymphoma, unspecified, lymph nodes of inguinal region and lower	Diagnosis	ICD-10-CM
C84.A6	Cutaneous T-cell lymphoma, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.A7	Cutaneous T-cell lymphoma, unspecified, spleen	Diagnosis	ICD-10-CM
C84.A8	Cutaneous T-cell lymphoma, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.A9	Cutaneous T-cell lymphoma, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C84.Z0	Other mature T/NK-cell lymphomas, unspecified site	Diagnosis	ICD-10-CM
C84.Z1	Other mature T/NK-cell lymphomas, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C84.Z2	Other mature T/NK-cell lymphomas, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C84.Z3	Other mature T/NK-cell lymphomas, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C84.Z4	Other mature T/NK-cell lymphomas, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C84.Z5	Other mature T/NK-cell lymphomas, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C84.Z6	Other mature T/NK-cell lymphomas, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C84.Z7	Other mature T/NK-cell lymphomas, spleen	Diagnosis	ICD-10-CM
C84.Z8	Other mature T/NK-cell lymphomas, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C84.Z9	Other mature T/NK-cell lymphomas, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C85.10	Unspecified B-cell lymphoma, unspecified site	Diagnosis	ICD-10-CM
C85.11	Unspecified B-cell lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C85.12	Unspecified B-cell lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C85.13	Unspecified B-cell lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C85.14	Unspecified B-cell lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C85.15	Unspecified B-cell lymphoma, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C85.16	Unspecified B-cell lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C85.17	Unspecified B-cell lymphoma, spleen	Diagnosis	ICD-10-CM
C85.18	Unspecified B-cell lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C85.19	Unspecified B-cell lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C85.20	Mediastinal (thymic) large B-cell lymphoma, unspecified site	Diagnosis	ICD-10-CM
C85.21	Mediastinal (thymic) large B-cell lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C85.22	Mediastinal (thymic) large B-cell lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C85.23	Mediastinal (thymic) large B-cell lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C85.24	Mediastinal (thymic) large B-cell lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C85.25	Mediastinal (thymic) large B-cell lymphoma, lymph nodes of inguinal region and lower	Diagnosis	ICD-10-CM
C85.26	Mediastinal (thymic) large B-cell lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C85.27	Mediastinal (thymic) large B-cell lymphoma, spleen	Diagnosis	ICD-10-CM
C85.28	Mediastinal (thymic) large B-cell lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C85.29	Mediastinal (thymic) large B-cell lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C85.80	Other specified types of non-Hodgkin lymphoma, unspecified site	Diagnosis	ICD-10-CM
C85.81	Other specified types of non-Hodgkin lymphoma, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C85.82	Other specified types of non-Hodgkin lymphoma, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C85.83	Other specified types of non-Hodgkin lymphoma, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C85.84	Other specified types of non-Hodgkin lymphoma, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C85.85	Other specified types of non-Hodgkin lymphoma, lymph nodes of inguinal region and	Diagnosis	ICD-10-CM
C85.86	Other specified types of non-Hodgkin lymphoma, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C85.87	Other specified types of non-Hodgkin lymphoma, spleen	Diagnosis	ICD-10-CM
C85.88	Other specified types of non-Hodgkin lymphoma, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C85.89	Other specified types of non-Hodgkin lymphoma, extranodal and solid organ sites	Diagnosis	ICD-10-CM
C85.90	Non-Hodgkin lymphoma, unspecified, unspecified site	Diagnosis	ICD-10-CM
C85.91	Non-Hodgkin lymphoma, unspecified, lymph nodes of head, face, and neck	Diagnosis	ICD-10-CM
C85.92	Non-Hodgkin lymphoma, unspecified, intrathoracic lymph nodes	Diagnosis	ICD-10-CM
C85.93	Non-Hodgkin lymphoma, unspecified, intra-abdominal lymph nodes	Diagnosis	ICD-10-CM
C85.94	Non-Hodgkin lymphoma, unspecified, lymph nodes of axilla and upper limb	Diagnosis	ICD-10-CM
C85.95	Non-Hodgkin lymphoma, unspecified, lymph nodes of inguinal region and lower limb	Diagnosis	ICD-10-CM
C85.96	Non-Hodgkin lymphoma, unspecified, intrapelvic lymph nodes	Diagnosis	ICD-10-CM
C85.97	Non-Hodgkin lymphoma, unspecified, spleen	Diagnosis	ICD-10-CM
C85.98	Non-Hodgkin lymphoma, unspecified, lymph nodes of multiple sites	Diagnosis	ICD-10-CM
C85.99	Non-Hodgkin lymphoma, unspecified, extranodal and solid organ sites	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C86.0	Extranodal NK/T-cell lymphoma, nasal type	Diagnosis	ICD-10-CM
C86.1	Hepatosplenic T-cell lymphoma	Diagnosis	ICD-10-CM
C86.2	Enteropathy-type (intestinal) T-cell lymphoma	Diagnosis	ICD-10-CM
C86.3	Subcutaneous panniculitis-like T-cell lymphoma	Diagnosis	ICD-10-CM
C86.4	Blastic NK-cell lymphoma	Diagnosis	ICD-10-CM
C86.5	Angioimmunoblastic T-cell lymphoma	Diagnosis	ICD-10-CM
C86.6	Primary cutaneous CD30-positive T-cell proliferations	Diagnosis	ICD-10-CM
C88.2	Heavy chain disease	Diagnosis	ICD-10-CM
C88.3	Immunoproliferative small intestinal disease	Diagnosis	ICD-10-CM
C88.4	Extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue [MALT-lymphoma]	Diagnosis	ICD-10-CM
C88.8	Other malignant immunoproliferative diseases	Diagnosis	ICD-10-CM
C88.9	Malignant immunoproliferative disease, unspecified	Diagnosis	ICD-10-CM
C90.00	Multiple myeloma not having achieved remission	Diagnosis	ICD-10-CM
C90.01	Multiple myeloma in remission	Diagnosis	ICD-10-CM
C90.02	Multiple myeloma in relapse	Diagnosis	ICD-10-CM
C90.10	Plasma cell leukemia not having achieved remission	Diagnosis	ICD-10-CM
C90.11	Plasma cell leukemia in remission	Diagnosis	ICD-10-CM
C90.12	Plasma cell leukemia in relapse	Diagnosis	ICD-10-CM
C90.20	Extramedullary plasmacytoma not having achieved remission	Diagnosis	ICD-10-CM
C90.21	Extramedullary plasmacytoma in remission	Diagnosis	ICD-10-CM
C90.22	Extramedullary plasmacytoma in relapse	Diagnosis	ICD-10-CM
C90.30	Solitary plasmacytoma not having achieved remission	Diagnosis	ICD-10-CM
C90.31	Solitary plasmacytoma in remission	Diagnosis	ICD-10-CM
C90.32	Solitary plasmacytoma in relapse	Diagnosis	ICD-10-CM
C91.00	Acute lymphoblastic leukemia not having achieved remission	Diagnosis	ICD-10-CM
C91.01	Acute lymphoblastic leukemia, in remission	Diagnosis	ICD-10-CM
C91.02	Acute lymphoblastic leukemia, in relapse	Diagnosis	ICD-10-CM
C91.10	Chronic lymphocytic leukemia of B-cell type not having achieved remission	Diagnosis	ICD-10-CM
C91.11	Chronic lymphocytic leukemia of B-cell type in remission	Diagnosis	ICD-10-CM
C91.12	Chronic lymphocytic leukemia of B-cell type in relapse	Diagnosis	ICD-10-CM
C91.30	Prolymphocytic leukemia of B-cell type not having achieved remission	Diagnosis	ICD-10-CM
C91.31	Prolymphocytic leukemia of B-cell type, in remission	Diagnosis	ICD-10-CM
C91.32	Prolymphocytic leukemia of B-cell type, in relapse	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C91.40	Hairy cell leukemia not having achieved remission	Diagnosis	ICD-10-CM
C91.41	Hairy cell leukemia, in remission	Diagnosis	ICD-10-CM
C91.42	Hairy cell leukemia, in relapse	Diagnosis	ICD-10-CM
C91.50	Adult T-cell lymphoma/leukemia (HTLV-1-associated) not having achieved remission	Diagnosis	ICD-10-CM
C91.51	Adult T-cell lymphoma/leukemia (HTLV-1-associated), in remission	Diagnosis	ICD-10-CM
C91.52	Adult T-cell lymphoma/leukemia (HTLV-1-associated), in relapse	Diagnosis	ICD-10-CM
C91.60	Prolymphocytic leukemia of T-cell type not having achieved remission	Diagnosis	ICD-10-CM
C91.61	Prolymphocytic leukemia of T-cell type, in remission	Diagnosis	ICD-10-CM
C91.62	Prolymphocytic leukemia of T-cell type, in relapse	Diagnosis	ICD-10-CM
C91.90	Lymphoid leukemia, unspecified not having achieved remission	Diagnosis	ICD-10-CM
C91.91	Lymphoid leukemia, unspecified, in remission	Diagnosis	ICD-10-CM
C91.92	Lymphoid leukemia, unspecified, in relapse	Diagnosis	ICD-10-CM
C91.A0	Mature B-cell leukemia Burkitt-type not having achieved remission	Diagnosis	ICD-10-CM
C91.A1	Mature B-cell leukemia Burkitt-type, in remission	Diagnosis	ICD-10-CM
C91.A2	Mature B-cell leukemia Burkitt-type, in relapse	Diagnosis	ICD-10-CM
C91.Z0	Other lymphoid leukemia not having achieved remission	Diagnosis	ICD-10-CM
C91.Z1	Other lymphoid leukemia, in remission	Diagnosis	ICD-10-CM
C91.Z2	Other lymphoid leukemia, in relapse	Diagnosis	ICD-10-CM
C92.00	Acute myeloblastic leukemia, not having achieved remission	Diagnosis	ICD-10-CM
C92.01	Acute myeloblastic leukemia, in remission	Diagnosis	ICD-10-CM
C92.02	Acute myeloblastic leukemia, in relapse	Diagnosis	ICD-10-CM
C92.10	Chronic myeloid leukemia, BCR/ABL-positive, not having achieved remission	Diagnosis	ICD-10-CM
C92.11	Chronic myeloid leukemia, BCR/ABL-positive, in remission	Diagnosis	ICD-10-CM
C92.12	Chronic myeloid leukemia, BCR/ABL-positive, in relapse	Diagnosis	ICD-10-CM
C92.20	Atypical chronic myeloid leukemia, BCR/ABL-negative, not having achieved remission	Diagnosis	ICD-10-CM
C92.21	Atypical chronic myeloid leukemia, BCR/ABL-negative, in remission	Diagnosis	ICD-10-CM
C92.22	Atypical chronic myeloid leukemia, BCR/ABL-negative, in relapse	Diagnosis	ICD-10-CM
C92.30	Myeloid sarcoma, not having achieved remission	Diagnosis	ICD-10-CM
C92.31	Myeloid sarcoma, in remission	Diagnosis	ICD-10-CM
C92.32	Myeloid sarcoma, in relapse	Diagnosis	ICD-10-CM
C92.40	Acute promyelocytic leukemia, not having achieved remission	Diagnosis	ICD-10-CM
C92.41	Acute promyelocytic leukemia, in remission	Diagnosis	ICD-10-CM
C92.42	Acute promyelocytic leukemia, in relapse	Diagnosis	ICD-10-CM
C92.50	Acute myelomonocytic leukemia, not having achieved remission	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C92.51	Acute myelomonocytic leukemia, in remission	Diagnosis	ICD-10-CM
C92.52	Acute myelomonocytic leukemia, in relapse	Diagnosis	ICD-10-CM
C92.60	Acute myeloid leukemia with 11q23-abnormality not having achieved remission	Diagnosis	ICD-10-CM
C92.61	Acute myeloid leukemia with 11q23-abnormality in remission	Diagnosis	ICD-10-CM
C92.62	Acute myeloid leukemia with 11q23-abnormality in relapse	Diagnosis	ICD-10-CM
C92.90	Myeloid leukemia, unspecified, not having achieved remission	Diagnosis	ICD-10-CM
C92.91	Myeloid leukemia, unspecified in remission	Diagnosis	ICD-10-CM
C92.92	Myeloid leukemia, unspecified in relapse	Diagnosis	ICD-10-CM
C92.A0	Acute myeloid leukemia with multilineage dysplasia, not having achieved remission	Diagnosis	ICD-10-CM
C92.A1	Acute myeloid leukemia with multilineage dysplasia, in remission	Diagnosis	ICD-10-CM
C92.A2	Acute myeloid leukemia with multilineage dysplasia, in relapse	Diagnosis	ICD-10-CM
C92.Z0	Other myeloid leukemia not having achieved remission	Diagnosis	ICD-10-CM
C92.Z1	Other myeloid leukemia, in remission	Diagnosis	ICD-10-CM
C92.Z2	Other myeloid leukemia, in relapse	Diagnosis	ICD-10-CM
C93.00	Acute monoblastic/monocytic leukemia, not having achieved remission	Diagnosis	ICD-10-CM
C93.01	Acute monoblastic/monocytic leukemia, in remission	Diagnosis	ICD-10-CM
C93.02	Acute monoblastic/monocytic leukemia, in relapse	Diagnosis	ICD-10-CM
C93.10	Chronic myelomonocytic leukemia not having achieved remission	Diagnosis	ICD-10-CM
C93.11	Chronic myelomonocytic leukemia, in remission	Diagnosis	ICD-10-CM
C93.12	Chronic myelomonocytic leukemia, in relapse	Diagnosis	ICD-10-CM
C93.30	Juvenile myelomonocytic leukemia, not having achieved remission	Diagnosis	ICD-10-CM
C93.31	Juvenile myelomonocytic leukemia, in remission	Diagnosis	ICD-10-CM
C93.32	Juvenile myelomonocytic leukemia, in relapse	Diagnosis	ICD-10-CM
C93.90	Monocytic leukemia, unspecified, not having achieved remission	Diagnosis	ICD-10-CM
C93.91	Monocytic leukemia, unspecified in remission	Diagnosis	ICD-10-CM
C93.92	Monocytic leukemia, unspecified in relapse	Diagnosis	ICD-10-CM
C93.Z0	Other monocytic leukemia, not having achieved remission	Diagnosis	ICD-10-CM
C93.Z1	Other monocytic leukemia, in remission	Diagnosis	ICD-10-CM
C93.Z2	Other monocytic leukemia, in relapse	Diagnosis	ICD-10-CM
C94.00	Acute erythroid leukemia, not having achieved remission	Diagnosis	ICD-10-CM
C94.01	Acute erythroid leukemia, in remission	Diagnosis	ICD-10-CM
C94.02	Acute erythroid leukemia, in relapse	Diagnosis	ICD-10-CM
C94.20	Acute megakaryoblastic leukemia not having achieved remission	Diagnosis	ICD-10-CM
C94.21	Acute megakaryoblastic leukemia, in remission	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C94.22	Acute megakaryoblastic leukemia, in relapse	Diagnosis	ICD-10-CM
C94.30	Mast cell leukemia not having achieved remission	Diagnosis	ICD-10-CM
C94.31	Mast cell leukemia, in remission	Diagnosis	ICD-10-CM
C94.32	Mast cell leukemia, in relapse	Diagnosis	ICD-10-CM
C94.80	Other specified leukemias not having achieved remission	Diagnosis	ICD-10-CM
C94.81	Other specified leukemias, in remission	Diagnosis	ICD-10-CM
C94.82	Other specified leukemias, in relapse	Diagnosis	ICD-10-CM
C95.00	Acute leukemia of unspecified cell type not having achieved remission	Diagnosis	ICD-10-CM
C95.01	Acute leukemia of unspecified cell type, in remission	Diagnosis	ICD-10-CM
C95.02	Acute leukemia of unspecified cell type, in relapse	Diagnosis	ICD-10-CM
C95.10	Chronic leukemia of unspecified cell type not having achieved remission	Diagnosis	ICD-10-CM
C95.11	Chronic leukemia of unspecified cell type, in remission	Diagnosis	ICD-10-CM
C95.12	Chronic leukemia of unspecified cell type, in relapse	Diagnosis	ICD-10-CM
C95.90	Leukemia, unspecified not having achieved remission	Diagnosis	ICD-10-CM
C95.91	Leukemia, unspecified, in remission	Diagnosis	ICD-10-CM
C95.92	Leukemia, unspecified, in relapse	Diagnosis	ICD-10-CM
C96.0	Multifocal and multisystemic (disseminated) Langerhans-cell histiocytosis	Diagnosis	ICD-10-CM
C96.20	Malignant mast cell neoplasm, unspecified	Diagnosis	ICD-10-CM
C96.21	Aggressive systemic mastocytosis	Diagnosis	ICD-10-CM
C96.22	Mast cell sarcoma	Diagnosis	ICD-10-CM
C96.29	Other malignant mast cell neoplasm	Diagnosis	ICD-10-CM
C96.4	Sarcoma of dendritic cells (accessory cells)	Diagnosis	ICD-10-CM
C96.9	Malignant neoplasm of lymphoid, hematopoietic and related tissue, unspecified	Diagnosis	ICD-10-CM
C96.A	Histiocytic sarcoma	Diagnosis	ICD-10-CM
C96.Z	Other specified malignant neoplasms of lymphoid, hematopoietic and related tissue	Diagnosis	ICD-10-CM
D03.0	Melanoma in situ of lip	Diagnosis	ICD-10-CM
D03.10	Melanoma in situ of unspecified eyelid, including canthus	Diagnosis	ICD-10-CM
D03.11	Melanoma in situ of right eyelid, including canthus	Diagnosis	ICD-10-CM
D03.12	Melanoma in situ of left eyelid, including canthus	Diagnosis	ICD-10-CM
D03.20	Melanoma in situ of unspecified ear and external auricular canal	Diagnosis	ICD-10-CM
D03.21	Melanoma in situ of right ear and external auricular canal	Diagnosis	ICD-10-CM
D03.22	Melanoma in situ of left ear and external auricular canal	Diagnosis	ICD-10-CM
D03.30	Melanoma in situ of unspecified part of face	Diagnosis	ICD-10-CM
D03.39	Melanoma in situ of other parts of face	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D03.4	Melanoma in situ of scalp and neck	Diagnosis	ICD-10-CM
D03.51	Melanoma in situ of anal skin	Diagnosis	ICD-10-CM
D03.52	Melanoma in situ of breast (skin) (soft tissue)	Diagnosis	ICD-10-CM
D03.59	Melanoma in situ of other part of trunk	Diagnosis	ICD-10-CM
D03.60	Melanoma in situ of unspecified upper limb, including shoulder	Diagnosis	ICD-10-CM
D03.61	Melanoma in situ of right upper limb, including shoulder	Diagnosis	ICD-10-CM
D03.62	Melanoma in situ of left upper limb, including shoulder	Diagnosis	ICD-10-CM
D03.70	Melanoma in situ of unspecified lower limb, including hip	Diagnosis	ICD-10-CM
D03.71	Melanoma in situ of right lower limb, including hip	Diagnosis	ICD-10-CM
D03.72	Melanoma in situ of left lower limb, including hip	Diagnosis	ICD-10-CM
D03.8	Melanoma in situ of other sites	Diagnosis	ICD-10-CM
D03.9	Melanoma in situ, unspecified	Diagnosis	ICD-10-CM
D3A.00	Benign carcinoid tumor of unspecified site	Diagnosis	ICD-10-CM
D3A.010	Benign carcinoid tumor of the duodenum	Diagnosis	ICD-10-CM
D3A.011	Benign carcinoid tumor of the jejunum	Diagnosis	ICD-10-CM
D3A.012	Benign carcinoid tumor of the ileum	Diagnosis	ICD-10-CM
D3A.019	Benign carcinoid tumor of the small intestine, unspecified portion	Diagnosis	ICD-10-CM
D3A.020	Benign carcinoid tumor of the appendix	Diagnosis	ICD-10-CM
D3A.021	Benign carcinoid tumor of the cecum	Diagnosis	ICD-10-CM
D3A.022	Benign carcinoid tumor of the ascending colon	Diagnosis	ICD-10-CM
D3A.023	Benign carcinoid tumor of the transverse colon	Diagnosis	ICD-10-CM
D3A.024	Benign carcinoid tumor of the descending colon	Diagnosis	ICD-10-CM
D3A.025	Benign carcinoid tumor of the sigmoid colon	Diagnosis	ICD-10-CM
D3A.026	Benign carcinoid tumor of the rectum	Diagnosis	ICD-10-CM
D3A.029	Benign carcinoid tumor of the large intestine, unspecified portion	Diagnosis	ICD-10-CM
D3A.090	Benign carcinoid tumor of the bronchus and lung	Diagnosis	ICD-10-CM
D3A.091	Benign carcinoid tumor of the thymus	Diagnosis	ICD-10-CM
D3A.092	Benign carcinoid tumor of the stomach	Diagnosis	ICD-10-CM
D3A.093	Benign carcinoid tumor of the kidney	Diagnosis	ICD-10-CM
D3A.094	Benign carcinoid tumor of the foregut, unspecified	Diagnosis	ICD-10-CM
D3A.095	Benign carcinoid tumor of the midgut, unspecified	Diagnosis	ICD-10-CM
D3A.096	Benign carcinoid tumor of the hindgut, unspecified	Diagnosis	ICD-10-CM
D3A.098	Benign carcinoid tumors of other sites	Diagnosis	ICD-10-CM
D3A.8	Other benign neuroendocrine tumors	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D45	Polycythemia vera	Diagnosis	ICD-10-CM
H40.50X0	Glaucoma secondary to other eye disorders, unspecified eye, stage unspecified	Diagnosis	ICD-10-CM
H40.50X1	Glaucoma secondary to other eye disorders, unspecified eye, mild stage	Diagnosis	ICD-10-CM
H40.50X2	Glaucoma secondary to other eye disorders, unspecified eye, moderate stage	Diagnosis	ICD-10-CM
H40.50X3	Glaucoma secondary to other eye disorders, unspecified eye, severe stage	Diagnosis	ICD-10-CM
H40.50X4	Glaucoma secondary to other eye disorders, unspecified eye, indeterminate stage	Diagnosis	ICD-10-CM
H40.51X0	Glaucoma secondary to other eye disorders, right eye, stage unspecified	Diagnosis	ICD-10-CM
H40.51X1	Glaucoma secondary to other eye disorders, right eye, mild stage	Diagnosis	ICD-10-CM
H40.51X2	Glaucoma secondary to other eye disorders, right eye, moderate stage	Diagnosis	ICD-10-CM
H40.51X3	Glaucoma secondary to other eye disorders, right eye, severe stage	Diagnosis	ICD-10-CM
H40.51X4	Glaucoma secondary to other eye disorders, right eye, indeterminate stage	Diagnosis	ICD-10-CM
H40.52X0	Glaucoma secondary to other eye disorders, left eye, stage unspecified	Diagnosis	ICD-10-CM
H40.52X1	Glaucoma secondary to other eye disorders, left eye, mild stage	Diagnosis	ICD-10-CM
H40.52X2	Glaucoma secondary to other eye disorders, left eye, moderate stage	Diagnosis	ICD-10-CM
H40.52X3	Glaucoma secondary to other eye disorders, left eye, severe stage	Diagnosis	ICD-10-CM
H40.52X4	Glaucoma secondary to other eye disorders, left eye, indeterminate stage	Diagnosis	ICD-10-CM
H40.53X0	Glaucoma secondary to other eye disorders, bilateral, stage unspecified	Diagnosis	ICD-10-CM
H40.53X1	Glaucoma secondary to other eye disorders, bilateral, mild stage	Diagnosis	ICD-10-CM
H40.53X2	Glaucoma secondary to other eye disorders, bilateral, moderate stage	Diagnosis	ICD-10-CM
H40.53X3	Glaucoma secondary to other eye disorders, bilateral, severe stage	Diagnosis	ICD-10-CM
H40.53X4	Glaucoma secondary to other eye disorders, bilateral, indeterminate stage	Diagnosis	ICD-10-CM
M88.0	Osteitis deformans of skull	Diagnosis	ICD-10-CM
M88.1	Osteitis deformans of vertebrae	Diagnosis	ICD-10-CM
M88.811	Osteitis deformans of right shoulder	Diagnosis	ICD-10-CM
M88.812	Osteitis deformans of left shoulder	Diagnosis	ICD-10-CM
M88.819	Osteitis deformans of unspecified shoulder	Diagnosis	ICD-10-CM
M88.821	Osteitis deformans of right upper arm	Diagnosis	ICD-10-CM
M88.822	Osteitis deformans of left upper arm	Diagnosis	ICD-10-CM
M88.829	Osteitis deformans of unspecified upper arm	Diagnosis	ICD-10-CM
M88.831	Osteitis deformans of right forearm	Diagnosis	ICD-10-CM
M88.832	Osteitis deformans of left forearm	Diagnosis	ICD-10-CM
M88.839	Osteitis deformans of unspecified forearm	Diagnosis	ICD-10-CM
M88.841	Osteitis deformans of right hand	Diagnosis	ICD-10-CM
M88.842	Osteitis deformans of left hand	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M88.849	Osteitis deformans of unspecified hand	Diagnosis	ICD-10-CM
M88.851	Osteitis deformans of right thigh	Diagnosis	ICD-10-CM
M88.852	Osteitis deformans of left thigh	Diagnosis	ICD-10-CM
M88.859	Osteitis deformans of unspecified thigh	Diagnosis	ICD-10-CM
M88.861	Osteitis deformans of right lower leg	Diagnosis	ICD-10-CM
M88.862	Osteitis deformans of left lower leg	Diagnosis	ICD-10-CM
M88.869	Osteitis deformans of unspecified lower leg	Diagnosis	ICD-10-CM
M88.871	Osteitis deformans of right ankle and foot	Diagnosis	ICD-10-CM
M88.872	Osteitis deformans of left ankle and foot	Diagnosis	ICD-10-CM
M88.879	Osteitis deformans of unspecified ankle and foot	Diagnosis	ICD-10-CM
M88.88	Osteitis deformans of other bones	Diagnosis	ICD-10-CM
M88.89	Osteitis deformans of multiple sites	Diagnosis	ICD-10-CM
M88.9	Osteitis deformans of unspecified bone	Diagnosis	ICD-10-CM
O34.10	Maternal care for benign tumor of corpus uteri, unspecified trimester	Diagnosis	ICD-10-CM
O34.11	Maternal care for benign tumor of corpus uteri, first trimester	Diagnosis	ICD-10-CM
O34.12	Maternal care for benign tumor of corpus uteri, second trimester	Diagnosis	ICD-10-CM
O34.13	Maternal care for benign tumor of corpus uteri, third trimester	Diagnosis	ICD-10-CM
R97.8	Other abnormal tumor markers	Diagnosis	ICD-10-CM
Z85.00	Personal history of malignant neoplasm of unspecified digestive organ	Diagnosis	ICD-10-CM
Z85.01	Personal history of malignant neoplasm of esophagus	Diagnosis	ICD-10-CM
Z85.028	Personal history of other malignant neoplasm of stomach	Diagnosis	ICD-10-CM
Z85.038	Personal history of other malignant neoplasm of large intestine	Diagnosis	ICD-10-CM
Z85.048	Personal history of other malignant neoplasm of rectum, rectosigmoid junction, and	Diagnosis	ICD-10-CM
Z85.05	Personal history of malignant neoplasm of liver	Diagnosis	ICD-10-CM
Z85.068	Personal history of other malignant neoplasm of small intestine	Diagnosis	ICD-10-CM
Z85.07	Personal history of malignant neoplasm of pancreas	Diagnosis	ICD-10-CM
Z85.09	Personal history of malignant neoplasm of other digestive organs	Diagnosis	ICD-10-CM
Z85.118	Personal history of other malignant neoplasm of bronchus and lung	Diagnosis	ICD-10-CM
Z85.12	Personal history of malignant neoplasm of trachea	Diagnosis	ICD-10-CM
Z85.20	Personal history of malignant neoplasm of unspecified respiratory organ	Diagnosis	ICD-10-CM
Z85.21	Personal history of malignant neoplasm of larynx	Diagnosis	ICD-10-CM
Z85.22	Personal history of malignant neoplasm of nasal cavities, middle ear, and accessory	Diagnosis	ICD-10-CM
Z85.238	Personal history of other malignant neoplasm of thymus	Diagnosis	ICD-10-CM
Z85.29	Personal history of malignant neoplasm of other respiratory and intrathoracic organs	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Z85.3	Personal history of malignant neoplasm of breast	Diagnosis	ICD-10-CM
Z85.40	Personal history of malignant neoplasm of unspecified female genital organ	Diagnosis	ICD-10-CM
Z85.41	Personal history of malignant neoplasm of cervix uteri	Diagnosis	ICD-10-CM
Z85.42	Personal history of malignant neoplasm of other parts of uterus	Diagnosis	ICD-10-CM
Z85.43	Personal history of malignant neoplasm of ovary	Diagnosis	ICD-10-CM
Z85.44	Personal history of malignant neoplasm of other female genital organs	Diagnosis	ICD-10-CM
Z85.45	Personal history of malignant neoplasm of unspecified male genital organ	Diagnosis	ICD-10-CM
Z85.46	Personal history of malignant neoplasm of prostate	Diagnosis	ICD-10-CM
Z85.47	Personal history of malignant neoplasm of testis	Diagnosis	ICD-10-CM
Z85.48	Personal history of malignant neoplasm of epididymis	Diagnosis	ICD-10-CM
Z85.49	Personal history of malignant neoplasm of other male genital organs	Diagnosis	ICD-10-CM
Z85.50	Personal history of malignant neoplasm of unspecified urinary tract organ	Diagnosis	ICD-10-CM
Z85.51	Personal history of malignant neoplasm of bladder	Diagnosis	ICD-10-CM
Z85.528	Personal history of other malignant neoplasm of kidney	Diagnosis	ICD-10-CM
Z85.53	Personal history of malignant neoplasm of renal pelvis	Diagnosis	ICD-10-CM
Z85.54	Personal history of malignant neoplasm of ureter	Diagnosis	ICD-10-CM
Z85.59	Personal history of malignant neoplasm of other urinary tract organ	Diagnosis	ICD-10-CM
Z85.810	Personal history of malignant neoplasm of tongue	Diagnosis	ICD-10-CM
Z85.818	Personal history of malignant neoplasm of other sites of lip, oral cavity, and pharynx	Diagnosis	ICD-10-CM
Z85.819	Personal history of malignant neoplasm of unspecified site of lip, oral cavity, and	Diagnosis	ICD-10-CM
Z85.828	Personal history of other malignant neoplasm of skin	Diagnosis	ICD-10-CM
Z85.830	Personal history of malignant neoplasm of bone	Diagnosis	ICD-10-CM
Z85.831	Personal history of malignant neoplasm of soft tissue	Diagnosis	ICD-10-CM
Z85.840	Personal history of malignant neoplasm of eye	Diagnosis	ICD-10-CM
Z85.841	Personal history of malignant neoplasm of brain	Diagnosis	ICD-10-CM
Z85.848	Personal history of malignant neoplasm of other parts of nervous tissue	Diagnosis	ICD-10-CM
Z85.850	Personal history of malignant neoplasm of thyroid	Diagnosis	ICD-10-CM
Z85.858	Personal history of malignant neoplasm of other endocrine glands	Diagnosis	ICD-10-CM
Z85.89	Personal history of malignant neoplasm of other organs and systems	Diagnosis	ICD-10-CM
Z85.9	Personal history of malignant neoplasm, unspecified	Diagnosis	ICD-10-CM
Hemiplegia			
G80.2	Spastic hemiplegic cerebral palsy	Diagnosis	ICD-10-CM
G81.00	Flaccid hemiplegia affecting unspecified side	Diagnosis	ICD-10-CM
G81.01	Flaccid hemiplegia affecting right dominant side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
G81.02	Flaccid hemiplegia affecting left dominant side	Diagnosis	ICD-10-CM
G81.03	Flaccid hemiplegia affecting right nondominant side	Diagnosis	ICD-10-CM
G81.04	Flaccid hemiplegia affecting left nondominant side	Diagnosis	ICD-10-CM
G81.10	Spastic hemiplegia affecting unspecified side	Diagnosis	ICD-10-CM
G81.11	Spastic hemiplegia affecting right dominant side	Diagnosis	ICD-10-CM
G81.12	Spastic hemiplegia affecting left dominant side	Diagnosis	ICD-10-CM
G81.13	Spastic hemiplegia affecting right nondominant side	Diagnosis	ICD-10-CM
G81.14	Spastic hemiplegia affecting left nondominant side	Diagnosis	ICD-10-CM
G81.90	Hemiplegia, unspecified affecting unspecified side	Diagnosis	ICD-10-CM
G81.91	Hemiplegia, unspecified affecting right dominant side	Diagnosis	ICD-10-CM
G81.92	Hemiplegia, unspecified affecting left dominant side	Diagnosis	ICD-10-CM
G81.93	Hemiplegia, unspecified affecting right nondominant side	Diagnosis	ICD-10-CM
G81.94	Hemiplegia, unspecified affecting left nondominant side	Diagnosis	ICD-10-CM
I69.051	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.052	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.053	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.054	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.059	Hemiplegia and hemiparesis following nontraumatic subarachnoid hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.151	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.152	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.153	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.154	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.159	Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I69.251	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting right dominant side	Diagnosis	ICD-10-CM
I69.252	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting left dominant side	Diagnosis	ICD-10-CM
I69.253	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.254	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.259	Hemiplegia and hemiparesis following other nontraumatic intracranial hemorrhage affecting unspecified side	Diagnosis	ICD-10-CM
I69.351	Hemiplegia and hemiparesis following cerebral infarction affecting right dominant side	Diagnosis	ICD-10-CM
I69.352	Hemiplegia and hemiparesis following cerebral infarction affecting left dominant side	Diagnosis	ICD-10-CM
I69.353	Hemiplegia and hemiparesis following cerebral infarction affecting right non-dominant	Diagnosis	ICD-10-CM
I69.354	Hemiplegia and hemiparesis following cerebral infarction affecting left non-dominant	Diagnosis	ICD-10-CM
I69.359	Hemiplegia and hemiparesis following cerebral infarction affecting unspecified side	Diagnosis	ICD-10-CM
I69.851	Hemiplegia and hemiparesis following other cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.852	Hemiplegia and hemiparesis following other cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.853	Hemiplegia and hemiparesis following other cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.854	Hemiplegia and hemiparesis following other cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.859	Hemiplegia and hemiparesis following other cerebrovascular disease affecting	Diagnosis	ICD-10-CM
I69.951	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting right dominant side	Diagnosis	ICD-10-CM
I69.952	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting left dominant side	Diagnosis	ICD-10-CM
I69.953	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting right non-dominant side	Diagnosis	ICD-10-CM
I69.954	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting left non-dominant side	Diagnosis	ICD-10-CM
I69.959	Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting unspecified side	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Neurological/Neurodegenerative Conditions			
G10	Huntington's disease	Diagnosis	ICD-10-CM
G20	Parkinson's disease	Diagnosis	ICD-10-CM
Dementia			
F01.50	Vascular dementia without behavioral disturbance	Diagnosis	ICD-10-CM
F01.51	Vascular dementia with behavioral disturbance	Diagnosis	ICD-10-CM
F02.80	Dementia in other diseases classified elsewhere without behavioral disturbance	Diagnosis	ICD-10-CM
F02.81	Dementia in other diseases classified elsewhere with behavioral disturbance	Diagnosis	ICD-10-CM
F03.90	Unspecified dementia without behavioral disturbance	Diagnosis	ICD-10-CM
F03.91	Unspecified dementia with behavioral disturbance	Diagnosis	ICD-10-CM
G30.0	Alzheimer's disease with early onset	Diagnosis	ICD-10-CM
G30.1	Alzheimer's disease with late onset	Diagnosis	ICD-10-CM
G30.8	Other Alzheimer's disease	Diagnosis	ICD-10-CM
G30.9	Alzheimer's disease, unspecified	Diagnosis	ICD-10-CM
G31.09	Other frontotemporal dementia	Diagnosis	ICD-10-CM
G31.83	Dementia with Lewy bodies	Diagnosis	ICD-10-CM
Depression			
F31.31	Bipolar disorder, current episode depressed, mild	Diagnosis	ICD-10-CM
F31.32	Bipolar disorder, current episode depressed, moderate	Diagnosis	ICD-10-CM
F31.4	Bipolar disorder, current episode depressed, severe, without psychotic features	Diagnosis	ICD-10-CM
F31.5	Bipolar disorder, current episode depressed, severe, with psychotic features	Diagnosis	ICD-10-CM
F31.60	Bipolar disorder, current episode mixed, unspecified	Diagnosis	ICD-10-CM
F31.61	Bipolar disorder, current episode mixed, mild	Diagnosis	ICD-10-CM
F31.62	Bipolar disorder, current episode mixed, moderate	Diagnosis	ICD-10-CM
F31.63	Bipolar disorder, current episode mixed, severe, without psychotic features	Diagnosis	ICD-10-CM
F31.64	Bipolar disorder, current episode mixed, severe, with psychotic features	Diagnosis	ICD-10-CM
F31.75	Bipolar disorder, in partial remission, most recent episode depressed	Diagnosis	ICD-10-CM
F31.76	Bipolar disorder, in full remission, most recent episode depressed	Diagnosis	ICD-10-CM
F31.77	Bipolar disorder, in partial remission, most recent episode mixed	Diagnosis	ICD-10-CM
F31.78	Bipolar disorder, in full remission, most recent episode mixed	Diagnosis	ICD-10-CM
F31.81	Bipolar II disorder	Diagnosis	ICD-10-CM
F32.0	Major depressive disorder, single episode, mild	Diagnosis	ICD-10-CM
F32.1	Major depressive disorder, single episode, moderate	Diagnosis	ICD-10-CM
F32.2	Major depressive disorder, single episode, severe without psychotic features	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
F32.3	Major depressive disorder, single episode, severe with psychotic features	Diagnosis	ICD-10-CM
F32.4	Major depressive disorder, single episode, in partial remission	Diagnosis	ICD-10-CM
F32.5	Major depressive disorder, single episode, in full remission	Diagnosis	ICD-10-CM
F32.9	Major depressive disorder, single episode, unspecified	Diagnosis	ICD-10-CM
F33.0	Major depressive disorder, recurrent, mild	Diagnosis	ICD-10-CM
F33.1	Major depressive disorder, recurrent, moderate	Diagnosis	ICD-10-CM
F33.2	Major depressive disorder, recurrent severe without psychotic features	Diagnosis	ICD-10-CM
F33.3	Major depressive disorder, recurrent, severe with psychotic symptoms	Diagnosis	ICD-10-CM
F33.40	Major depressive disorder, recurrent, in remission, unspecified	Diagnosis	ICD-10-CM
F33.41	Major depressive disorder, recurrent, in partial remission	Diagnosis	ICD-10-CM
F33.42	Major depressive disorder, recurrent, in full remission	Diagnosis	ICD-10-CM
F33.9	Major depressive disorder, recurrent, unspecified	Diagnosis	ICD-10-CM
F34.1	Dysthymic disorder	Diagnosis	ICD-10-CM
F43.21	Adjustment disorder with depressed mood	Diagnosis	ICD-10-CM
Schizophrenia			
F20.0	Paranoid schizophrenia	Diagnosis	ICD-10-CM
F20.1	Disorganized schizophrenia	Diagnosis	ICD-10-CM
F20.2	Catatonic schizophrenia	Diagnosis	ICD-10-CM
F20.3	Undifferentiated schizophrenia	Diagnosis	ICD-10-CM
F20.5	Residual schizophrenia	Diagnosis	ICD-10-CM
F20.81	Schizophreniform disorder	Diagnosis	ICD-10-CM
F20.89	Other schizophrenia	Diagnosis	ICD-10-CM
F20.9	Schizophrenia, unspecified	Diagnosis	ICD-10-CM
F25.0	Schizoaffective disorder, bipolar type	Diagnosis	ICD-10-CM
F25.1	Schizoaffective disorder, depressive type	Diagnosis	ICD-10-CM
F25.8	Other schizoaffective disorders	Diagnosis	ICD-10-CM
F25.9	Schizoaffective disorder, unspecified	Diagnosis	ICD-10-CM
Rheumatic Disorders			
M05.00	Felty's syndrome, unspecified site	Diagnosis	ICD-10-CM
M05.011	Felty's syndrome, right shoulder	Diagnosis	ICD-10-CM
M05.012	Felty's syndrome, left shoulder	Diagnosis	ICD-10-CM
M05.019	Felty's syndrome, unspecified shoulder	Diagnosis	ICD-10-CM
M05.021	Felty's syndrome, right elbow	Diagnosis	ICD-10-CM
M05.022	Felty's syndrome, left elbow	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M05.029	Felty's syndrome, unspecified elbow	Diagnosis	ICD-10-CM
M05.031	Felty's syndrome, right wrist	Diagnosis	ICD-10-CM
M05.032	Felty's syndrome, left wrist	Diagnosis	ICD-10-CM
M05.039	Felty's syndrome, unspecified wrist	Diagnosis	ICD-10-CM
M05.041	Felty's syndrome, right hand	Diagnosis	ICD-10-CM
M05.042	Felty's syndrome, left hand	Diagnosis	ICD-10-CM
M05.049	Felty's syndrome, unspecified hand	Diagnosis	ICD-10-CM
M05.051	Felty's syndrome, right hip	Diagnosis	ICD-10-CM
M05.052	Felty's syndrome, left hip	Diagnosis	ICD-10-CM
M05.059	Felty's syndrome, unspecified hip	Diagnosis	ICD-10-CM
M05.061	Felty's syndrome, right knee	Diagnosis	ICD-10-CM
M05.062	Felty's syndrome, left knee	Diagnosis	ICD-10-CM
M05.069	Felty's syndrome, unspecified knee	Diagnosis	ICD-10-CM
M05.071	Felty's syndrome, right ankle and foot	Diagnosis	ICD-10-CM
M05.072	Felty's syndrome, left ankle and foot	Diagnosis	ICD-10-CM
M05.079	Felty's syndrome, unspecified ankle and foot	Diagnosis	ICD-10-CM
M05.09	Felty's syndrome, multiple sites	Diagnosis	ICD-10-CM
M05.20	Rheumatoid vasculitis with rheumatoid arthritis of unspecified site	Diagnosis	ICD-10-CM
M05.211	Rheumatoid vasculitis with rheumatoid arthritis of right shoulder	Diagnosis	ICD-10-CM
M05.212	Rheumatoid vasculitis with rheumatoid arthritis of left shoulder	Diagnosis	ICD-10-CM
M05.219	Rheumatoid vasculitis with rheumatoid arthritis of unspecified shoulder	Diagnosis	ICD-10-CM
M05.221	Rheumatoid vasculitis with rheumatoid arthritis of right elbow	Diagnosis	ICD-10-CM
M05.222	Rheumatoid vasculitis with rheumatoid arthritis of left elbow	Diagnosis	ICD-10-CM
M05.229	Rheumatoid vasculitis with rheumatoid arthritis of unspecified elbow	Diagnosis	ICD-10-CM
M05.231	Rheumatoid vasculitis with rheumatoid arthritis of right wrist	Diagnosis	ICD-10-CM
M05.232	Rheumatoid vasculitis with rheumatoid arthritis of left wrist	Diagnosis	ICD-10-CM
M05.239	Rheumatoid vasculitis with rheumatoid arthritis of unspecified wrist	Diagnosis	ICD-10-CM
M05.241	Rheumatoid vasculitis with rheumatoid arthritis of right hand	Diagnosis	ICD-10-CM
M05.242	Rheumatoid vasculitis with rheumatoid arthritis of left hand	Diagnosis	ICD-10-CM
M05.249	Rheumatoid vasculitis with rheumatoid arthritis of unspecified hand	Diagnosis	ICD-10-CM
M05.251	Rheumatoid vasculitis with rheumatoid arthritis of right hip	Diagnosis	ICD-10-CM
M05.252	Rheumatoid vasculitis with rheumatoid arthritis of left hip	Diagnosis	ICD-10-CM
M05.259	Rheumatoid vasculitis with rheumatoid arthritis of unspecified hip	Diagnosis	ICD-10-CM
M05.261	Rheumatoid vasculitis with rheumatoid arthritis of right knee	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M05.262	Rheumatoid vasculitis with rheumatoid arthritis of left knee	Diagnosis	ICD-10-CM
M05.269	Rheumatoid vasculitis with rheumatoid arthritis of unspecified knee	Diagnosis	ICD-10-CM
M05.271	Rheumatoid vasculitis with rheumatoid arthritis of right ankle and foot	Diagnosis	ICD-10-CM
M05.272	Rheumatoid vasculitis with rheumatoid arthritis of left ankle and foot	Diagnosis	ICD-10-CM
M05.279	Rheumatoid vasculitis with rheumatoid arthritis of unspecified ankle and foot	Diagnosis	ICD-10-CM
M05.29	Rheumatoid vasculitis with rheumatoid arthritis of multiple sites	Diagnosis	ICD-10-CM
M05.30	Rheumatoid heart disease with rheumatoid arthritis of unspecified site	Diagnosis	ICD-10-CM
M05.311	Rheumatoid heart disease with rheumatoid arthritis of right shoulder	Diagnosis	ICD-10-CM
M05.312	Rheumatoid heart disease with rheumatoid arthritis of left shoulder	Diagnosis	ICD-10-CM
M05.319	Rheumatoid heart disease with rheumatoid arthritis of unspecified shoulder	Diagnosis	ICD-10-CM
M05.321	Rheumatoid heart disease with rheumatoid arthritis of right elbow	Diagnosis	ICD-10-CM
M05.322	Rheumatoid heart disease with rheumatoid arthritis of left elbow	Diagnosis	ICD-10-CM
M05.329	Rheumatoid heart disease with rheumatoid arthritis of unspecified elbow	Diagnosis	ICD-10-CM
M05.331	Rheumatoid heart disease with rheumatoid arthritis of right wrist	Diagnosis	ICD-10-CM
M05.332	Rheumatoid heart disease with rheumatoid arthritis of left wrist	Diagnosis	ICD-10-CM
M05.339	Rheumatoid heart disease with rheumatoid arthritis of unspecified wrist	Diagnosis	ICD-10-CM
M05.341	Rheumatoid heart disease with rheumatoid arthritis of right hand	Diagnosis	ICD-10-CM
M05.342	Rheumatoid heart disease with rheumatoid arthritis of left hand	Diagnosis	ICD-10-CM
M05.349	Rheumatoid heart disease with rheumatoid arthritis of unspecified hand	Diagnosis	ICD-10-CM
M05.351	Rheumatoid heart disease with rheumatoid arthritis of right hip	Diagnosis	ICD-10-CM
M05.352	Rheumatoid heart disease with rheumatoid arthritis of left hip	Diagnosis	ICD-10-CM
M05.359	Rheumatoid heart disease with rheumatoid arthritis of unspecified hip	Diagnosis	ICD-10-CM
M05.361	Rheumatoid heart disease with rheumatoid arthritis of right knee	Diagnosis	ICD-10-CM
M05.362	Rheumatoid heart disease with rheumatoid arthritis of left knee	Diagnosis	ICD-10-CM
M05.369	Rheumatoid heart disease with rheumatoid arthritis of unspecified knee	Diagnosis	ICD-10-CM
M05.371	Rheumatoid heart disease with rheumatoid arthritis of right ankle and foot	Diagnosis	ICD-10-CM
M05.372	Rheumatoid heart disease with rheumatoid arthritis of left ankle and foot	Diagnosis	ICD-10-CM
M05.379	Rheumatoid heart disease with rheumatoid arthritis of unspecified ankle and foot	Diagnosis	ICD-10-CM
M05.39	Rheumatoid heart disease with rheumatoid arthritis of multiple sites	Diagnosis	ICD-10-CM
M05.40	Rheumatoid myopathy with rheumatoid arthritis of unspecified site	Diagnosis	ICD-10-CM
M05.411	Rheumatoid myopathy with rheumatoid arthritis of right shoulder	Diagnosis	ICD-10-CM
M05.412	Rheumatoid myopathy with rheumatoid arthritis of left shoulder	Diagnosis	ICD-10-CM
M05.419	Rheumatoid myopathy with rheumatoid arthritis of unspecified shoulder	Diagnosis	ICD-10-CM
M05.421	Rheumatoid myopathy with rheumatoid arthritis of right elbow	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M05.422	Rheumatoid myopathy with rheumatoid arthritis of left elbow	Diagnosis	ICD-10-CM
M05.429	Rheumatoid myopathy with rheumatoid arthritis of unspecified elbow	Diagnosis	ICD-10-CM
M05.431	Rheumatoid myopathy with rheumatoid arthritis of right wrist	Diagnosis	ICD-10-CM
M05.432	Rheumatoid myopathy with rheumatoid arthritis of left wrist	Diagnosis	ICD-10-CM
M05.439	Rheumatoid myopathy with rheumatoid arthritis of unspecified wrist	Diagnosis	ICD-10-CM
M05.441	Rheumatoid myopathy with rheumatoid arthritis of right hand	Diagnosis	ICD-10-CM
M05.442	Rheumatoid myopathy with rheumatoid arthritis of left hand	Diagnosis	ICD-10-CM
M05.449	Rheumatoid myopathy with rheumatoid arthritis of unspecified hand	Diagnosis	ICD-10-CM
M05.451	Rheumatoid myopathy with rheumatoid arthritis of right hip	Diagnosis	ICD-10-CM
M05.452	Rheumatoid myopathy with rheumatoid arthritis of left hip	Diagnosis	ICD-10-CM
M05.459	Rheumatoid myopathy with rheumatoid arthritis of unspecified hip	Diagnosis	ICD-10-CM
M05.461	Rheumatoid myopathy with rheumatoid arthritis of right knee	Diagnosis	ICD-10-CM
M05.462	Rheumatoid myopathy with rheumatoid arthritis of left knee	Diagnosis	ICD-10-CM
M05.469	Rheumatoid myopathy with rheumatoid arthritis of unspecified knee	Diagnosis	ICD-10-CM
M05.471	Rheumatoid myopathy with rheumatoid arthritis of right ankle and foot	Diagnosis	ICD-10-CM
M05.472	Rheumatoid myopathy with rheumatoid arthritis of left ankle and foot	Diagnosis	ICD-10-CM
M05.479	Rheumatoid myopathy with rheumatoid arthritis of unspecified ankle and foot	Diagnosis	ICD-10-CM
M05.49	Rheumatoid myopathy with rheumatoid arthritis of multiple sites	Diagnosis	ICD-10-CM
M05.50	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified site	Diagnosis	ICD-10-CM
M05.511	Rheumatoid polyneuropathy with rheumatoid arthritis of right shoulder	Diagnosis	ICD-10-CM
M05.512	Rheumatoid polyneuropathy with rheumatoid arthritis of left shoulder	Diagnosis	ICD-10-CM
M05.519	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified shoulder	Diagnosis	ICD-10-CM
M05.521	Rheumatoid polyneuropathy with rheumatoid arthritis of right elbow	Diagnosis	ICD-10-CM
M05.522	Rheumatoid polyneuropathy with rheumatoid arthritis of left elbow	Diagnosis	ICD-10-CM
M05.529	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified elbow	Diagnosis	ICD-10-CM
M05.531	Rheumatoid polyneuropathy with rheumatoid arthritis of right wrist	Diagnosis	ICD-10-CM
M05.532	Rheumatoid polyneuropathy with rheumatoid arthritis of left wrist	Diagnosis	ICD-10-CM
M05.539	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified wrist	Diagnosis	ICD-10-CM
M05.541	Rheumatoid polyneuropathy with rheumatoid arthritis of right hand	Diagnosis	ICD-10-CM
M05.542	Rheumatoid polyneuropathy with rheumatoid arthritis of left hand	Diagnosis	ICD-10-CM
M05.549	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified hand	Diagnosis	ICD-10-CM
M05.551	Rheumatoid polyneuropathy with rheumatoid arthritis of right hip	Diagnosis	ICD-10-CM
M05.552	Rheumatoid polyneuropathy with rheumatoid arthritis of left hip	Diagnosis	ICD-10-CM
M05.559	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified hip	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M05.561	Rheumatoid polyneuropathy with rheumatoid arthritis of right knee	Diagnosis	ICD-10-CM
M05.562	Rheumatoid polyneuropathy with rheumatoid arthritis of left knee	Diagnosis	ICD-10-CM
M05.569	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified knee	Diagnosis	ICD-10-CM
M05.571	Rheumatoid polyneuropathy with rheumatoid arthritis of right ankle and foot	Diagnosis	ICD-10-CM
M05.572	Rheumatoid polyneuropathy with rheumatoid arthritis of left ankle and foot	Diagnosis	ICD-10-CM
M05.579	Rheumatoid polyneuropathy with rheumatoid arthritis of unspecified ankle and foot	Diagnosis	ICD-10-CM
M05.59	Rheumatoid polyneuropathy with rheumatoid arthritis of multiple sites	Diagnosis	ICD-10-CM
M05.60	Rheumatoid arthritis of unspecified site with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.611	Rheumatoid arthritis of right shoulder with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.612	Rheumatoid arthritis of left shoulder with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.619	Rheumatoid arthritis of unspecified shoulder with involvement of other organs and	Diagnosis	ICD-10-CM
M05.621	Rheumatoid arthritis of right elbow with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.622	Rheumatoid arthritis of left elbow with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.629	Rheumatoid arthritis of unspecified elbow with involvement of other organs and	Diagnosis	ICD-10-CM
M05.631	Rheumatoid arthritis of right wrist with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.632	Rheumatoid arthritis of left wrist with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.639	Rheumatoid arthritis of unspecified wrist with involvement of other organs and	Diagnosis	ICD-10-CM
M05.641	Rheumatoid arthritis of right hand with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.642	Rheumatoid arthritis of left hand with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.649	Rheumatoid arthritis of unspecified hand with involvement of other organs and	Diagnosis	ICD-10-CM
M05.651	Rheumatoid arthritis of right hip with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.652	Rheumatoid arthritis of left hip with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.659	Rheumatoid arthritis of unspecified hip with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.661	Rheumatoid arthritis of right knee with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.662	Rheumatoid arthritis of left knee with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.669	Rheumatoid arthritis of unspecified knee with involvement of other organs and	Diagnosis	ICD-10-CM
M05.671	Rheumatoid arthritis of right ankle and foot with involvement of other organs and	Diagnosis	ICD-10-CM
M05.672	Rheumatoid arthritis of left ankle and foot with involvement of other organs and	Diagnosis	ICD-10-CM
M05.679	Rheumatoid arthritis of unspecified ankle and foot with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.69	Rheumatoid arthritis of multiple sites with involvement of other organs and systems	Diagnosis	ICD-10-CM
M05.70	Rheumatoid arthritis with rheumatoid factor of unspecified site without organ or systems involvement	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M05.711	Rheumatoid arthritis with rheumatoid factor of right shoulder without organ or systems involvement	Diagnosis	ICD-10-CM
M05.712	Rheumatoid arthritis with rheumatoid factor of left shoulder without organ or systems involvement	Diagnosis	ICD-10-CM
M05.719	Rheumatoid arthritis with rheumatoid factor of unspecified shoulder without organ or systems involvement	Diagnosis	ICD-10-CM
M05.721	Rheumatoid arthritis with rheumatoid factor of right elbow without organ or systems involvement	Diagnosis	ICD-10-CM
M05.722	Rheumatoid arthritis with rheumatoid factor of left elbow without organ or systems involvement	Diagnosis	ICD-10-CM
M05.729	Rheumatoid arthritis with rheumatoid factor of unspecified elbow without organ or systems involvement	Diagnosis	ICD-10-CM
M05.731	Rheumatoid arthritis with rheumatoid factor of right wrist without organ or systems involvement	Diagnosis	ICD-10-CM
M05.732	Rheumatoid arthritis with rheumatoid factor of left wrist without organ or systems	Diagnosis	ICD-10-CM
M05.739	Rheumatoid arthritis with rheumatoid factor of unspecified wrist without organ or systems involvement	Diagnosis	ICD-10-CM
M05.741	Rheumatoid arthritis with rheumatoid factor of right hand without organ or systems involvement	Diagnosis	ICD-10-CM
M05.742	Rheumatoid arthritis with rheumatoid factor of left hand without organ or systems	Diagnosis	ICD-10-CM
M05.749	Rheumatoid arthritis with rheumatoid factor of unspecified hand without organ or systems involvement	Diagnosis	ICD-10-CM
M05.751	Rheumatoid arthritis with rheumatoid factor of right hip without organ or systems	Diagnosis	ICD-10-CM
M05.752	Rheumatoid arthritis with rheumatoid factor of left hip without organ or systems	Diagnosis	ICD-10-CM
M05.759	Rheumatoid arthritis with rheumatoid factor of unspecified hip without organ or systems involvement	Diagnosis	ICD-10-CM
M05.761	Rheumatoid arthritis with rheumatoid factor of right knee without organ or systems involvement	Diagnosis	ICD-10-CM
M05.762	Rheumatoid arthritis with rheumatoid factor of left knee without organ or systems	Diagnosis	ICD-10-CM
M05.769	Rheumatoid arthritis with rheumatoid factor of unspecified knee without organ or systems involvement	Diagnosis	ICD-10-CM
M05.771	Rheumatoid arthritis with rheumatoid factor of right ankle and foot without organ or systems involvement	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M05.772	Rheumatoid arthritis with rheumatoid factor of left ankle and foot without organ or systems involvement	Diagnosis	ICD-10-CM
M05.779	Rheumatoid arthritis with rheumatoid factor of unspecified ankle and foot without organ or systems involvement	Diagnosis	ICD-10-CM
M05.79	Rheumatoid arthritis with rheumatoid factor of multiple sites without organ or systems involvement	Diagnosis	ICD-10-CM
M05.80	Other rheumatoid arthritis with rheumatoid factor of unspecified site	Diagnosis	ICD-10-CM
M05.811	Other rheumatoid arthritis with rheumatoid factor of right shoulder	Diagnosis	ICD-10-CM
M05.812	Other rheumatoid arthritis with rheumatoid factor of left shoulder	Diagnosis	ICD-10-CM
M05.819	Other rheumatoid arthritis with rheumatoid factor of unspecified shoulder	Diagnosis	ICD-10-CM
M05.821	Other rheumatoid arthritis with rheumatoid factor of right elbow	Diagnosis	ICD-10-CM
M05.822	Other rheumatoid arthritis with rheumatoid factor of left elbow	Diagnosis	ICD-10-CM
M05.829	Other rheumatoid arthritis with rheumatoid factor of unspecified elbow	Diagnosis	ICD-10-CM
M05.831	Other rheumatoid arthritis with rheumatoid factor of right wrist	Diagnosis	ICD-10-CM
M05.832	Other rheumatoid arthritis with rheumatoid factor of left wrist	Diagnosis	ICD-10-CM
M05.839	Other rheumatoid arthritis with rheumatoid factor of unspecified wrist	Diagnosis	ICD-10-CM
M05.841	Other rheumatoid arthritis with rheumatoid factor of right hand	Diagnosis	ICD-10-CM
M05.842	Other rheumatoid arthritis with rheumatoid factor of left hand	Diagnosis	ICD-10-CM
M05.849	Other rheumatoid arthritis with rheumatoid factor of unspecified hand	Diagnosis	ICD-10-CM
M05.851	Other rheumatoid arthritis with rheumatoid factor of right hip	Diagnosis	ICD-10-CM
M05.852	Other rheumatoid arthritis with rheumatoid factor of left hip	Diagnosis	ICD-10-CM
M05.859	Other rheumatoid arthritis with rheumatoid factor of unspecified hip	Diagnosis	ICD-10-CM
M05.861	Other rheumatoid arthritis with rheumatoid factor of right knee	Diagnosis	ICD-10-CM
M05.862	Other rheumatoid arthritis with rheumatoid factor of left knee	Diagnosis	ICD-10-CM
M05.869	Other rheumatoid arthritis with rheumatoid factor of unspecified knee	Diagnosis	ICD-10-CM
M05.871	Other rheumatoid arthritis with rheumatoid factor of right ankle and foot	Diagnosis	ICD-10-CM
M05.872	Other rheumatoid arthritis with rheumatoid factor of left ankle and foot	Diagnosis	ICD-10-CM
M05.879	Other rheumatoid arthritis with rheumatoid factor of unspecified ankle and foot	Diagnosis	ICD-10-CM
M05.89	Other rheumatoid arthritis with rheumatoid factor of multiple sites	Diagnosis	ICD-10-CM
M05.9	Rheumatoid arthritis with rheumatoid factor, unspecified	Diagnosis	ICD-10-CM
M06.00	Rheumatoid arthritis without rheumatoid factor, unspecified site	Diagnosis	ICD-10-CM
M06.011	Rheumatoid arthritis without rheumatoid factor, right shoulder	Diagnosis	ICD-10-CM
M06.012	Rheumatoid arthritis without rheumatoid factor, left shoulder	Diagnosis	ICD-10-CM
M06.019	Rheumatoid arthritis without rheumatoid factor, unspecified shoulder	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M06.021	Rheumatoid arthritis without rheumatoid factor, right elbow	Diagnosis	ICD-10-CM
M06.022	Rheumatoid arthritis without rheumatoid factor, left elbow	Diagnosis	ICD-10-CM
M06.029	Rheumatoid arthritis without rheumatoid factor, unspecified elbow	Diagnosis	ICD-10-CM
M06.031	Rheumatoid arthritis without rheumatoid factor, right wrist	Diagnosis	ICD-10-CM
M06.032	Rheumatoid arthritis without rheumatoid factor, left wrist	Diagnosis	ICD-10-CM
M06.039	Rheumatoid arthritis without rheumatoid factor, unspecified wrist	Diagnosis	ICD-10-CM
M06.041	Rheumatoid arthritis without rheumatoid factor, right hand	Diagnosis	ICD-10-CM
M06.042	Rheumatoid arthritis without rheumatoid factor, left hand	Diagnosis	ICD-10-CM
M06.049	Rheumatoid arthritis without rheumatoid factor, unspecified hand	Diagnosis	ICD-10-CM
M06.051	Rheumatoid arthritis without rheumatoid factor, right hip	Diagnosis	ICD-10-CM
M06.052	Rheumatoid arthritis without rheumatoid factor, left hip	Diagnosis	ICD-10-CM
M06.059	Rheumatoid arthritis without rheumatoid factor, unspecified hip	Diagnosis	ICD-10-CM
M06.061	Rheumatoid arthritis without rheumatoid factor, right knee	Diagnosis	ICD-10-CM
M06.062	Rheumatoid arthritis without rheumatoid factor, left knee	Diagnosis	ICD-10-CM
M06.069	Rheumatoid arthritis without rheumatoid factor, unspecified knee	Diagnosis	ICD-10-CM
M06.071	Rheumatoid arthritis without rheumatoid factor, right ankle and foot	Diagnosis	ICD-10-CM
M06.072	Rheumatoid arthritis without rheumatoid factor, left ankle and foot	Diagnosis	ICD-10-CM
M06.079	Rheumatoid arthritis without rheumatoid factor, unspecified ankle and foot	Diagnosis	ICD-10-CM
M06.08	Rheumatoid arthritis without rheumatoid factor, vertebrae	Diagnosis	ICD-10-CM
M06.09	Rheumatoid arthritis without rheumatoid factor, multiple sites	Diagnosis	ICD-10-CM
M06.1	Adult-onset Still's disease	Diagnosis	ICD-10-CM
M06.20	Rheumatoid bursitis, unspecified site	Diagnosis	ICD-10-CM
M06.211	Rheumatoid bursitis, right shoulder	Diagnosis	ICD-10-CM
M06.212	Rheumatoid bursitis, left shoulder	Diagnosis	ICD-10-CM
M06.219	Rheumatoid bursitis, unspecified shoulder	Diagnosis	ICD-10-CM
M06.221	Rheumatoid bursitis, right elbow	Diagnosis	ICD-10-CM
M06.222	Rheumatoid bursitis, left elbow	Diagnosis	ICD-10-CM
M06.229	Rheumatoid bursitis, unspecified elbow	Diagnosis	ICD-10-CM
M06.231	Rheumatoid bursitis, right wrist	Diagnosis	ICD-10-CM
M06.232	Rheumatoid bursitis, left wrist	Diagnosis	ICD-10-CM
M06.239	Rheumatoid bursitis, unspecified wrist	Diagnosis	ICD-10-CM
M06.241	Rheumatoid bursitis, right hand	Diagnosis	ICD-10-CM
M06.242	Rheumatoid bursitis, left hand	Diagnosis	ICD-10-CM
M06.249	Rheumatoid bursitis, unspecified hand	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M06.251	Rheumatoid bursitis, right hip	Diagnosis	ICD-10-CM
M06.252	Rheumatoid bursitis, left hip	Diagnosis	ICD-10-CM
M06.259	Rheumatoid bursitis, unspecified hip	Diagnosis	ICD-10-CM
M06.261	Rheumatoid bursitis, right knee	Diagnosis	ICD-10-CM
M06.262	Rheumatoid bursitis, left knee	Diagnosis	ICD-10-CM
M06.269	Rheumatoid bursitis, unspecified knee	Diagnosis	ICD-10-CM
M06.271	Rheumatoid bursitis, right ankle and foot	Diagnosis	ICD-10-CM
M06.272	Rheumatoid bursitis, left ankle and foot	Diagnosis	ICD-10-CM
M06.279	Rheumatoid bursitis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M06.28	Rheumatoid bursitis, vertebrae	Diagnosis	ICD-10-CM
M06.29	Rheumatoid bursitis, multiple sites	Diagnosis	ICD-10-CM
M06.30	Rheumatoid nodule, unspecified site	Diagnosis	ICD-10-CM
M06.311	Rheumatoid nodule, right shoulder	Diagnosis	ICD-10-CM
M06.312	Rheumatoid nodule, left shoulder	Diagnosis	ICD-10-CM
M06.319	Rheumatoid nodule, unspecified shoulder	Diagnosis	ICD-10-CM
M06.321	Rheumatoid nodule, right elbow	Diagnosis	ICD-10-CM
M06.322	Rheumatoid nodule, left elbow	Diagnosis	ICD-10-CM
M06.329	Rheumatoid nodule, unspecified elbow	Diagnosis	ICD-10-CM
M06.331	Rheumatoid nodule, right wrist	Diagnosis	ICD-10-CM
M06.332	Rheumatoid nodule, left wrist	Diagnosis	ICD-10-CM
M06.339	Rheumatoid nodule, unspecified wrist	Diagnosis	ICD-10-CM
M06.341	Rheumatoid nodule, right hand	Diagnosis	ICD-10-CM
M06.342	Rheumatoid nodule, left hand	Diagnosis	ICD-10-CM
M06.349	Rheumatoid nodule, unspecified hand	Diagnosis	ICD-10-CM
M06.351	Rheumatoid nodule, right hip	Diagnosis	ICD-10-CM
M06.352	Rheumatoid nodule, left hip	Diagnosis	ICD-10-CM
M06.359	Rheumatoid nodule, unspecified hip	Diagnosis	ICD-10-CM
M06.361	Rheumatoid nodule, right knee	Diagnosis	ICD-10-CM
M06.362	Rheumatoid nodule, left knee	Diagnosis	ICD-10-CM
M06.369	Rheumatoid nodule, unspecified knee	Diagnosis	ICD-10-CM
M06.371	Rheumatoid nodule, right ankle and foot	Diagnosis	ICD-10-CM
M06.372	Rheumatoid nodule, left ankle and foot	Diagnosis	ICD-10-CM
M06.379	Rheumatoid nodule, unspecified ankle and foot	Diagnosis	ICD-10-CM
M06.38	Rheumatoid nodule, vertebrae	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M06.39	Rheumatoid nodule, multiple sites	Diagnosis	ICD-10-CM
M06.80	Other specified rheumatoid arthritis, unspecified site	Diagnosis	ICD-10-CM
M06.811	Other specified rheumatoid arthritis, right shoulder	Diagnosis	ICD-10-CM
M06.812	Other specified rheumatoid arthritis, left shoulder	Diagnosis	ICD-10-CM
M06.819	Other specified rheumatoid arthritis, unspecified shoulder	Diagnosis	ICD-10-CM
M06.821	Other specified rheumatoid arthritis, right elbow	Diagnosis	ICD-10-CM
M06.822	Other specified rheumatoid arthritis, left elbow	Diagnosis	ICD-10-CM
M06.829	Other specified rheumatoid arthritis, unspecified elbow	Diagnosis	ICD-10-CM
M06.831	Other specified rheumatoid arthritis, right wrist	Diagnosis	ICD-10-CM
M06.832	Other specified rheumatoid arthritis, left wrist	Diagnosis	ICD-10-CM
M06.839	Other specified rheumatoid arthritis, unspecified wrist	Diagnosis	ICD-10-CM
M06.841	Other specified rheumatoid arthritis, right hand	Diagnosis	ICD-10-CM
M06.842	Other specified rheumatoid arthritis, left hand	Diagnosis	ICD-10-CM
M06.849	Other specified rheumatoid arthritis, unspecified hand	Diagnosis	ICD-10-CM
M06.851	Other specified rheumatoid arthritis, right hip	Diagnosis	ICD-10-CM
M06.852	Other specified rheumatoid arthritis, left hip	Diagnosis	ICD-10-CM
M06.859	Other specified rheumatoid arthritis, unspecified hip	Diagnosis	ICD-10-CM
M06.861	Other specified rheumatoid arthritis, right knee	Diagnosis	ICD-10-CM
M06.862	Other specified rheumatoid arthritis, left knee	Diagnosis	ICD-10-CM
M06.869	Other specified rheumatoid arthritis, unspecified knee	Diagnosis	ICD-10-CM
M06.871	Other specified rheumatoid arthritis, right ankle and foot	Diagnosis	ICD-10-CM
M06.872	Other specified rheumatoid arthritis, left ankle and foot	Diagnosis	ICD-10-CM
M06.879	Other specified rheumatoid arthritis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M06.88	Other specified rheumatoid arthritis, vertebrae	Diagnosis	ICD-10-CM
M06.89	Other specified rheumatoid arthritis, multiple sites	Diagnosis	ICD-10-CM
M06.9	Rheumatoid arthritis, unspecified	Diagnosis	ICD-10-CM
M08.00	Unspecified juvenile rheumatoid arthritis of unspecified site	Diagnosis	ICD-10-CM
M08.011	Unspecified juvenile rheumatoid arthritis, right shoulder	Diagnosis	ICD-10-CM
M08.012	Unspecified juvenile rheumatoid arthritis, left shoulder	Diagnosis	ICD-10-CM
M08.019	Unspecified juvenile rheumatoid arthritis, unspecified shoulder	Diagnosis	ICD-10-CM
M08.021	Unspecified juvenile rheumatoid arthritis, right elbow	Diagnosis	ICD-10-CM
M08.022	Unspecified juvenile rheumatoid arthritis, left elbow	Diagnosis	ICD-10-CM
M08.029	Unspecified juvenile rheumatoid arthritis, unspecified elbow	Diagnosis	ICD-10-CM
M08.031	Unspecified juvenile rheumatoid arthritis, right wrist	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M08.032	Unspecified juvenile rheumatoid arthritis, left wrist	Diagnosis	ICD-10-CM
M08.039	Unspecified juvenile rheumatoid arthritis, unspecified wrist	Diagnosis	ICD-10-CM
M08.041	Unspecified juvenile rheumatoid arthritis, right hand	Diagnosis	ICD-10-CM
M08.042	Unspecified juvenile rheumatoid arthritis, left hand	Diagnosis	ICD-10-CM
M08.049	Unspecified juvenile rheumatoid arthritis, unspecified hand	Diagnosis	ICD-10-CM
M08.051	Unspecified juvenile rheumatoid arthritis, right hip	Diagnosis	ICD-10-CM
M08.052	Unspecified juvenile rheumatoid arthritis, left hip	Diagnosis	ICD-10-CM
M08.059	Unspecified juvenile rheumatoid arthritis, unspecified hip	Diagnosis	ICD-10-CM
M08.061	Unspecified juvenile rheumatoid arthritis, right knee	Diagnosis	ICD-10-CM
M08.062	Unspecified juvenile rheumatoid arthritis, left knee	Diagnosis	ICD-10-CM
M08.069	Unspecified juvenile rheumatoid arthritis, unspecified knee	Diagnosis	ICD-10-CM
M08.071	Unspecified juvenile rheumatoid arthritis, right ankle and foot	Diagnosis	ICD-10-CM
M08.072	Unspecified juvenile rheumatoid arthritis, left ankle and foot	Diagnosis	ICD-10-CM
M08.079	Unspecified juvenile rheumatoid arthritis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M08.08	Unspecified juvenile rheumatoid arthritis, vertebrae	Diagnosis	ICD-10-CM
M08.09	Unspecified juvenile rheumatoid arthritis, multiple sites	Diagnosis	ICD-10-CM
M08.1	Juvenile ankylosing spondylitis	Diagnosis	ICD-10-CM
M08.20	Juvenile rheumatoid arthritis with systemic onset, unspecified site	Diagnosis	ICD-10-CM
M08.211	Juvenile rheumatoid arthritis with systemic onset, right shoulder	Diagnosis	ICD-10-CM
M08.212	Juvenile rheumatoid arthritis with systemic onset, left shoulder	Diagnosis	ICD-10-CM
M08.219	Juvenile rheumatoid arthritis with systemic onset, unspecified shoulder	Diagnosis	ICD-10-CM
M08.221	Juvenile rheumatoid arthritis with systemic onset, right elbow	Diagnosis	ICD-10-CM
M08.222	Juvenile rheumatoid arthritis with systemic onset, left elbow	Diagnosis	ICD-10-CM
M08.229	Juvenile rheumatoid arthritis with systemic onset, unspecified elbow	Diagnosis	ICD-10-CM
M08.231	Juvenile rheumatoid arthritis with systemic onset, right wrist	Diagnosis	ICD-10-CM
M08.232	Juvenile rheumatoid arthritis with systemic onset, left wrist	Diagnosis	ICD-10-CM
M08.239	Juvenile rheumatoid arthritis with systemic onset, unspecified wrist	Diagnosis	ICD-10-CM
M08.241	Juvenile rheumatoid arthritis with systemic onset, right hand	Diagnosis	ICD-10-CM
M08.242	Juvenile rheumatoid arthritis with systemic onset, left hand	Diagnosis	ICD-10-CM
M08.249	Juvenile rheumatoid arthritis with systemic onset, unspecified hand	Diagnosis	ICD-10-CM
M08.251	Juvenile rheumatoid arthritis with systemic onset, right hip	Diagnosis	ICD-10-CM
M08.252	Juvenile rheumatoid arthritis with systemic onset, left hip	Diagnosis	ICD-10-CM
M08.259	Juvenile rheumatoid arthritis with systemic onset, unspecified hip	Diagnosis	ICD-10-CM
M08.261	Juvenile rheumatoid arthritis with systemic onset, right knee	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M08.262	Juvenile rheumatoid arthritis with systemic onset, left knee	Diagnosis	ICD-10-CM
M08.269	Juvenile rheumatoid arthritis with systemic onset, unspecified knee	Diagnosis	ICD-10-CM
M08.271	Juvenile rheumatoid arthritis with systemic onset, right ankle and foot	Diagnosis	ICD-10-CM
M08.272	Juvenile rheumatoid arthritis with systemic onset, left ankle and foot	Diagnosis	ICD-10-CM
M08.279	Juvenile rheumatoid arthritis with systemic onset, unspecified ankle and foot	Diagnosis	ICD-10-CM
M08.28	Juvenile rheumatoid arthritis with systemic onset, vertebrae	Diagnosis	ICD-10-CM
M08.29	Juvenile rheumatoid arthritis with systemic onset, multiple sites	Diagnosis	ICD-10-CM
M08.3	Juvenile rheumatoid polyarthritis (seronegative)	Diagnosis	ICD-10-CM
M08.40	Pauciarticular juvenile rheumatoid arthritis, unspecified site	Diagnosis	ICD-10-CM
M08.411	Pauciarticular juvenile rheumatoid arthritis, right shoulder	Diagnosis	ICD-10-CM
M08.412	Pauciarticular juvenile rheumatoid arthritis, left shoulder	Diagnosis	ICD-10-CM
M08.419	Pauciarticular juvenile rheumatoid arthritis, unspecified shoulder	Diagnosis	ICD-10-CM
M08.421	Pauciarticular juvenile rheumatoid arthritis, right elbow	Diagnosis	ICD-10-CM
M08.422	Pauciarticular juvenile rheumatoid arthritis, left elbow	Diagnosis	ICD-10-CM
M08.429	Pauciarticular juvenile rheumatoid arthritis, unspecified elbow	Diagnosis	ICD-10-CM
M08.431	Pauciarticular juvenile rheumatoid arthritis, right wrist	Diagnosis	ICD-10-CM
M08.432	Pauciarticular juvenile rheumatoid arthritis, left wrist	Diagnosis	ICD-10-CM
M08.439	Pauciarticular juvenile rheumatoid arthritis, unspecified wrist	Diagnosis	ICD-10-CM
M08.441	Pauciarticular juvenile rheumatoid arthritis, right hand	Diagnosis	ICD-10-CM
M08.442	Pauciarticular juvenile rheumatoid arthritis, left hand	Diagnosis	ICD-10-CM
M08.449	Pauciarticular juvenile rheumatoid arthritis, unspecified hand	Diagnosis	ICD-10-CM
M08.451	Pauciarticular juvenile rheumatoid arthritis, right hip	Diagnosis	ICD-10-CM
M08.452	Pauciarticular juvenile rheumatoid arthritis, left hip	Diagnosis	ICD-10-CM
M08.459	Pauciarticular juvenile rheumatoid arthritis, unspecified hip	Diagnosis	ICD-10-CM
M08.461	Pauciarticular juvenile rheumatoid arthritis, right knee	Diagnosis	ICD-10-CM
M08.462	Pauciarticular juvenile rheumatoid arthritis, left knee	Diagnosis	ICD-10-CM
M08.469	Pauciarticular juvenile rheumatoid arthritis, unspecified knee	Diagnosis	ICD-10-CM
M08.471	Pauciarticular juvenile rheumatoid arthritis, right ankle and foot	Diagnosis	ICD-10-CM
M08.472	Pauciarticular juvenile rheumatoid arthritis, left ankle and foot	Diagnosis	ICD-10-CM
M08.479	Pauciarticular juvenile rheumatoid arthritis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M08.48	Pauciarticular juvenile rheumatoid arthritis, vertebrae	Diagnosis	ICD-10-CM
M08.80	Other juvenile arthritis, unspecified site	Diagnosis	ICD-10-CM
M08.811	Other juvenile arthritis, right shoulder	Diagnosis	ICD-10-CM
M08.812	Other juvenile arthritis, left shoulder	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M08.819	Other juvenile arthritis, unspecified shoulder	Diagnosis	ICD-10-CM
M08.821	Other juvenile arthritis, right elbow	Diagnosis	ICD-10-CM
M08.822	Other juvenile arthritis, left elbow	Diagnosis	ICD-10-CM
M08.829	Other juvenile arthritis, unspecified elbow	Diagnosis	ICD-10-CM
M08.831	Other juvenile arthritis, right wrist	Diagnosis	ICD-10-CM
M08.832	Other juvenile arthritis, left wrist	Diagnosis	ICD-10-CM
M08.839	Other juvenile arthritis, unspecified wrist	Diagnosis	ICD-10-CM
M08.841	Other juvenile arthritis, right hand	Diagnosis	ICD-10-CM
M08.842	Other juvenile arthritis, left hand	Diagnosis	ICD-10-CM
M08.849	Other juvenile arthritis, unspecified hand	Diagnosis	ICD-10-CM
M08.851	Other juvenile arthritis, right hip	Diagnosis	ICD-10-CM
M08.852	Other juvenile arthritis, left hip	Diagnosis	ICD-10-CM
M08.859	Other juvenile arthritis, unspecified hip	Diagnosis	ICD-10-CM
M08.861	Other juvenile arthritis, right knee	Diagnosis	ICD-10-CM
M08.862	Other juvenile arthritis, left knee	Diagnosis	ICD-10-CM
M08.869	Other juvenile arthritis, unspecified knee	Diagnosis	ICD-10-CM
M08.871	Other juvenile arthritis, right ankle and foot	Diagnosis	ICD-10-CM
M08.872	Other juvenile arthritis, left ankle and foot	Diagnosis	ICD-10-CM
M08.879	Other juvenile arthritis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M08.88	Other juvenile arthritis, other specified site	Diagnosis	ICD-10-CM
M08.89	Other juvenile arthritis, multiple sites	Diagnosis	ICD-10-CM
M08.90	Juvenile arthritis, unspecified, unspecified site	Diagnosis	ICD-10-CM
M08.911	Juvenile arthritis, unspecified, right shoulder	Diagnosis	ICD-10-CM
M08.912	Juvenile arthritis, unspecified, left shoulder	Diagnosis	ICD-10-CM
M08.919	Juvenile arthritis, unspecified, unspecified shoulder	Diagnosis	ICD-10-CM
M08.921	Juvenile arthritis, unspecified, right elbow	Diagnosis	ICD-10-CM
M08.922	Juvenile arthritis, unspecified, left elbow	Diagnosis	ICD-10-CM
M08.929	Juvenile arthritis, unspecified, unspecified elbow	Diagnosis	ICD-10-CM
M08.931	Juvenile arthritis, unspecified, right wrist	Diagnosis	ICD-10-CM
M08.932	Juvenile arthritis, unspecified, left wrist	Diagnosis	ICD-10-CM
M08.939	Juvenile arthritis, unspecified, unspecified wrist	Diagnosis	ICD-10-CM
M08.941	Juvenile arthritis, unspecified, right hand	Diagnosis	ICD-10-CM
M08.942	Juvenile arthritis, unspecified, left hand	Diagnosis	ICD-10-CM
M08.949	Juvenile arthritis, unspecified, unspecified hand	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M08.951	Juvenile arthritis, unspecified, right hip	Diagnosis	ICD-10-CM
M08.952	Juvenile arthritis, unspecified, left hip	Diagnosis	ICD-10-CM
M08.959	Juvenile arthritis, unspecified, unspecified hip	Diagnosis	ICD-10-CM
M08.961	Juvenile arthritis, unspecified, right knee	Diagnosis	ICD-10-CM
M08.962	Juvenile arthritis, unspecified, left knee	Diagnosis	ICD-10-CM
M08.969	Juvenile arthritis, unspecified, unspecified knee	Diagnosis	ICD-10-CM
M08.971	Juvenile arthritis, unspecified, right ankle and foot	Diagnosis	ICD-10-CM
M08.972	Juvenile arthritis, unspecified, left ankle and foot	Diagnosis	ICD-10-CM
M08.979	Juvenile arthritis, unspecified, unspecified ankle and foot	Diagnosis	ICD-10-CM
M08.98	Juvenile arthritis, unspecified, vertebrae	Diagnosis	ICD-10-CM
M08.99	Juvenile arthritis, unspecified, multiple sites	Diagnosis	ICD-10-CM
M45.0	Ankylosing spondylitis of multiple sites in spine	Diagnosis	ICD-10-CM
M45.1	Ankylosing spondylitis of occipito-atlanto-axial region	Diagnosis	ICD-10-CM
M45.2	Ankylosing spondylitis of cervical region	Diagnosis	ICD-10-CM
M45.3	Ankylosing spondylitis of cervicothoracic region	Diagnosis	ICD-10-CM
M45.4	Ankylosing spondylitis of thoracic region	Diagnosis	ICD-10-CM
M45.5	Ankylosing spondylitis of thoracolumbar region	Diagnosis	ICD-10-CM
M45.6	Ankylosing spondylitis lumbar region	Diagnosis	ICD-10-CM
M45.7	Ankylosing spondylitis of lumbosacral region	Diagnosis	ICD-10-CM
M45.8	Ankylosing spondylitis sacral and sacrococcygeal region	Diagnosis	ICD-10-CM
M45.9	Ankylosing spondylitis of unspecified sites in spine	Diagnosis	ICD-10-CM
Multiple Sclerosis			
G35	Multiple sclerosis	Diagnosis	ICD-10-CM
G36.0	Neuromyelitis optica [Devic]	Diagnosis	ICD-10-CM
G36.1	Acute and subacute hemorrhagic leukoencephalitis [Hurst]	Diagnosis	ICD-10-CM
G36.8	Other specified acute disseminated demyelination	Diagnosis	ICD-10-CM
G36.9	Acute disseminated demyelination, unspecified	Diagnosis	ICD-10-CM
G37.1	Central demyelination of corpus callosum	Diagnosis	ICD-10-CM
G37.2	Central pontine myelinolysis	Diagnosis	ICD-10-CM
G37.3	Acute transverse myelitis in demyelinating disease of central nervous system	Diagnosis	ICD-10-CM
G37.4	Subacute necrotizing myelitis of central nervous system	Diagnosis	ICD-10-CM
G37.8	Other specified demyelinating diseases of central nervous system	Diagnosis	ICD-10-CM
G37.9	Demyelinating disease of central nervous system, unspecified	Diagnosis	ICD-10-CM
HIV			

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
B20	Human immunodeficiency virus [HIV] disease	Diagnosis	ICD-10-CM
B97.35	Human immunodeficiency virus, type 2 [HIV 2] as the cause of diseases classified	Diagnosis	ICD-10-CM
Z21	Asymptomatic human immunodeficiency virus [HIV] infection status	Diagnosis	ICD-10-CM
Coronary Artery Disease			
0210083	Bypass Coronary Artery, One Artery from Coronary Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0210088	Bypass Coronary Artery, One Artery from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0210089	Bypass Coronary Artery, One Artery from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021008C	Bypass Coronary Artery, One Artery from Thoracic Artery with Zooplastic Tissue, Open	Procedure	ICD-10-PCS
021008F	Bypass Coronary Artery, One Artery from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021008W	Bypass Coronary Artery, One Artery from Aorta with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0210093	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0210098	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0210099	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021009C	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021009F	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021009W	Bypass Coronary Artery, One Artery from Aorta with Autologous Venous Tissue, Open	Procedure	ICD-10-PCS
02100A3	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100A8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100A9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100AC	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02100AF	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02100AW	Bypass Coronary Artery, One Artery from Aorta with Autologous Arterial Tissue, Open	Procedure	ICD-10-PCS
02100J3	Bypass Coronary Artery, One Artery from Coronary Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100J8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100J9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100JC	Bypass Coronary Artery, One Artery from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100JF	Bypass Coronary Artery, One Artery from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02100JW	Bypass Coronary Artery, One Artery from Aorta with Synthetic Substitute, Open	Procedure	ICD-10-PCS
02100K3	Bypass Coronary Artery, One Artery from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100K8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100K9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100KC	Bypass Coronary Artery, One Artery from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100KF	Bypass Coronary Artery, One Artery from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100KW	Bypass Coronary Artery, One Artery from Aorta with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02100Z3	Bypass Coronary Artery, One Artery from Coronary Artery, Open Approach	Procedure	ICD-10-PCS
02100Z8	Bypass Coronary Artery, One Artery from Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02100Z9	Bypass Coronary Artery, One Artery from Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02100ZC	Bypass Coronary Artery, One Artery from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02100ZF	Bypass Coronary Artery, One Artery from Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
0210483	Bypass Coronary Artery, One Artery from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0210488	Bypass Coronary Artery, One Artery from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210489	Bypass Coronary Artery, One Artery from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021048C	Bypass Coronary Artery, One Artery from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021048F	Bypass Coronary Artery, One Artery from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021048W	Bypass Coronary Artery, One Artery from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210493	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210498	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0210499	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021049C	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021049F	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021049W	Bypass Coronary Artery, One Artery from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104A3	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104A8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104A9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104AC	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104AF	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104AW	Bypass Coronary Artery, One Artery from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02104J3	Bypass Coronary Artery, One Artery from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104J8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104J9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104JC	Bypass Coronary Artery, One Artery from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104JF	Bypass Coronary Artery, One Artery from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104JW	Bypass Coronary Artery, One Artery from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104K3	Bypass Coronary Artery, One Artery from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104K8	Bypass Coronary Artery, One Artery from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104K9	Bypass Coronary Artery, One Artery from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104KC	Bypass Coronary Artery, One Artery from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104KF	Bypass Coronary Artery, One Artery from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104KW	Bypass Coronary Artery, One Artery from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104Z3	Bypass Coronary Artery, One Artery from Coronary Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02104Z8	Bypass Coronary Artery, One Artery from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104Z9	Bypass Coronary Artery, One Artery from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02104ZC	Bypass Coronary Artery, One Artery from Thoracic Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02104ZF	Bypass Coronary Artery, One Artery from Abdominal Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0211083	Bypass Coronary Artery, Two Arteries from Coronary Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0211088	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0211089	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021108C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021108F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021108W	Bypass Coronary Artery, Two Arteries from Aorta with Zooplastic Tissue, Open	Procedure	ICD-10-PCS
0211093	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0211098	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0211099	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021109C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021109F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021109W	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02110A3	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110A8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110A9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110AC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110AF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110AW	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02110J3	Bypass Coronary Artery, Two Arteries from Coronary Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02110J8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110J9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110JC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110JF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02110JW	Bypass Coronary Artery, Two Arteries from Aorta with Synthetic Substitute, Open	Procedure	ICD-10-PCS
02110K3	Bypass Coronary Artery, Two Arteries from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110K8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110K9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110KC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110KF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110KW	Bypass Coronary Artery, Two Arteries from Aorta with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02110Z3	Bypass Coronary Artery, Two Arteries from Coronary Artery, Open Approach	Procedure	ICD-10-PCS
02110Z8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02110Z9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02110ZC	Bypass Coronary Artery, Two Arteries from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02110ZF	Bypass Coronary Artery, Two Arteries from Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
0211483	Bypass Coronary Artery, Two Arteries from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211488	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211489	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021148C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
021148F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021148W	Bypass Coronary Artery, Two Arteries from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211493	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211498	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0211499	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021149C	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021149F	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021149W	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114A3	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114A8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114A9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114AC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114AF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114AW	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114J3	Bypass Coronary Artery, Two Arteries from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114J8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114J9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02114JC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114JF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114JW	Bypass Coronary Artery, Two Arteries from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114K3	Bypass Coronary Artery, Two Arteries from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114K8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114K9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114KC	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114KF	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114KW	Bypass Coronary Artery, Two Arteries from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114Z3	Bypass Coronary Artery, Two Arteries from Coronary Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02114Z8	Bypass Coronary Artery, Two Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114Z9	Bypass Coronary Artery, Two Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02114ZC	Bypass Coronary Artery, Two Arteries from Thoracic Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02114ZF	Bypass Coronary Artery, Two Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212083	Bypass Coronary Artery, Three Arteries from Coronary Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0212088	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0212089	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021208C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
021208F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021208W	Bypass Coronary Artery, Three Arteries from Aorta with Zooplastic Tissue, Open	Procedure	ICD-10-PCS
0212093	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0212098	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0212099	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021209C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021209F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021209W	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02120A3	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120A8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120A9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120AC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120AF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120AW	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02120J3	Bypass Coronary Artery, Three Arteries from Coronary Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120J8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120J9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120JC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02120JF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02120JW	Bypass Coronary Artery, Three Arteries from Aorta with Synthetic Substitute, Open	Procedure	ICD-10-PCS
02120K3	Bypass Coronary Artery, Three Arteries from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120K8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120K9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120KC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120KF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120KW	Bypass Coronary Artery, Three Arteries from Aorta with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02120Z3	Bypass Coronary Artery, Three Arteries from Coronary Artery, Open Approach	Procedure	ICD-10-PCS
02120Z8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02120Z9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
02120ZC	Bypass Coronary Artery, Three Arteries from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02120ZF	Bypass Coronary Artery, Three Arteries from Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
0212483	Bypass Coronary Artery, Three Arteries from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212488	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212489	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021248C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021248F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021248W	Bypass Coronary Artery, Three Arteries from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212493	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0212498	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0212499	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021249C	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021249F	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021249W	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124A3	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124A8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124A9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124AC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124AF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124AW	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124J3	Bypass Coronary Artery, Three Arteries from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124J8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124J9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124JC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124JF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124JW	Bypass Coronary Artery, Three Arteries from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02124K3	Bypass Coronary Artery, Three Arteries from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124K8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124K9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124KC	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124KF	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124KW	Bypass Coronary Artery, Three Arteries from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124Z3	Bypass Coronary Artery, Three Arteries from Coronary Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124Z8	Bypass Coronary Artery, Three Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124Z9	Bypass Coronary Artery, Three Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124ZC	Bypass Coronary Artery, Three Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02124ZF	Bypass Coronary Artery, Three Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213083	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0213088	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
0213089	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021308C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021308F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021308W	Bypass Coronary Artery, Four or More Arteries from Aorta with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0213093	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0213098	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
0213099	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021309C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021309F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
021309W	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Venous Tissue, Open Approach	Procedure	ICD-10-PCS
02130A3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130A8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130A9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130AC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130AF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130AW	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Arterial Tissue, Open Approach	Procedure	ICD-10-PCS
02130J3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130J8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130J9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130JC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130JF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02130JW	Bypass Coronary Artery, Four or More Arteries from Aorta with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
02130K3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130K8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130K9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130KC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130KF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130KW	Bypass Coronary Artery, Four or More Arteries from Aorta with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
02130Z3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery, Open Approach	Procedure	ICD-10-PCS
02130Z8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary, Open	Procedure	ICD-10-PCS
02130Z9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary, Open	Procedure	ICD-10-PCS
02130ZC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
02130ZF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery, Open	Procedure	ICD-10-PCS
0213483	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213488	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213489	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021348C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021348F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021348W	Bypass Coronary Artery, Four or More Arteries from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213493	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0213498	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0213499	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021349C	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021349F	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021349W	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134A3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134A8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134A9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134AC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134AF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134AW	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134J3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134J8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134J9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134JC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134JF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134JW	Bypass Coronary Artery, Four or More Arteries from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02134K3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134K8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134K9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134KC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134KF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134KW	Bypass Coronary Artery, Four or More Arteries from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134Z3	Bypass Coronary Artery, Four or More Arteries from Coronary Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134Z8	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134Z9	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134ZC	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02134ZF	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021K0Z8	Bypass Right Ventricle to Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
021K0Z9	Bypass Right Ventricle to Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
021K0ZC	Bypass Right Ventricle to Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
021K0ZF	Bypass Right Ventricle to Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
021K0ZW	Bypass Right Ventricle to Aorta, Open Approach	Procedure	ICD-10-PCS
021K4Z8	Bypass Right Ventricle to Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021K4Z9	Bypass Right Ventricle to Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021K4ZC	Bypass Right Ventricle to Thoracic Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021K4ZF	Bypass Right Ventricle to Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021K4ZW	Bypass Right Ventricle to Aorta, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L08P	Bypass Left Ventricle to Pulmonary Trunk with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021L08Q	Bypass Left Ventricle to Right Pulmonary Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
021L08R	Bypass Left Ventricle to Left Pulmonary Artery with Zooplastic Tissue, Open Approach	Procedure	ICD-10-PCS
021L09P	Bypass Left Ventricle to Pulmonary Trunk with Autologous Venous Tissue, Open	Procedure	ICD-10-PCS
021L09Q	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Venous Tissue, Open	Procedure	ICD-10-PCS
021L09R	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Venous Tissue, Open	Procedure	ICD-10-PCS
021L0AP	Bypass Left Ventricle to Pulmonary Trunk with Autologous Arterial Tissue, Open	Procedure	ICD-10-PCS
021L0AQ	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Arterial Tissue, Open	Procedure	ICD-10-PCS
021L0AR	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Arterial Tissue, Open	Procedure	ICD-10-PCS
021L0JP	Bypass Left Ventricle to Pulmonary Trunk with Synthetic Substitute, Open Approach	Procedure	ICD-10-PCS
021L0JQ	Bypass Left Ventricle to Right Pulmonary Artery with Synthetic Substitute, Open	Procedure	ICD-10-PCS
021L0JR	Bypass Left Ventricle to Left Pulmonary Artery with Synthetic Substitute, Open	Procedure	ICD-10-PCS
021L0KP	Bypass Left Ventricle to Pulmonary Trunk with Nonautologous Tissue Substitute, Open	Procedure	ICD-10-PCS
021L0KQ	Bypass Left Ventricle to Right Pulmonary Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
021L0KR	Bypass Left Ventricle to Left Pulmonary Artery with Nonautologous Tissue Substitute, Open Approach	Procedure	ICD-10-PCS
021L0Z8	Bypass Left Ventricle to Right Internal Mammary, Open Approach	Procedure	ICD-10-PCS
021L0Z9	Bypass Left Ventricle to Left Internal Mammary, Open Approach	Procedure	ICD-10-PCS
021L0ZC	Bypass Left Ventricle to Thoracic Artery, Open Approach	Procedure	ICD-10-PCS
021L0ZF	Bypass Left Ventricle to Abdominal Artery, Open Approach	Procedure	ICD-10-PCS
021L0ZP	Bypass Left Ventricle to Pulmonary Trunk, Open Approach	Procedure	ICD-10-PCS
021L0ZQ	Bypass Left Ventricle to Right Pulmonary Artery, Open Approach	Procedure	ICD-10-PCS
021L0ZR	Bypass Left Ventricle to Left Pulmonary Artery, Open Approach	Procedure	ICD-10-PCS
021L48P	Bypass Left Ventricle to Pulmonary Trunk with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L48Q	Bypass Left Ventricle to Right Pulmonary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L48R	Bypass Left Ventricle to Left Pulmonary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L49P	Bypass Left Ventricle to Pulmonary Trunk with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L49Q	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L49R	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
021L4AP	Bypass Left Ventricle to Pulmonary Trunk with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4AQ	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4AR	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4JP	Bypass Left Ventricle to Pulmonary Trunk with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4JQ	Bypass Left Ventricle to Right Pulmonary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4JR	Bypass Left Ventricle to Left Pulmonary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4KP	Bypass Left Ventricle to Pulmonary Trunk with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4KQ	Bypass Left Ventricle to Right Pulmonary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4KR	Bypass Left Ventricle to Left Pulmonary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4Z8	Bypass Left Ventricle to Right Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4Z9	Bypass Left Ventricle to Left Internal Mammary, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4ZC	Bypass Left Ventricle to Thoracic Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4ZF	Bypass Left Ventricle to Abdominal Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4ZP	Bypass Left Ventricle to Pulmonary Trunk, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4ZQ	Bypass Left Ventricle to Right Pulmonary Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
021L4ZR	Bypass Left Ventricle to Left Pulmonary Artery, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270046	Dilation of Coronary Artery, One Artery, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027004Z	Dilation of Coronary Artery, One Artery with Drug-eluting Intraluminal Device, Open	Procedure	ICD-10-PCS
0270056	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027005Z	Dilation of Coronary Artery, One Artery with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0270066	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
027006Z	Dilation of Coronary Artery, One Artery with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0270076	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027007Z	Dilation of Coronary Artery, One Artery with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700D6	Dilation of Coronary Artery, One Artery, Bifurcation, with Intraluminal Device, Open	Procedure	ICD-10-PCS
02700DZ	Dilation of Coronary Artery, One Artery with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02700E6	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700EZ	Dilation of Coronary Artery, One Artery with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700F6	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700FZ	Dilation of Coronary Artery, One Artery with Three Intraluminal Devices, Open	Procedure	ICD-10-PCS
02700G6	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02700GZ	Dilation of Coronary Artery, One Artery with Four or More Intraluminal Devices, Open	Procedure	ICD-10-PCS
02700T6	Dilation of Coronary Artery, One Artery, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02700TZ	Dilation of Coronary Artery, One Artery with Radioactive Intraluminal Device, Open	Procedure	ICD-10-PCS
02700Z6	Dilation of Coronary Artery, One Artery, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02700ZZ	Dilation of Coronary Artery, One Artery, Open Approach	Procedure	ICD-10-PCS
0270346	Dilation of Coronary Artery, One Artery, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027034Z	Dilation of Coronary Artery, One Artery with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0270356	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027035Z	Dilation of Coronary Artery, One Artery with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0270366	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027036Z	Dilation of Coronary Artery, One Artery with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0270376	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027037Z	Dilation of Coronary Artery, One Artery with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703D6	Dilation of Coronary Artery, One Artery, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02703DZ	Dilation of Coronary Artery, One Artery with Intraluminal Device, Percutaneous	Procedure	ICD-10-PCS
02703E6	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703EZ	Dilation of Coronary Artery, One Artery with Two Intraluminal Devices, Percutaneous	Procedure	ICD-10-PCS
02703F6	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703FZ	Dilation of Coronary Artery, One Artery with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703G6	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703GZ	Dilation of Coronary Artery, One Artery with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02703T6	Dilation of Coronary Artery, One Artery, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02703TZ	Dilation of Coronary Artery, One Artery with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0270446	Dilation of Coronary Artery, One Artery, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027044Z	Dilation of Coronary Artery, One Artery with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270456	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027045Z	Dilation of Coronary Artery, One Artery with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0270466	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027046Z	Dilation of Coronary Artery, One Artery with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0270476	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027047Z	Dilation of Coronary Artery, One Artery with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704D6	Dilation of Coronary Artery, One Artery, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704DZ	Dilation of Coronary Artery, One Artery with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704E6	Dilation of Coronary Artery, One Artery, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704EZ	Dilation of Coronary Artery, One Artery with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704F6	Dilation of Coronary Artery, One Artery, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704FZ	Dilation of Coronary Artery, One Artery with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704G6	Dilation of Coronary Artery, One Artery, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704GZ	Dilation of Coronary Artery, One Artery with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704T6	Dilation of Coronary Artery, One Artery, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02704TZ	Dilation of Coronary Artery, One Artery with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0271046	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027104Z	Dilation of Coronary Artery, Two Arteries with Drug-eluting Intraluminal Device, Open	Procedure	ICD-10-PCS
0271056	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027105Z	Dilation of Coronary Artery, Two Arteries with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0271066	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027106Z	Dilation of Coronary Artery, Two Arteries with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0271076	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027107Z	Dilation of Coronary Artery, Two Arteries with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710D6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Intraluminal Device, Open	Procedure	ICD-10-PCS
02710DZ	Dilation of Coronary Artery, Two Arteries with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02710E6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710EZ	Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices, Open	Procedure	ICD-10-PCS
02710F6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710FZ	Dilation of Coronary Artery, Two Arteries with Three Intraluminal Devices, Open	Procedure	ICD-10-PCS
02710G6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710GZ	Dilation of Coronary Artery, Two Arteries with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02710T6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02710TZ	Dilation of Coronary Artery, Two Arteries with Radioactive Intraluminal Device, Open	Procedure	ICD-10-PCS
02710Z6	Dilation of Coronary Artery, Two Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02710ZZ	Dilation of Coronary Artery, Two Arteries, Open Approach	Procedure	ICD-10-PCS
0271346	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027134Z	Dilation of Coronary Artery, Two Arteries with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0271356	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027135Z	Dilation of Coronary Artery, Two Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0271366	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027136Z	Dilation of Coronary Artery, Two Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0271376	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027137Z	Dilation of Coronary Artery, Two Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713D6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02713DZ	Dilation of Coronary Artery, Two Arteries with Intraluminal Device, Percutaneous	Procedure	ICD-10-PCS
02713E6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713EZ	Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713F6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713FZ	Dilation of Coronary Artery, Two Arteries with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713G6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713GZ	Dilation of Coronary Artery, Two Arteries with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02713T6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02713TZ	Dilation of Coronary Artery, Two Arteries with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0271446	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027144Z	Dilation of Coronary Artery, Two Arteries with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0271456	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027145Z	Dilation of Coronary Artery, Two Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0271466	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027146Z	Dilation of Coronary Artery, Two Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0271476	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027147Z	Dilation of Coronary Artery, Two Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714D6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714DZ	Dilation of Coronary Artery, Two Arteries with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714E6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714EZ	Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714F6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714FZ	Dilation of Coronary Artery, Two Arteries with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714G6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714GZ	Dilation of Coronary Artery, Two Arteries with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714T6	Dilation of Coronary Artery, Two Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02714TZ	Dilation of Coronary Artery, Two Arteries with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272046	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027204Z	Dilation of Coronary Artery, Three Arteries with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
0272056	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027205Z	Dilation of Coronary Artery, Three Arteries with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0272066	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
027206Z	Dilation of Coronary Artery, Three Arteries with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0272076	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027207Z	Dilation of Coronary Artery, Three Arteries with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720D6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02720DZ	Dilation of Coronary Artery, Three Arteries with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02720E6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720EZ	Dilation of Coronary Artery, Three Arteries with Two Intraluminal Devices, Open	Procedure	ICD-10-PCS
02720F6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720FZ	Dilation of Coronary Artery, Three Arteries with Three Intraluminal Devices, Open	Procedure	ICD-10-PCS
02720G6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720GZ	Dilation of Coronary Artery, Three Arteries with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02720T6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02720TZ	Dilation of Coronary Artery, Three Arteries with Radioactive Intraluminal Device, Open	Procedure	ICD-10-PCS
02720Z6	Dilation of Coronary Artery, Three Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02720ZZ	Dilation of Coronary Artery, Three Arteries, Open Approach	Procedure	ICD-10-PCS
0272346	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027234Z	Dilation of Coronary Artery, Three Arteries with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0272356	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027235Z	Dilation of Coronary Artery, Three Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0272366	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
027236Z	Dilation of Coronary Artery, Three Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0272376	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027237Z	Dilation of Coronary Artery, Three Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723D6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02723DZ	Dilation of Coronary Artery, Three Arteries with Intraluminal Device, Percutaneous	Procedure	ICD-10-PCS
02723E6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723EZ	Dilation of Coronary Artery, Three Arteries with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723F6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723FZ	Dilation of Coronary Artery, Three Arteries with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723G6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723GZ	Dilation of Coronary Artery, Three Arteries with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02723T6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02723TZ	Dilation of Coronary Artery, Three Arteries with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0272446	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027244Z	Dilation of Coronary Artery, Three Arteries with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272456	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027245Z	Dilation of Coronary Artery, Three Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272466	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
027246Z	Dilation of Coronary Artery, Three Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0272476	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027247Z	Dilation of Coronary Artery, Three Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724D6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724DZ	Dilation of Coronary Artery, Three Arteries with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724E6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724EZ	Dilation of Coronary Artery, Three Arteries with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724F6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724FZ	Dilation of Coronary Artery, Three Arteries with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724G6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724GZ	Dilation of Coronary Artery, Three Arteries with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724T6	Dilation of Coronary Artery, Three Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02724TZ	Dilation of Coronary Artery, Three Arteries with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273046	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
027304Z	Dilation of Coronary Artery, Four or More Arteries with Drug-eluting Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
0273056	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027305Z	Dilation of Coronary Artery, Four or More Arteries with Two Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0273066	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027306Z	Dilation of Coronary Artery, Four or More Arteries with Three Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
0273076	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
027307Z	Dilation of Coronary Artery, Four or More Arteries with Four or More Drug-eluting Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730D6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02730DZ	Dilation of Coronary Artery, Four or More Arteries with Intraluminal Device, Open	Procedure	ICD-10-PCS
02730E6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730EZ	Dilation of Coronary Artery, Four or More Arteries with Two Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730F6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730FZ	Dilation of Coronary Artery, Four or More Arteries with Three Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730G6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730GZ	Dilation of Coronary Artery, Four or More Arteries with Four or More Intraluminal Devices, Open Approach	Procedure	ICD-10-PCS
02730T6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02730TZ	Dilation of Coronary Artery, Four or More Arteries with Radioactive Intraluminal Device, Open Approach	Procedure	ICD-10-PCS
02730Z6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02730ZZ	Dilation of Coronary Artery, Four or More Arteries, Open Approach	Procedure	ICD-10-PCS
0273346	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
027334Z	Dilation of Coronary Artery, Four or More Arteries with Drug-eluting Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0273356	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027335Z	Dilation of Coronary Artery, Four or More Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0273366	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027336Z	Dilation of Coronary Artery, Four or More Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
0273376	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
027337Z	Dilation of Coronary Artery, Four or More Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733D6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733DZ	Dilation of Coronary Artery, Four or More Arteries with Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733E6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733EZ	Dilation of Coronary Artery, Four or More Arteries with Two Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733F6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733FZ	Dilation of Coronary Artery, Four or More Arteries with Three Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733G6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733GZ	Dilation of Coronary Artery, Four or More Arteries with Four or More Intraluminal Devices, Percutaneous Approach	Procedure	ICD-10-PCS
02733T6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
02733TZ	Dilation of Coronary Artery, Four or More Arteries with Radioactive Intraluminal Device, Percutaneous Approach	Procedure	ICD-10-PCS
0273446	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
027344Z	Dilation of Coronary Artery, Four or More Arteries with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273456	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027345Z	Dilation of Coronary Artery, Four or More Arteries with Two Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273466	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027346Z	Dilation of Coronary Artery, Four or More Arteries with Three Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0273476	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
027347Z	Dilation of Coronary Artery, Four or More Arteries with Four or More Drug-eluting Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734D6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734DZ	Dilation of Coronary Artery, Four or More Arteries with Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734E6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734EZ	Dilation of Coronary Artery, Four or More Arteries with Two Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734F6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734FZ	Dilation of Coronary Artery, Four or More Arteries with Three Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734G6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734GZ	Dilation of Coronary Artery, Four or More Arteries with Four or More Intraluminal Devices, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734T6	Dilation of Coronary Artery, Four or More Arteries, Bifurcation, with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02734TZ	Dilation of Coronary Artery, Four or More Arteries with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02C00Z6	Extirpation of Matter from Coronary Artery, One Artery, Bifurcation, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
02C00ZZ	Extirpation of Matter from Coronary Artery, One Artery, Open Approach	Procedure	ICD-10-PCS
02C03Z6	Extirpation of Matter from Coronary Artery, One Artery, Bifurcation, Percutaneous	Procedure	ICD-10-PCS
02C03ZZ	Extirpation of Matter from Coronary Artery, One Artery, Percutaneous Approach	Procedure	ICD-10-PCS
02C04Z6	Extirpation of Matter from Coronary Artery, One Artery, Bifurcation, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02C04ZZ	Extirpation of Matter from Coronary Artery, One Artery, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02C10Z6	Extirpation of Matter from Coronary Artery, Two Arteries, Bifurcation, Open Approach	Procedure	ICD-10-PCS
02C10ZZ	Extirpation of Matter from Coronary Artery, Two Arteries, Open Approach	Procedure	ICD-10-PCS
02C13Z6	Extirpation of Matter from Coronary Artery, Two Arteries, Bifurcation, Percutaneous	Procedure	ICD-10-PCS
02C13ZZ	Extirpation of Matter from Coronary Artery, Two Arteries, Percutaneous Approach	Procedure	ICD-10-PCS
02C14Z6	Extirpation of Matter from Coronary Artery, Two Arteries, Bifurcation, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02C14ZZ	Extirpation of Matter from Coronary Artery, Two Arteries, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02C20Z6	Extirpation of Matter from Coronary Artery, Three Arteries, Bifurcation, Open	Procedure	ICD-10-PCS
02C20ZZ	Extirpation of Matter from Coronary Artery, Three Arteries, Open Approach	Procedure	ICD-10-PCS
02C23Z6	Extirpation of Matter from Coronary Artery, Three Arteries, Bifurcation, Percutaneous	Procedure	ICD-10-PCS
02C23ZZ	Extirpation of Matter from Coronary Artery, Three Arteries, Percutaneous Approach	Procedure	ICD-10-PCS
02C24Z6	Extirpation of Matter from Coronary Artery, Three Arteries, Bifurcation, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02C24ZZ	Extirpation of Matter from Coronary Artery, Three Arteries, Percutaneous Endoscopic	Procedure	ICD-10-PCS
02C30Z6	Extirpation of Matter from Coronary Artery, Four or More Arteries, Bifurcation, Open	Procedure	ICD-10-PCS
02C30ZZ	Extirpation of Matter from Coronary Artery, Four or More Arteries, Open Approach	Procedure	ICD-10-PCS
02C33Z6	Extirpation of Matter from Coronary Artery, Four or More Arteries, Bifurcation, Percutaneous Approach	Procedure	ICD-10-PCS
02C33ZZ	Extirpation of Matter from Coronary Artery, Four or More Arteries, Percutaneous	Procedure	ICD-10-PCS
02C34Z6	Extirpation of Matter from Coronary Artery, Four or More Arteries, Bifurcation, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
02C34ZZ	Extirpation of Matter from Coronary Artery, Four or More Arteries, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
33510	Coronary artery bypass, vein only; single coronary venous graft	Procedure	CPT-4
33511	Coronary artery bypass, vein only; 2 coronary venous grafts	Procedure	CPT-4
33512	Coronary artery bypass, vein only; 3 coronary venous grafts	Procedure	CPT-4
33513	Coronary artery bypass, vein only; 4 coronary venous grafts	Procedure	CPT-4
33514	Coronary artery bypass, vein only; 5 coronary venous grafts	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
33516	Coronary artery bypass, vein only; 6 or more coronary venous grafts	Procedure	CPT-4
33517	Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)	Procedure	CPT-4
33518	Coronary artery bypass, using venous graft(s) and arterial graft(s); 2 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33519	Coronary artery bypass, using venous graft(s) and arterial graft(s); 3 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33520	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Single Graft	Procedure	CPT-4
33521	Coronary artery bypass, using venous graft(s) and arterial graft(s); 4 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33522	Coronary artery bypass, using venous graft(s) and arterial graft(s); 5 venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33523	Coronary artery bypass, using venous graft(s) and arterial graft(s); 6 or more venous grafts (List separately in addition to code for primary procedure)	Procedure	CPT-4
33525	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Two	Procedure	CPT-4
33528	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Three Or More Coronary Grafts	Procedure	CPT-4
33530	Reoperation, coronary artery bypass procedure or valve procedure, more than 1 month after original operation (List separately in addition to code for primary procedure)	Procedure	CPT-4
33533	Coronary artery bypass, using arterial graft(s); single arterial graft	Procedure	CPT-4
33534	Coronary artery bypass, using arterial graft(s); 2 coronary arterial grafts	Procedure	CPT-4
33535	Coronary artery bypass, using arterial graft(s); 3 coronary arterial grafts	Procedure	CPT-4
33536	Coronary artery bypass, using arterial graft(s); 4 or more coronary arterial grafts	Procedure	CPT-4
33560	Myocardial Operation Combined With Coronary Bypass Procedure	Procedure	CPT-4
33570	CORONARY ANGIOPLASTY W/BYPASS	Procedure	CPT-4
33572	Coronary endarterectomy, open, any method, of left anterior descending, circumflex, or right coronary artery performed in conjunction with coronary artery bypass graft procedure, each vessel (List separately in addition to primary procedure)	Procedure	CPT-4
33575	CORON ANGIOPLSTY W/BYPASS; COMBO W/VASCULARIZAT	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
34701	Endovascular repair of infrarenal aorta by deployment of an aorto-aortic tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the aortic bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the aortic bifurcation; for other than rupture (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	Procedure	CPT-4
34702	Endovascular repair of infrarenal aorta by deployment of an aorto-aortic tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the aortic bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the aortic bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulc	Procedure	CPT-4
34703	Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-uni-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the iliac bifurcation; for other than rupture (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	Procedure	CPT-4
34704	Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-uni-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the iliac bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (eg, for aneurysm, pseudoaneurysm, dissec	Procedure	CPT-4
34705	Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-bi-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the iliac bifurcation; for other than rupture (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
34706	Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-bi-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the iliac bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (eg, for aneurysm, pseudoaneurysm, dissect	Procedure	CPT-4
34707	Endovascular repair of iliac artery by deployment of an ilio-iliac tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally to the iliac bifurcation, and treatment zone angioplasty/stenting, when performed, unilateral; for other than rupture (eg, for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation)	Procedure	CPT-4
34708	Endovascular repair of iliac artery by deployment of an ilio-iliac tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally to the iliac bifurcation, and treatment zone angioplasty/stenting, when performed, unilateral; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (eg, for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, traumatic disruption)	Procedure	CPT-4
34709	Placement of extension prosthesis(es) distal to the common iliac artery(ies) or proximal to the renal artery(ies) for endovascular repair of infrarenal abdominal aortic or iliac aneurysm, false aneurysm, dissection, penetrating ulcer, including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and treatment zone angioplasty/stenting, when performed, per vessel treated (List separately in addition to code for primary procedure)	Procedure	CPT-4
34710	Delayed placement of distal or proximal extension prosthesis for endovascular repair of infrarenal abdominal aortic or iliac aneurysm, false aneurysm, dissection, endoleak, or endograft migration, including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and treatment zone angioplasty/stenting, when performed; initial vessel treated	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
34711	Delayed placement of distal or proximal extension prosthesis for endovascular repair of infrarenal abdominal aortic or iliac aneurysm, false aneurysm, dissection, endoleak, or endograft migration, including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and treatment zone angioplasty/stenting, when performed; each additional vessel treated (List separately in addition to code for primary procedure)	Procedure	CPT-4
34717	Endovascular repair of iliac artery at the time of aorto-iliac artery endograft placement by deployment of an iliac branched endograft including pre-procedure sizing and device selection, all ipsilateral selective iliac artery catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally in the internal iliac, external iliac, and common femoral artery(ies), and treatment zone angioplasty/stenting, when performed, for rupture or other than rupture (eg, for aneurysm, pseudoaneurysm, dissection, art	Procedure	CPT-4
34718	Endovascular repair of iliac artery, not associated with placement of an aorto-iliac artery endograft at the same session, by deployment of an iliac branched endograft, including pre-procedure sizing and device selection, all ipsilateral selective iliac artery catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally in the internal iliac, external iliac, and common femoral artery(ies), and treatment zone angioplasty/stenting, when performed, for other than rupture (eg, for aneurysm, pseudoan	Procedure	CPT-4
34841	Endovascular repair of visceral aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including one visceral artery endoprosthesis (superior mesenteric, celiac or renal artery)	Procedure	CPT-4
34842	Endovascular repair of visceral aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including two visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[s])	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
34843	Endovascular repair of visceral aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including three visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[s])	Procedure	CPT-4
34844	Endovascular repair of visceral aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including four or more visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[s])	Procedure	CPT-4
34845	Endovascular repair of visceral aorta and infrarenal abdominal aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including one visceral artery endoprosthesis (superior mesenteric, celiac or renal artery)	Procedure	CPT-4
34846	Endovascular repair of visceral aorta and infrarenal abdominal aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including two visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[s])	Procedure	CPT-4
34847	Endovascular repair of visceral aorta and infrarenal abdominal aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including three visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[s])	Procedure	CPT-4
34848	Endovascular repair of visceral aorta and infrarenal abdominal aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including four or more visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[s])	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
35450	Transluminal balloon angioplasty, open; renal or other visceral artery	Procedure	CPT-4
35452	Transluminal balloon angioplasty, open; aortic	Procedure	CPT-4
35454	Transluminal balloon angioplasty, open; iliac	Procedure	CPT-4
35456	Transluminal balloon angioplasty, open; femoral-popliteal	Procedure	CPT-4
35458	Transluminal balloon angioplasty, open; brachiocephalic trunk or branches, each	Procedure	CPT-4
35459	Transluminal balloon angioplasty, open; tibioperoneal trunk and branches	Procedure	CPT-4
35460	Transluminal balloon angioplasty, open; venous	Procedure	CPT-4
35470	Transluminal balloon angioplasty, percutaneous; tibioperoneal trunk or branches,	Procedure	CPT-4
35471	Transluminal balloon angioplasty, percutaneous; renal or visceral artery	Procedure	CPT-4
35472	Transluminal balloon angioplasty, percutaneous; aortic	Procedure	CPT-4
35473	Transluminal balloon angioplasty, percutaneous; iliac	Procedure	CPT-4
35474	Transluminal balloon angioplasty, percutaneous; femoral-popliteal	Procedure	CPT-4
35475	Transluminal balloon angioplasty, percutaneous; brachiocephalic trunk or branches,	Procedure	CPT-4
35476	Transluminal balloon angioplasty, percutaneous; venous	Procedure	CPT-4
35600	Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure (List separately in addition to code for primary procedure)	Procedure	CPT-4
35879	Revision, lower extremity arterial bypass, without thrombectomy, open; with vein patch angioplasty	Procedure	CPT-4
36902	Introduction of needle(s) and/or catheter(s), dialysis circuit, with diagnostic angiography of the dialysis circuit, including all direct puncture(s) and catheter placement(s), injection(s) of contrast, all necessary imaging from the arterial anastomosis and adjacent artery through entire venous outflow including the inferior or superior vena cava, fluoroscopic guidance, radiological supervision and interpretation and image documentation and report; with transluminal balloon angioplasty, peripheral dialysis segment, including all imaging and radiological supervision and interpretation necessar	Procedure	CPT-4
36903	Introduction of needle(s) and/or catheter(s), dialysis circuit, with diagnostic angiography of the dialysis circuit, including all direct puncture(s) and catheter placement(s), injection(s) of contrast, all necessary imaging from the arterial anastomosis and adjacent artery through entire venous outflow including the inferior or superior vena cava, fluoroscopic guidance, radiological supervision and interpretation and image documentation and report; with transcatheter placement of intravascular stent(s), peripheral dialysis segment, including all imaging and radiological supervision and interp	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
36905	Percutaneous transluminal mechanical thrombectomy and/or infusion for thrombolysis, dialysis circuit, any method, including all imaging and radiological supervision and interpretation, diagnostic angiography, fluoroscopic guidance, catheter placement(s), and intraprocedural pharmacological thrombolytic injection(s); with transluminal balloon angioplasty, peripheral dialysis segment, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty	Procedure	CPT-4
36906	Percutaneous transluminal mechanical thrombectomy and/or infusion for thrombolysis, dialysis circuit, any method, including all imaging and radiological supervision and interpretation, diagnostic angiography, fluoroscopic guidance, catheter placement(s), and intraprocedural pharmacological thrombolytic injection(s); with transcatheter placement of intravascular stent(s), peripheral dialysis segment, including all imaging and radiological supervision and interpretation necessary to perform the stenting, and all angioplasty within the peripheral dialysis circuit	Procedure	CPT-4
36907	Transluminal balloon angioplasty, central dialysis segment, performed through dialysis circuit, including all imaging and radiological supervision and interpretation required to perform the angioplasty (List separately in addition to code for primary procedure)	Procedure	CPT-4
36908	Transcatheter placement of intravascular stent(s), central dialysis segment, performed through dialysis circuit, including all imaging and radiological supervision and interpretation required to perform the stenting, and all angioplasty in the central dialysis segment (List separately in addition to code for primary procedure)	Procedure	CPT-4
37215	Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty, when performed, and radiological supervision and interpretation; with distal embolic protection	Procedure	CPT-4
37216	Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty, when performed, and radiological supervision and interpretation; without distal embolic protection	Procedure	CPT-4
37217	Transcatheter placement of intravascular stent(s), intrathoracic common carotid artery or innominate artery by retrograde treatment, open ipsilateral cervical carotid artery exposure, including angioplasty, when performed, and radiological supervision and interpretation	Procedure	CPT-4
37218	Transcatheter placement of intravascular stent(s), intrathoracic common carotid artery or innominate artery, open or percutaneous antegrade approach, including angioplasty, when performed, and radiological supervision and interpretation	Procedure	CPT-4
37220	Revascularization, endovascular, open or percutaneous, iliac artery, unilateral, initial vessel; with transluminal angioplasty	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
37221	Revascularization, endovascular, open or percutaneous, iliac artery, unilateral, initial vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37222	Revascularization, endovascular, open or percutaneous, iliac artery, each additional ipsilateral iliac vessel; with transluminal angioplasty (List separately in addition to code for primary procedure)	Procedure	CPT-4
37223	Revascularization, endovascular, open or percutaneous, iliac artery, each additional ipsilateral iliac vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	Procedure	CPT-4
37224	Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal angioplasty	Procedure	CPT-4
37225	Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with atherectomy, includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37226	Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37227	Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal stent placement(s) and atherectomy, includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37228	Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal angioplasty	Procedure	CPT-4
37229	Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with atherectomy, includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37230	Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37231	Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal stent placement(s) and atherectomy, includes angioplasty within the same vessel, when performed	Procedure	CPT-4
37232	Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with transluminal angioplasty (List separately in addition to code for primary procedure)	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
37233	Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with atherectomy, includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	Procedure	CPT-4
37234	Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	Procedure	CPT-4
37235	Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with transluminal stent placement(s) and atherectomy, includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	Procedure	CPT-4
37236	Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; initial artery	Procedure	CPT-4
37237	Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; each additional artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
37238	Transcatheter placement of an intravascular stent(s), open or percutaneous, including radiological supervision and interpretation and including angioplasty within the same vessel, when performed; initial vein	Procedure	CPT-4
37239	Transcatheter placement of an intravascular stent(s), open or percutaneous, including radiological supervision and interpretation and including angioplasty within the same vessel, when performed; each additional vein (List separately in addition to code for primary procedure)	Procedure	CPT-4
37246	Transluminal balloon angioplasty (except lower extremity artery(ies) for occlusive disease, intracranial, coronary, pulmonary, or dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same artery; initial artery	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
37247	Transluminal balloon angioplasty (except lower extremity artery(ies) for occlusive disease, intracranial, coronary, pulmonary, or dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same artery; each additional artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
37248	Transluminal balloon angioplasty (except dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same vein; initial vein	Procedure	CPT-4
37249	Transluminal balloon angioplasty (except dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same vein; each additional vein (List separately in addition to code for primary procedure)	Procedure	CPT-4
3E07017	Introduction of Other Thrombolytic into Coronary Artery, Open Approach	Procedure	ICD-10-PCS
3E070PZ	Introduction of Platelet Inhibitor into Coronary Artery, Open Approach	Procedure	ICD-10-PCS
3E07317	Introduction of Other Thrombolytic into Coronary Artery, Percutaneous Approach	Procedure	ICD-10-PCS
3E073PZ	Introduction of Platelet Inhibitor into Coronary Artery, Percutaneous Approach	Procedure	ICD-10-PCS
4A020N7	Measurement of Cardiac Sampling and Pressure, Left Heart, Open Approach	Procedure	ICD-10-PCS
4A020N8	Measurement of Cardiac Sampling and Pressure, Bilateral, Open Approach	Procedure	ICD-10-PCS
4A023N7	Measurement of Cardiac Sampling and Pressure, Left Heart, Percutaneous Approach	Procedure	ICD-10-PCS
4A023N8	Measurement of Cardiac Sampling and Pressure, Bilateral, Percutaneous Approach	Procedure	ICD-10-PCS
4A12XSH	Monitoring of Cardiac Vascular Perfusion using Indocyanine Green Dye, External	Procedure	ICD-10-PCS
61630	Balloon angioplasty, intracranial (eg, atherosclerotic stenosis), percutaneous	Procedure	CPT-4
61635	Transcatheter placement of intravascular stent(s), intracranial (eg, atherosclerotic stenosis), including balloon angioplasty, if performed	Procedure	CPT-4
75962	Transluminal balloon angioplasty, peripheral artery other than renal, or other visceral artery, iliac or lower extremity, radiological supervision and interpretation	Procedure	CPT-4
75963	Percutaneous Transluminal Angioplasty, Any Method, Peripheral Artery; Complete	Procedure	CPT-4
75964	Transluminal balloon angioplasty, each additional peripheral artery other than renal or other visceral artery, iliac or lower extremity, radiological supervision and interpretation (List separately in addition to code for primary procedure)	Procedure	CPT-4
75965	Percutaneous Transluminal Angioplasty, Any Method, Each Additional Peripheral Artery; Complete Procedure	Procedure	CPT-4
75966	Transluminal balloon angioplasty, renal or other visceral artery, radiological supervision and interpretation	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
75967	Percutaneous Transluminal Angioplasty, Any Method, Renal Or Other Visceral Artery; Complete Procedure	Procedure	CPT-4
75968	Transluminal balloon angioplasty, each additional visceral artery, radiological supervision and interpretation (List separately in addition to code for primary procedure)	Procedure	CPT-4
75969	Percutaneous Transluminal Angioplasty, Any Method, Each Additional Visceral Artery; Complete Procedure	Procedure	CPT-4
75970	Transcatheter biopsy, radiological supervision and interpretation	Procedure	CPT-4
75972	Percutaneous Transluminal Angioplasty, Unilateral;	Procedure	CPT-4
75973	Percutaneous Transluminal Angioplasty, Unilateral;	Procedure	CPT-4
75974	Percutaneous Transluminal Angioplasty, Bilateral, Single Catheter;	Procedure	CPT-4
75975	Percutaneous Transluminal Angioplasty, Bilateral, Single Catheter;	Procedure	CPT-4
75976	Percutaneous Transluminal Angioplasty, Bilateral, Dual Catheters;	Procedure	CPT-4
75977	Percutaneous Transluminal Angioplasty, Bilateral, Dual Catheters;	Procedure	CPT-4
75978	Transluminal balloon angioplasty, venous (eg, subclavian stenosis), radiological supervision and interpretation	Procedure	CPT-4
75979	Percutaneous Transluminal Angioplasty, Venous (eg, Subclavian Stenosis); Complete	Procedure	CPT-4
92920	Percutaneous transluminal coronary angioplasty; single major coronary artery or	Procedure	CPT-4
92921	Percutaneous transluminal coronary angioplasty; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92924	Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; single major coronary artery or branch	Procedure	CPT-4
92925	Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92928	Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch	Procedure	CPT-4
92929	Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4
92933	Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch	Procedure	CPT-4
92934	Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery (List separately in addition to code for primary procedure)	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
92937	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel	Procedure	CPT-4
92938	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; each additional branch subtended by the bypass graft (List separately in addition to code for primary procedure)	Procedure	CPT-4
92941	Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel	Procedure	CPT-4
92943	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; single vessel	Procedure	CPT-4
92944	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; each additional coronary artery, coronary artery branch, or bypass graft (List separately in addition to code for primary procedure)	Procedure	CPT-4
92973	Percutaneous transluminal coronary thrombectomy mechanical (List separately in addition to code for primary procedure)	Procedure	CPT-4
92974	Transcatheter placement of radiation delivery device for subsequent coronary intravascular brachytherapy (List separately in addition to code for primary procedure)	Procedure	CPT-4
92977	Thrombolysis, coronary; by intravenous infusion	Procedure	CPT-4
92980	Transcatheter placement of an intracoronary stent(s), percutaneous, with or without other therapeutic intervention, any method; single vessel	Procedure	CPT-4
92981	Transcatheter placement of an intracoronary stent(s), percutaneous, with or without other therapeutic intervention, any method; each additional vessel (List separately in addition to code for primary procedure)	Procedure	CPT-4
92982	Percutaneous transluminal coronary balloon angioplasty; single vessel	Procedure	CPT-4
92984	Percutaneous transluminal coronary balloon angioplasty; each additional vessel (List separately in addition to code for primary procedure)	Procedure	CPT-4
92995	Percutaneous transluminal coronary atherectomy, by mechanical or other method, with or without balloon angioplasty; single vessel	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
92996	Percutaneous transluminal coronary atherectomy, by mechanical or other method, with or without balloon angioplasty; each additional vessel (List separately in addition to code for primary procedure)	Procedure	CPT-4
92997	Percutaneous transluminal pulmonary artery balloon angioplasty; single vessel	Procedure	CPT-4
92998	Percutaneous transluminal pulmonary artery balloon angioplasty; each additional vessel (List separately in addition to code for primary procedure)	Procedure	CPT-4
93452	Left heart catheterization including intraprocedural injection(s) for left ventriculography, imaging supervision and interpretation, when performed	Procedure	CPT-4
93453	Combined right and left heart catheterization including intraprocedural injection(s) for left ventriculography, imaging supervision and interpretation, when performed	Procedure	CPT-4
93454	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation	Procedure	CPT-4
93455	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with catheter placement(s) in bypass graft(s) (internal mammary, free arterial, venous grafts) including intraprocedural injection(s) for bypass graft angiography	Procedure	CPT-4
93456	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with right heart catheterization	Procedure	CPT-4
93457	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with catheter placement(s) in bypass graft(s) (internal mammary, free arterial, venous grafts) including intraprocedural injection(s) for bypass graft angiography and right heart catheterization	Procedure	CPT-4
93458	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed	Procedure	CPT-4
93459	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed, catheter placement(s) in bypass graft(s) (internal mammary, free arterial, venous grafts) with bypass graft angiography	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
93460	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with right and left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed	Procedure	CPT-4
93461	Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with right and left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed, catheter placement(s) in bypass graft(s) (internal mammary, free arterial, venous grafts) with bypass graft angiography	Procedure	CPT-4
C1034	Catheter, coronary angioplasty, surpass superfusion catheter, long 30 surpass superfusion catheter	Procedure	HCPCS
C1100	Guide wire, percutaneous transluminal coronary angioplasty, medtronic ave gt1 guide wire, medtronic ave gt2 fusion guide wire, interventional technologies trackwire, interventional technologies trackwire support, interventional technologies trackwire extra support	Procedure	HCPCS
C1101	Catheter, percutaneous transluminal coronary angioplasty guide, medtronic ave 5f, 6f, 7f, 8f, 9f zuma guide catheter, medtronic ave z2 5f, 6f, 7f, 8f, 9f zuma guide catheter, medtronic ave vector guide catheter, medtronic ave vector x guide catheter. note: only the medtronic ave z2 zuma guide catheters are effective october 1, 2000. the medtronic ave zuma guide catheters were effective august 1, 2000.	Procedure	HCPCS
C1366	Guide wire, percutaneous transluminal coronary angioplasty, hi-torque iron man, hi-torque balance middleweight, hi-torque all star, hi-torque balance heavyweight, hi-torque balance trak	Procedure	HCPCS
C1367	Guide wire, percutaneous transluminal coronary angioplasty, hi-torque cross it, hi-torque cross-it 100xt, hi-torque cross-it 200xt, hi-torque cross-it 300xt, hi-torque wiggle	Procedure	HCPCS
C1500	Atherectomy system, peripheral, rotablator rotational angioplasty system with rotalink exchangeable catheter, advancer, and guide wire	Procedure	HCPCS
C1725	Catheter, transluminal angioplasty, nonlaser (may include guidance, infusion/perfusion capability)	Procedure	HCPCS
C1885	Catheter, transluminal angioplasty, laser	Procedure	HCPCS
C1930	Catheter, percutaneous transluminal coronary angioplasty, coyote dilatation catheter 20mm/30mm/40mm	Procedure	HCPCS
C1933	Catheter, opti-plast centurion 5.5f pta catheter (shaft length 50 cm to 120 cm), opti-plast xl 5.5f pta catheter (shaft length 75 cm to 120 cm), opti-plast pta catheter (5.5 fr), tru trac 5fr percutaneous transluminal angioplasty balloon dilatation catheter, optiplast xt 5 fr percutaneous transluminal angioplasty catheter (various sizes)	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C1948	Catheter, pursuit balloon angioplasty catheter, cook accent balloon angioplasty	Procedure	HCPCS
C1981	Catheter ,coronary angioplasty balloon, adante, bonnie, bonnie 15mm, bonnie monorail 30mm or 40mm, bonnie sliding rail, bypass speedy, chubby, chubby sliding rail, coyote 20mm, coyote 9/15/25mm, maxxum, nc ranger, nc ranger 9mm, ranger 20mm, long ranger 30mm or 40mm, nc ranger 16/18mm, nc ranger 22/25/30mm, nc big ranger, quantum ranger, quantum ranger 1/4 sizes, quantum ranger 9/16/18mm, quantum ranger 22/30mm, quantum ranger 25mm, ranger lp 20/30/40, viva/long viva, ace - 1cm, ace - 2cm, ace graft, long ace, pivot cobra (10, 14, 18, 30, 40mm in lengths) note: only the bonnie monorail 30mm or	Procedure	HCPCS
C2605	Catheter, spectranetics extreme laser catheter, spectranetics extreme 0.9mm coronary angioplasty catheter (model 110-001)	Procedure	HCPCS
C2623	Catheter, transluminal angioplasty, drug-coated, nonlaser	Procedure	HCPCS
C3551	Guide wire, percutaneous transluminal coronary angioplasty, choice, luge, patriot, pt graphix intermediate, trooper, mailman 182/300 cm, glidewire gold guidewire, platinum plus guidewire, platinum plus guidewire with glidex hydrophilic coating, jagwire single-use high performance guide wire, merit medical systems extender guidewire, merit medical systems tomcat ptca guidewire, platinum plus guidewire (0.014 and 0.018 in diameters)	Procedure	HCPCS
C8526	Optiplast xt 5f percutaneous transluminal angioplasty catheter (various sizes)	Procedure	HCPCS
C9600	Percutaneous transcatheter placement of drug eluting intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch	Procedure	HCPCS
C9601	Percutaneous transcatheter placement of drug-eluting intracoronary stent(s), with coronary angioplasty when performed; each additional branch of a major coronary artery (list separately in addition to code for primary procedure)	Procedure	HCPCS
C9602	Percutaneous transluminal coronary atherectomy, with drug eluting intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch	Procedure	HCPCS
C9603	Percutaneous transluminal coronary atherectomy, with drug-eluting intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery (list separately in addition to code for primary procedure)	Procedure	HCPCS
C9604	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of drug-eluting intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel	Procedure	HCPCS
C9605	Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of drug-eluting intracoronary stent, atherectomy and angioplasty, including distal protection when performed; each additional branch subtended by the bypass graft (list separately in addition to code for primary procedure)	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C9606	Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel	Procedure	HCPCS
C9607	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty; single vessel	Procedure	HCPCS
C9608	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty; each additional coronary artery, coronary artery branch, or bypass graft (list separately in addition to code for primary procedure)	Procedure	HCPCS
C9754	Creation of arteriovenous fistula, percutaneous; direct, any site, including all imaging and radiologic supervision and interpretation, when performed and secondary procedures to redirect blood flow (e.g., transluminal balloon angioplasty, coil embolization, when performed)	Procedure	HCPCS
G0290	Transcatheter placement of a drug eluting intracoronary stent(s), percutaneous, with or without other therapeutic intervention, any method; single vessel	Procedure	HCPCS
G0291	Transcatheter placement of a drug eluting intracoronary stent(s), percutaneous, with or without other therapeutic intervention, any method; each additional vessel	Procedure	HCPCS
G0392	Transluminal balloon angioplasty, percutaneous; for maintenance of hemodialysis access, arteriovenous fistula or graft; arterial	Procedure	HCPCS
G0393	Transluminal balloon angioplasty, percutaneous; for maintenance of hemodialysis access, arteriovenous fistula or graft; venous	Procedure	HCPCS
I20	Angina pectoris	Diagnosis	ICD-10-CM
I20.0	Unstable angina	Diagnosis	ICD-10-CM
I20.1	Angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I20.8	Other forms of angina pectoris	Diagnosis	ICD-10-CM
I20.9	Angina pectoris, unspecified	Diagnosis	ICD-10-CM
I23.7	Postinfarction angina	Diagnosis	ICD-10-CM
I24	Other acute ischemic heart diseases	Diagnosis	ICD-10-CM
I24.0	Acute coronary thrombosis not resulting in myocardial infarction	Diagnosis	ICD-10-CM
I24.8	Other forms of acute ischemic heart disease	Diagnosis	ICD-10-CM
I24.9	Acute ischemic heart disease, unspecified	Diagnosis	ICD-10-CM
I25	Chronic ischemic heart disease	Diagnosis	ICD-10-CM
I25.1	Atherosclerotic heart disease of native coronary artery	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris	Diagnosis	ICD-10-CM
I25.11	Atherosclerotic heart disease of native coronary artery with angina pectoris	Diagnosis	ICD-10-CM
I25.110	Atherosclerotic heart disease of native coronary artery with unstable angina pectoris	Diagnosis	ICD-10-CM
I25.111	Atherosclerotic heart disease of native coronary artery with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.118	Atherosclerotic heart disease of native coronary artery with other forms of angina	Diagnosis	ICD-10-CM
I25.119	Atherosclerotic heart disease of native coronary artery with unspecified angina	Diagnosis	ICD-10-CM
I25.2	Old myocardial infarction	Diagnosis	ICD-10-CM
I25.4	Coronary artery aneurysm and dissection	Diagnosis	ICD-10-CM
I25.41	Coronary artery aneurysm	Diagnosis	ICD-10-CM
I25.42	Coronary artery dissection	Diagnosis	ICD-10-CM
I25.5	Ischemic cardiomyopathy	Diagnosis	ICD-10-CM
I25.6	Silent myocardial ischemia	Diagnosis	ICD-10-CM
I25.7	Atherosclerosis of coronary artery bypass graft(s) and coronary artery of transplanted heart with angina pectoris	Diagnosis	ICD-10-CM
I25.70	Atherosclerosis of coronary artery bypass graft(s), unspecified, with angina pectoris	Diagnosis	ICD-10-CM
I25.700	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unstable angina	Diagnosis	ICD-10-CM
I25.701	Atherosclerosis of coronary artery bypass graft(s), unspecified, with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.708	Atherosclerosis of coronary artery bypass graft(s), unspecified, with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25.709	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unspecified angina	Diagnosis	ICD-10-CM
I25.71	Atherosclerosis of autologous vein coronary artery bypass graft(s) with angina pectoris	Diagnosis	ICD-10-CM
I25.710	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unstable	Diagnosis	ICD-10-CM
I25.711	Atherosclerosis of autologous vein coronary artery bypass graft(s) with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.718	Atherosclerosis of autologous vein coronary artery bypass graft(s) with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25.719	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unspecified angina pectoris	Diagnosis	ICD-10-CM
I25.72	Atherosclerosis of autologous artery coronary artery bypass graft(s) with angina	Diagnosis	ICD-10-CM
I25.720	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unstable angina pectoris	Diagnosis	ICD-10-CM

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Code	Description	Code Category	Code Type
I25.721	Atherosclerosis of autologous artery coronary artery bypass graft(s) with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.728	Atherosclerosis of autologous artery coronary artery bypass graft(s) with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25.729	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unspecified angina pectoris	Diagnosis	ICD-10-CM
I25.73	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with	Diagnosis	ICD-10-CM
I25.730	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unstable angina pectoris	Diagnosis	ICD-10-CM
I25.731	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.738	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25.739	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unspecified angina pectoris	Diagnosis	ICD-10-CM
I25.75	Atherosclerosis of native coronary artery of transplanted heart with angina pectoris	Diagnosis	ICD-10-CM
I25.750	Atherosclerosis of native coronary artery of transplanted heart with unstable angina	Diagnosis	ICD-10-CM
I25.751	Atherosclerosis of native coronary artery of transplanted heart with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.758	Atherosclerosis of native coronary artery of transplanted heart with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25.759	Atherosclerosis of native coronary artery of transplanted heart with unspecified	Diagnosis	ICD-10-CM
I25.76	Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina	Diagnosis	ICD-10-CM
I25.760	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable	Diagnosis	ICD-10-CM
I25.761	Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25.768	Atherosclerosis of bypass graft of coronary artery of transplanted heart with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25.769	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unspecified angina pectoris	Diagnosis	ICD-10-CM
I25.79	Atherosclerosis of other coronary artery bypass graft(s) with angina pectoris	Diagnosis	ICD-10-CM
I25.790	Atherosclerosis of other coronary artery bypass graft(s) with unstable angina pectoris	Diagnosis	ICD-10-CM
I25.791	Atherosclerosis of other coronary artery bypass graft(s) with angina pectoris with documented spasm	Diagnosis	ICD-10-CM

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Code	Description	Code Category	Code Type
I25.798	Atherosclerosis of other coronary artery bypass graft(s) with other forms of angina	Diagnosis	ICD-10-CM
I25.799	Atherosclerosis of other coronary artery bypass graft(s) with unspecified angina	Diagnosis	ICD-10-CM
I25.8	Other forms of chronic ischemic heart disease	Diagnosis	ICD-10-CM
I25.81	Atherosclerosis of other coronary vessels without angina pectoris	Diagnosis	ICD-10-CM
I25.810	Atherosclerosis of coronary artery bypass graft(s) without angina pectoris	Diagnosis	ICD-10-CM
I25.811	Atherosclerosis of native coronary artery of transplanted heart without angina	Diagnosis	ICD-10-CM
I25.812	Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina	Diagnosis	ICD-10-CM
I25.82	Chronic total occlusion of coronary artery	Diagnosis	ICD-10-CM
I25.83	Coronary atherosclerosis due to lipid rich plaque	Diagnosis	ICD-10-CM
I25.84	Coronary atherosclerosis due to calcified coronary lesion	Diagnosis	ICD-10-CM
I25.89	Other forms of chronic ischemic heart disease	Diagnosis	ICD-10-CM
I25.9	Chronic ischemic heart disease, unspecified	Diagnosis	ICD-10-CM
I46.2	Cardiac arrest due to underlying cardiac condition	Diagnosis	ICD-10-CM
I46.8	Cardiac arrest due to other underlying condition	Diagnosis	ICD-10-CM
I46.9	Cardiac arrest, cause unspecified	Diagnosis	ICD-10-CM
I47.0	Re-entry ventricular arrhythmia	Diagnosis	ICD-10-CM
I47.2	Ventricular tachycardia	Diagnosis	ICD-10-CM
I70	Atherosclerosis	Diagnosis	ICD-10-CM
I70.0	Atherosclerosis of aorta	Diagnosis	ICD-10-CM
I70.1	Atherosclerosis of renal artery	Diagnosis	ICD-10-CM
I70.8	Atherosclerosis of other arteries	Diagnosis	ICD-10-CM
I70.9	Other and unspecified atherosclerosis	Diagnosis	ICD-10-CM
I70.90	Unspecified atherosclerosis	Diagnosis	ICD-10-CM
I70.91	Generalized atherosclerosis	Diagnosis	ICD-10-CM
S2205	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using arterial graft(s), single coronary arterial graft	Procedure	HCPCS
S2206	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using arterial graft(s), 2 coronary arterial grafts	Procedure	HCPCS
S2207	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using venous graft only, single coronary venous graft	Procedure	HCPCS

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Code	Description	Code Category	Code Type
S2208	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using single arterial and venous graft(s), single venous graft	Procedure	HCPCS
S2209	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using 2 arterial grafts and single venous graft	Procedure	HCPCS
T82.211A	Breakdown (mechanical) of coronary artery bypass graft, initial encounter	Diagnosis	ICD-10-CM
T82.212A	Displacement of coronary artery bypass graft, initial encounter	Diagnosis	ICD-10-CM
T82.213A	Leakage of coronary artery bypass graft, initial encounter	Diagnosis	ICD-10-CM
T82.218A	Other mechanical complication of coronary artery bypass graft, initial encounter	Diagnosis	ICD-10-CM
X2C0361	Extirpation of Matter from Coronary Artery, One Artery using Orbital Atherectomy Technology, Percutaneous Approach, New Technology Group 1	Procedure	ICD-10-PCS
X2C1361	Extirpation of Matter from Coronary Artery, Two Arteries using Orbital Atherectomy Technology, Percutaneous Approach, New Technology Group 1	Procedure	ICD-10-PCS
X2C2361	Extirpation of Matter from Coronary Artery, Three Arteries using Orbital Atherectomy Technology, Percutaneous Approach, New Technology Group 1	Procedure	ICD-10-PCS
X2C3361	Extirpation of Matter from Coronary Artery, Four or More Arteries using Orbital Atherectomy Technology, Percutaneous Approach, New Technology Group 1	Procedure	ICD-10-PCS
Z95.1	Presence of aortocoronary bypass graft	Diagnosis	ICD-10-CM
Z95.5	Presence of coronary angioplasty implant and graft	Diagnosis	ICD-10-CM
Z98.61	Coronary angioplasty status	Diagnosis	ICD-10-CM
Immunodeficiency			
02Y	Heart and Great Vessels, Transplantation	Procedure	ICD-10-PCS
02YA	Transplantation / Heart	Procedure	ICD-10-PCS
02YA0Z0	Transplantation of Heart, Allogeneic, Open Approach	Procedure	ICD-10-PCS
02YA0Z1	Transplantation of Heart, Syngeneic, Open Approach	Procedure	ICD-10-PCS
02YA0Z2	Transplantation of Heart, Zooplastic, Open Approach	Procedure	ICD-10-PCS
07Y	Lymphatic and Hemic Systems, Transplantation	Procedure	ICD-10-PCS
07YP	Transplantation / Spleen	Procedure	ICD-10-PCS
07YP0Z0	Transplantation of Spleen, Allogeneic, Open Approach	Procedure	ICD-10-PCS
07YP0Z1	Transplantation of Spleen, Syngeneic, Open Approach	Procedure	ICD-10-PCS
07YP0Z2	Transplantation of Spleen, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BY	Respiratory System, Transplantation	Procedure	ICD-10-PCS
0BYC	Transplantation / Upper Lung Lobe, Right	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0BYC0Z0	Transplantation of Right Upper Lung Lobe, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYC0Z1	Transplantation of Right Upper Lung Lobe, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYC0Z2	Transplantation of Right Upper Lung Lobe, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYD	Transplantation / Middle Lung Lobe, Right	Procedure	ICD-10-PCS
0BYD0Z0	Transplantation of Right Middle Lung Lobe, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYD0Z1	Transplantation of Right Middle Lung Lobe, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYD0Z2	Transplantation of Right Middle Lung Lobe, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYF	Transplantation / Lower Lung Lobe, Right	Procedure	ICD-10-PCS
0BYF0Z0	Transplantation of Right Lower Lung Lobe, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYF0Z1	Transplantation of Right Lower Lung Lobe, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYF0Z2	Transplantation of Right Lower Lung Lobe, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYG	Transplantation / Upper Lung Lobe, Left	Procedure	ICD-10-PCS
0BYG0Z0	Transplantation of Left Upper Lung Lobe, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYG0Z1	Transplantation of Left Upper Lung Lobe, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYG0Z2	Transplantation of Left Upper Lung Lobe, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYH	Transplantation / Lung Lingula	Procedure	ICD-10-PCS
0BYH0Z0	Transplantation of Lung Lingula, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYH0Z1	Transplantation of Lung Lingula, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYH0Z2	Transplantation of Lung Lingula, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYJ	Transplantation / Lower Lung Lobe, Left	Procedure	ICD-10-PCS
0BYJ0Z0	Transplantation of Left Lower Lung Lobe, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYJ0Z1	Transplantation of Left Lower Lung Lobe, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYJ0Z2	Transplantation of Left Lower Lung Lobe, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYK	Transplantation / Lung, Right	Procedure	ICD-10-PCS
0BYK0Z0	Transplantation of Right Lung, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYK0Z1	Transplantation of Right Lung, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYK0Z2	Transplantation of Right Lung, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYL	Transplantation / Lung, Left	Procedure	ICD-10-PCS
0BYL0Z0	Transplantation of Left Lung, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYL0Z1	Transplantation of Left Lung, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0BYL0Z2	Transplantation of Left Lung, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0BYM	Transplantation / Lungs, Bilateral	Procedure	ICD-10-PCS
0BYM0Z0	Transplantation of Bilateral Lungs, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0BYM0Z1	Transplantation of Bilateral Lungs, Syngeneic, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0BYM0Z2	Transplantation of Bilateral Lungs, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0DY	Gastrointestinal System, Transplantation	Procedure	ICD-10-PCS
0DY5	Transplantation / Esophagus	Procedure	ICD-10-PCS
0DY50Z0	Transplantation of Esophagus, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0DY50Z1	Transplantation of Esophagus, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0DY50Z2	Transplantation of Esophagus, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0DY6	Transplantation / Stomach	Procedure	ICD-10-PCS
0DY60Z0	Transplantation of Stomach, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0DY60Z1	Transplantation of Stomach, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0DY60Z2	Transplantation of Stomach, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0DY8	Transplantation / Small Intestine	Procedure	ICD-10-PCS
0DY80Z0	Transplantation of Small Intestine, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0DY80Z1	Transplantation of Small Intestine, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0DY80Z2	Transplantation of Small Intestine, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0DYE	Transplantation / Large Intestine	Procedure	ICD-10-PCS
0DYE0Z0	Transplantation of Large Intestine, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0DYE0Z1	Transplantation of Large Intestine, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0DYE0Z2	Transplantation of Large Intestine, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0FY	Hepatobiliary System and Pancreas, Transplantation	Procedure	ICD-10-PCS
0FY0	Transplantation / Liver	Procedure	ICD-10-PCS
0FY00Z0	Transplantation of Liver, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0FY00Z1	Transplantation of Liver, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0FY00Z2	Transplantation of Liver, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0FYG	Transplantation / Pancreas	Procedure	ICD-10-PCS
0FYG0Z0	Transplantation of Pancreas, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0FYG0Z1	Transplantation of Pancreas, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0FYG0Z2	Transplantation of Pancreas, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0TY	Urinary System, Transplantation	Procedure	ICD-10-PCS
0TY0	Transplantation / Kidney, Right	Procedure	ICD-10-PCS
0TY00Z0	Transplantation of Right Kidney, Allogeneic, Open Approach	Procedure	ICD-10-PCS
0TY00Z1	Transplantation of Right Kidney, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0TY00Z2	Transplantation of Right Kidney, Zooplastic, Open Approach	Procedure	ICD-10-PCS
0TY1	Transplantation / Kidney, Left	Procedure	ICD-10-PCS
0TY10Z0	Transplantation of Left Kidney, Allogeneic, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0TY10Z1	Transplantation of Left Kidney, Syngeneic, Open Approach	Procedure	ICD-10-PCS
0TY10Z2	Transplantation of Left Kidney, Zooplastic, Open Approach	Procedure	ICD-10-PCS
30230AZ	Transfusion of Embryonic Stem Cells into Peripheral Vein, Open Approach	Procedure	ICD-10-PCS
30230G1	Transfusion of Nonautologous Bone Marrow into Peripheral Vein, Open Approach	Procedure	ICD-10-PCS
30230G2	Transfusion of allogeneic related bone marrow into peripheral vein, open approach	Procedure	ICD-10-PCS
30230G3	Transfusion of allogeneic unrelated bone marrow into peripheral vein, open approach	Procedure	ICD-10-PCS
30230G4	Transfusion of allogeneic unspecified bone marrow into peripheral vein, open	Procedure	ICD-10-PCS
30230X1	Transfusion of Nonautologous Cord Blood Stem Cells into Peripheral Vein, Open	Procedure	ICD-10-PCS
30230X2	Transfusion of allogeneic related cord blood stem cells into peripheral vein, open	Procedure	ICD-10-PCS
30230X3	Transfusion of allogeneic unrelated cord blood stem cells into peripheral vein, open	Procedure	ICD-10-PCS
30230X4	Transfusion of allogeneic unspecified cord blood stem cells into peripheral vein, open	Procedure	ICD-10-PCS
30230Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Peripheral Vein, Open	Procedure	ICD-10-PCS
30230Y2	Transfusion of allogeneic related hematopoietic stem cells into peripheral vein, open	Procedure	ICD-10-PCS
30230Y3	Transfusion of allogeneic unrelated hematopoietic stem cells into peripheral vein, open approach	Procedure	ICD-10-PCS
30230Y4	Transfusion of allogeneic unspecified hematopoietic stem cells into peripheral vein, open approach	Procedure	ICD-10-PCS
30233AZ	Transfusion of Embryonic Stem Cells into Peripheral Vein, Percutaneous Approach	Procedure	ICD-10-PCS
30233G1	Transfusion of Nonautologous Bone Marrow into Peripheral Vein, Percutaneous	Procedure	ICD-10-PCS
30233G2	Transfusion of allogeneic related bone marrow into peripheral vein, percutaneous	Procedure	ICD-10-PCS
30233G3	Transfusion of allogeneic unrelated bone marrow into peripheral vein, percutaneous	Procedure	ICD-10-PCS
30233G4	Transfusion of allogeneic unspecified bone marrow into peripheral vein, percutaneous	Procedure	ICD-10-PCS
30233X1	Transfusion of Nonautologous Cord Blood Stem Cells into Peripheral Vein, Percutaneous Approach	Procedure	ICD-10-PCS
30233X2	Transfusion of allogeneic related cord blood stem cells into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
30233X3	Transfusion of allogeneic unrelated cord blood stem cells into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
30233X4	Transfusion of allogeneic unspecified cord blood stem cells into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
30233Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Peripheral Vein, Percutaneous Approach	Procedure	ICD-10-PCS
30233Y2	Transfusion of allogeneic related hematopoietic stem cells into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
30233Y3	Transfusion of allogeneic unrelated hematopoietic stem cells into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
30233Y4	Transfusion of allogeneic unspecified hematopoietic stem cells into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
30240AZ	Transfusion of Embryonic Stem Cells into Central Vein, Open Approach	Procedure	ICD-10-PCS
30240G1	Transfusion of Nonautologous Bone Marrow into Central Vein, Open Approach	Procedure	ICD-10-PCS
30240G2	Transfusion of allogeneic related bone marrow into central vein, open approach	Procedure	ICD-10-PCS
30240G3	Transfusion of allogeneic unrelated bone marrow into central vein, open approach	Procedure	ICD-10-PCS
30240G4	Transfusion of allogeneic unspecified bone marrow into central vein, open approach	Procedure	ICD-10-PCS
30240X1	Transfusion of Nonautologous Cord Blood Stem Cells into Central Vein, Open	Procedure	ICD-10-PCS
30240X2	Transfusion of allogeneic related cord blood stem cells into central vein, open	Procedure	ICD-10-PCS
30240X3	Transfusion of allogeneic unrelated cord blood stem cells into central vein, open	Procedure	ICD-10-PCS
30240X4	Transfusion of allogeneic unspecified cord blood stem cells into central vein, open	Procedure	ICD-10-PCS
30240Y0	Transfusion of Autologous Hematopoietic Stem Cells into Central Vein, Open Approach	Procedure	ICD-10-PCS
30240Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Central Vein, Open	Procedure	ICD-10-PCS
30240Y2	Transfusion of allogeneic related hematopoietic stem cells into central vein, open	Procedure	ICD-10-PCS
30240Y3	Transfusion of allogeneic unrelated hematopoietic stem cells into central vein, open	Procedure	ICD-10-PCS
30240Y4	Transfusion of allogeneic unspecified hematopoietic stem cells into central vein, open	Procedure	ICD-10-PCS
30243AZ	Transfusion of Embryonic Stem Cells into Central Vein, Percutaneous Approach	Procedure	ICD-10-PCS
30243G1	Transfusion of Nonautologous Bone Marrow into Central Vein, Percutaneous	Procedure	ICD-10-PCS
30243G2	Transfusion of allogeneic related bone marrow into central vein, percutaneous	Procedure	ICD-10-PCS
30243G3	Transfusion of allogeneic unrelated bone marrow into central vein, percutaneous	Procedure	ICD-10-PCS
30243G4	Transfusion of allogeneic unspecified bone marrow into central vein, percutaneous	Procedure	ICD-10-PCS
30243X1	Transfusion of Nonautologous Cord Blood Stem Cells into Central Vein, Percutaneous	Procedure	ICD-10-PCS
30243X2	Transfusion of allogeneic related cord blood stem cells into central vein, percutaneous	Procedure	ICD-10-PCS
30243X3	Transfusion of allogeneic unrelated cord blood stem cells into central vein, percutaneous approach	Procedure	ICD-10-PCS
30243X4	Transfusion of allogeneic unspecified cord blood stem cells into central vein, percutaneous approach	Procedure	ICD-10-PCS
30243Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Central Vein, Percutaneous Approach	Procedure	ICD-10-PCS
30243Y2	Transfusion of allogeneic related hematopoietic stem cells into central vein, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
30243Y3	Transfusion of allogeneic unrelated hematopoietic stem cells into central vein, percutaneous approach	Procedure	ICD-10-PCS
30243Y4	Transfusion of allogeneic unspecified hematopoietic stem cells into central vein, percutaneous approach	Procedure	ICD-10-PCS
30250G1	Transfusion of Nonautologous Bone Marrow into Peripheral Artery, Open Approach	Procedure	ICD-10-PCS
30250X1	Transfusion of Nonautologous Cord Blood Stem Cells into Peripheral Artery, Open	Procedure	ICD-10-PCS
30250Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Peripheral Artery, Open	Procedure	ICD-10-PCS
30253G1	Transfusion of Nonautologous Bone Marrow into Peripheral Artery, Percutaneous	Procedure	ICD-10-PCS
30253X1	Transfusion of Nonautologous Cord Blood Stem Cells into Peripheral Artery, Percutaneous Approach	Procedure	ICD-10-PCS
30253Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Peripheral Artery, Percutaneous Approach	Procedure	ICD-10-PCS
30260G1	Transfusion of Nonautologous Bone Marrow into Central Artery, Open Approach	Procedure	ICD-10-PCS
30260X1	Transfusion of Nonautologous Cord Blood Stem Cells into Central Artery, Open	Procedure	ICD-10-PCS
30260Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Central Artery, Open	Procedure	ICD-10-PCS
30263G1	Transfusion of Nonautologous Bone Marrow into Central Artery, Percutaneous	Procedure	ICD-10-PCS
30263X1	Transfusion of Nonautologous Cord Blood Stem Cells into Central Artery, Percutaneous Approach	Procedure	ICD-10-PCS
30263Y1	Transfusion of Nonautologous Hematopoietic Stem Cells into Central Artery, Percutaneous Approach	Procedure	ICD-10-PCS
32851	Lung transplant, single; without cardiopulmonary bypass	Procedure	CPT-4
32852	Lung transplant, single; with cardiopulmonary bypass	Procedure	CPT-4
32853	Lung transplant, double (bilateral sequential or en bloc); without cardiopulmonary	Procedure	CPT-4
32854	Lung transplant, double (bilateral sequential or en bloc); with cardiopulmonary bypass	Procedure	CPT-4
33935	Heart-lung transplant with recipient cardiectomy-pneumonectomy	Procedure	CPT-4
33945	Heart transplant, with or without recipient cardiectomy	Procedure	CPT-4
3490F	History of AIDS-defining condition (HIV)	Procedure	CPT-2
38240	Hematopoietic progenitor cell (HPC); allogeneic transplantation per donor	Procedure	CPT-4
38242	Allogeneic lymphocyte infusions	Procedure	CPT-4
38243	Allogeneic hematopoietic cellular transplant boost	Procedure	CPT-4
3E1M39Z	Irrigation of Peritoneal Cavity using Dialysate, Percutaneous Approach	Procedure	ICD-10-PCS
44135	Intestinal allotransplantation; from cadaver donor	Procedure	CPT-4
44136	Intestinal allotransplantation; from living donor	Procedure	CPT-4
47135	Liver allotransplantation; orthotopic, partial or whole, from cadaver or living donor,	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
47136	Liver allotransplantation; heterotopic, partial or whole, from cadaver or living donor,	Procedure	CPT-4
48554	Transplantation of pancreatic allograft	Procedure	CPT-4
50360	Renal allotransplantation, implantation of graft; without recipient nephrectomy	Procedure	CPT-4
50365	Renal allotransplantation, implantation of graft; with recipient nephrectomy	Procedure	CPT-4
50366	Renal Homotransplantation, Implantation Of Graft	Procedure	CPT-4
50370	Removal of transplanted renal allograft	Procedure	CPT-4
5A1D00Z	Performance of Urinary Filtration, Single	Procedure	ICD-10-PCS
5A1D06Z	Performance of Urinary Filtration, Multiple	Procedure	ICD-10-PCS
5A1D70Z	Performance of Urinary Filtration, Intermittent, Less than 6 Hours Per Day	Procedure	ICD-10-PCS
5A1D80Z	Performance of Urinary Filtration, Prolonged Intermittent, 6-18 hours Per Day	Procedure	ICD-10-PCS
5A1D90Z	Performance of Urinary Filtration, Continuous, Greater than 18 hours Per Day	Procedure	ICD-10-PCS
A4653	Peritoneal dialysis catheter anchoring device, belt, each	Procedure	HCPCS
A4671	Disposable cycler set used with cycler dialysis machine, each	Procedure	HCPCS
A4672	Drainage extension line, sterile, for dialysis, each	Procedure	HCPCS
A4673	Extension line with easy lock connectors, used with dialysis	Procedure	HCPCS
A4674	Chemicals/antiseptics solution used to clean/sterilize dialysis equipment, per 8 oz	Procedure	HCPCS
A4680	Activated carbon filters for dialysis	Procedure	HCPCS
A4690	Dialyzers (artificial kidneys) all brands, all sizes per unit	Procedure	HCPCS
A4700	Standard dialysate solution, each	Procedure	HCPCS
A4705	Bicarbonate dialysate solution, each	Procedure	HCPCS
A4706	Bicarbonate concentrate, solution, for hemodialysis, per gallon	Procedure	HCPCS
A4707	Bicarbonate concentrate, powder, for hemodialysis, per packet	Procedure	HCPCS
A4708	Acetate concentrate solution, for hemodialysis, per gallon	Procedure	HCPCS
A4709	Acid concentrate, solution, for hemodialysis, per gallon	Procedure	HCPCS
A4712	Water, sterile	Procedure	HCPCS
A4714	Treated water (deionized, distilled, reverse osmosis) for use in dialysis system	Procedure	HCPCS
A4719	"y set" tubing for peritoneal dialysis	Procedure	HCPCS
A4720	Dialysate solution, any concentration of dextrose, fluid volume greater than 249cc, but less than or equal to 999cc, for peritoneal dialysis	Procedure	HCPCS
A4721	Dialysate solution, any concentration of dextrose, fluid volume greater than 999cc but less than or equal to 1999cc, for peritoneal dialysis	Procedure	HCPCS
A4722	Dialysate solution, any concentration of dextrose, fluid volume greater than 1999cc but less than or equal to 2999cc, for peritoneal dialysis	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
A4723	Dialysate solution, any concentration of dextrose, fluid volume greater than 2999cc but less than or equal to 3999cc, for peritoneal dialysis	Procedure	HCPCS
A4724	Dialysate solution, any concentration of dextrose, fluid volume greater than 3999cc but less than or equal to 4999cc, for peritoneal dialysis	Procedure	HCPCS
A4725	Dialysate solution, any concentration of dextrose, fluid volume greater than 4999cc but less than or equal to 5999cc, for peritoneal dialysis	Procedure	HCPCS
A4726	Dialysate solution, any concentration of dextrose, fluid volume greater than 5999cc, for peritoneal dialysis	Procedure	HCPCS
A4728	Dialysate solution, non-dextrose containing, 500 ml	Procedure	HCPCS
A4730	Fistula cannulation set for dialysis only	Procedure	HCPCS
A4735	Local/topical anesthetics for dialysis only	Procedure	HCPCS
A4736	Topical anesthetic, for dialysis, per gram	Procedure	HCPCS
A4737	Injectable anesthetic, for dialysis, per 10 ml	Procedure	HCPCS
A4740	Shunt accessories for dialysis only	Procedure	HCPCS
A4750	Blood tubing, arterial or venous, each	Procedure	HCPCS
A4755	Blood tubing, arterial and venous combined	Procedure	HCPCS
A4760	Dialysate standard testing solution, supplies	Procedure	HCPCS
A4765	Dialysate concentrate additives, each	Procedure	HCPCS
A4766	Dialysate concentrate, solution, additive for peritoneal dialysis, per 10 ml	Procedure	HCPCS
A4802	Protamine sulfate, for hemodialysis, per 50 mg	Procedure	HCPCS
A4820	Hemodialysis kit supplies	Procedure	HCPCS
A4850	Hemostats with rubber tips for dialysis	Procedure	HCPCS
A4860	Disposable catheter caps	Procedure	HCPCS
A4870	Plumbing and/or electrical work for home dialysis equipment	Procedure	HCPCS
A4880	Storage tanks utilized in connection with water purification system, replacement tanks for dialysis	Procedure	HCPCS
A4890	Contracts, repair and maintenance, for home dialysis equipment (non-covered)	Procedure	HCPCS
A4900	Continuous ambulatory peritoneal dialysis (capd) supply kit	Procedure	HCPCS
A4901	Continuous cycling peritoneal dialysis (ccpd) supply kit	Procedure	HCPCS
A4905	Intermittent peritoneal dialysis (ipd) supply kit	Procedure	HCPCS
A4910	Non-medical supplies for dialysis, (i.e., scale, scissors, stopwatch, etc.)	Procedure	HCPCS
A4911	Drain bag/bottle, for dialysis, each	Procedure	HCPCS
A4912	Gomco drain bottle	Procedure	HCPCS
A4913	Miscellaneous dialysis supplies, not identified elsewhere, by report	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
A4914	Preparation kits	Procedure	HCPCS
A4918	Venous pressure clamps, each	Procedure	HCPCS
B180	Chronic viral hepatitis B with delta-agent	Diagnosis	ICD-10-CM
B181	Chronic viral hepatitis B without delta-agent	Diagnosis	ICD-10-CM
B182	Chronic viral hepatitis C	Diagnosis	ICD-10-CM
B189	Chronic viral hepatitis, unspecified	Diagnosis	ICD-10-CM
B20	Human immunodeficiency virus (HIV) disease	Diagnosis	ICD-10-CM
B9735	Human immunodeficiency virus, type 2 (HIV 2) as the cause of diseases classified	Diagnosis	ICD-10-CM
BT29	Computerized Tomography (CT Scan) / Kidney Transplant	Procedure	ICD-10-PCS
BT2900Z	Computerized Tomography (CT Scan) of Kidney Transplant using High Osmolar Contrast, Unenhanced and Enhanced	Procedure	ICD-10-PCS
BT290ZZ	Computerized Tomography (CT Scan) of Kidney Transplant using High Osmolar	Procedure	ICD-10-PCS
BT2910Z	Computerized Tomography (CT Scan) of Kidney Transplant using Low Osmolar Contrast, Unenhanced and Enhanced	Procedure	ICD-10-PCS
BT291ZZ	Computerized Tomography (CT Scan) of Kidney Transplant using Low Osmolar Contrast	Procedure	ICD-10-PCS
BT29Y0Z	Computerized Tomography (CT Scan) of Kidney Transplant using Other Contrast, Unenhanced and Enhanced	Procedure	ICD-10-PCS
BT29YZZ	Computerized Tomography (CT Scan) of Kidney Transplant using Other Contrast	Procedure	ICD-10-PCS
BT29ZZZ	Computerized Tomography (CT Scan) of Kidney Transplant	Procedure	ICD-10-PCS
BT39	Magnetic Resonance Imaging (MRI) / Kidney Transplant	Procedure	ICD-10-PCS
BT39Y0Z	Magnetic Resonance Imaging (MRI) of Kidney Transplant using Other Contrast, Unenhanced and Enhanced	Procedure	ICD-10-PCS
BT39YZZ	Magnetic Resonance Imaging (MRI) of Kidney Transplant using Other Contrast	Procedure	ICD-10-PCS
BT39ZZZ	Magnetic Resonance Imaging (MRI) of Kidney Transplant	Procedure	ICD-10-PCS
BT49	Ultrasonography / Kidney Transplant	Procedure	ICD-10-PCS
BT49ZZZ	Ultrasonography of Kidney Transplant	Procedure	ICD-10-PCS
D510	Vitamin B12 deficiency anemia due to intrinsic factor deficiency	Diagnosis	ICD-10-CM
D5702	Hb-SS disease with splenic sequestration	Diagnosis	ICD-10-CM
D57212	Sickle-cell/Hb-C disease with splenic sequestration	Diagnosis	ICD-10-CM
D57412	Sickle-cell thalassemia with splenic sequestration	Diagnosis	ICD-10-CM
D57812	Other sickle-cell disorders with splenic sequestration	Diagnosis	ICD-10-CM
D590	Drug-induced autoimmune hemolytic anemia	Diagnosis	ICD-10-CM
D591	Other autoimmune hemolytic anemias	Diagnosis	ICD-10-CM
D600	Chronic acquired pure red cell aplasia	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D601	Transient acquired pure red cell aplasia	Diagnosis	ICD-10-CM
D608	Other acquired pure red cell aplasias	Diagnosis	ICD-10-CM
D609	Acquired pure red cell aplasia, unspecified	Diagnosis	ICD-10-CM
D610	Constitutional aplastic anemia	Diagnosis	ICD-10-CM
D6101	Constitutional (pure) red blood cell aplasia	Diagnosis	ICD-10-CM
D6109	Other constitutional aplastic anemia	Diagnosis	ICD-10-CM
D611	Drug-induced aplastic anemia	Diagnosis	ICD-10-CM
D612	Aplastic anemia due to other external agents	Diagnosis	ICD-10-CM
D613	Idiopathic aplastic anemia	Diagnosis	ICD-10-CM
D61810	Antineoplastic chemotherapy induced pancytopenia	Diagnosis	ICD-10-CM
D61811	Other drug induced pancytopenia	Diagnosis	ICD-10-CM
D61812	Other pancytopenia	Diagnosis	ICD-10-CM
D6189	Other specified aplastic anemias and other bone marrow failure syndromes	Diagnosis	ICD-10-CM
D619	Aplastic anemia, unspecified	Diagnosis	ICD-10-CM
D6481	Anemia due to antineoplastic chemotherapy	Diagnosis	ICD-10-CM
D690	Allergic purpura	Diagnosis	ICD-10-CM
D692	Other nonthrombocytopenic purpura	Diagnosis	ICD-10-CM
D693	Immune thrombocytopenic purpura	Diagnosis	ICD-10-CM
D6941	Evans syndrome	Diagnosis	ICD-10-CM
D700	Congenital agranulocytosis	Diagnosis	ICD-10-CM
D701	Agranulocytosis secondary to cancer chemotherapy	Diagnosis	ICD-10-CM
D702	Other drug-induced agranulocytosis	Diagnosis	ICD-10-CM
D704	Cyclic neutropenia	Diagnosis	ICD-10-CM
D71	Functional disorders of polymorphonuclear neutrophils	Diagnosis	ICD-10-CM
D720	Genetic anomalies of leukocytes	Diagnosis	ICD-10-CM
D761	Hemophagocytic lymphohistiocytosis	Diagnosis	ICD-10-CM
D762	Hemophagocytic syndrome, infection-associated	Diagnosis	ICD-10-CM
D763	Other histiocytosis syndromes	Diagnosis	ICD-10-CM
D800	Hereditary hypogammaglobulinemia	Diagnosis	ICD-10-CM
D801	Nonfamilial hypogammaglobulinemia	Diagnosis	ICD-10-CM
D802	Selective deficiency of immunoglobulin A [IgA]	Diagnosis	ICD-10-CM
D803	Selective deficiency of immunoglobulin G [IgG] subclasses	Diagnosis	ICD-10-CM
D804	Selective deficiency of immunoglobulin M [IgM]	Diagnosis	ICD-10-CM
D805	Immunodeficiency with increased immunoglobulin M [IgM]	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D806	Antibody deficiency with near-normal immunoglobulins or with	Diagnosis	ICD-10-CM
D808	Other immunodeficiencies with predominantly antibody defects	Diagnosis	ICD-10-CM
D809	Immunodeficiency with predominantly antibody defects, unspecified	Diagnosis	ICD-10-CM
D810	Severe combined immunodeficiency [SCID] with reticular dysgenesis	Diagnosis	ICD-10-CM
D811	Severe combined immunodeficiency [SCID] with low T- and B-cell numbers	Diagnosis	ICD-10-CM
D812	Severe combined immunodeficiency [SCID] with low or normal B-cell numbers	Diagnosis	ICD-10-CM
D813	Adenosine deaminase [ADA] deficiency	Diagnosis	ICD-10-CM
D8130	Adenosine deaminase deficiency, unspecified	Diagnosis	ICD-10-CM
D8131	Adenosine deaminase deficiency with severe combined immunodeficiency	Diagnosis	ICD-10-CM
D8132	Adenosine deaminase 2 deficiency	Diagnosis	ICD-10-CM
D8139	Other adenosine deaminase deficiency	Diagnosis	ICD-10-CM
D814	Nezelof's syndrome	Diagnosis	ICD-10-CM
D815	Purine nucleoside phosphorylase [PNP] deficiency	Diagnosis	ICD-10-CM
D816	Major histocompatibility complex class I deficiency	Diagnosis	ICD-10-CM
D817	Major histocompatibility complex class II deficiency	Diagnosis	ICD-10-CM
D8189	Other combined immunodeficiencies	Diagnosis	ICD-10-CM
D819	Combined immunodeficiency, unspecified	Diagnosis	ICD-10-CM
D820	Wiskott-Aldrich syndrome	Diagnosis	ICD-10-CM
D821	Di George's syndrome	Diagnosis	ICD-10-CM
D822	Immunodeficiency with short-limbed stature	Diagnosis	ICD-10-CM
D823	Immunodeficiency following hereditary defective response to Epstein-Barr virus	Diagnosis	ICD-10-CM
D824	Hyperimmunoglobulin E [IgE] syndrome	Diagnosis	ICD-10-CM
D828	Immunodeficiency associated with other specified major defects	Diagnosis	ICD-10-CM
D829	Immunodeficiency associated with major defect, unspecified	Diagnosis	ICD-10-CM
D830	Common variable immunodeficiency with predominant abnormalities of B-cell numbers and function	Diagnosis	ICD-10-CM
D831	Common variable immunodeficiency with predominant immunoregulatory T-cell	Diagnosis	ICD-10-CM
D832	Common variable immunodeficiency with autoantibodies to B- or T-cells	Diagnosis	ICD-10-CM
D838	Other common variable immunodeficiencies	Diagnosis	ICD-10-CM
D839	Common variable immunodeficiency, unspecified	Diagnosis	ICD-10-CM
D840	Lymphocyte function antigen-1 [LFA-1] defect	Diagnosis	ICD-10-CM
D841	Defects in the complement system	Diagnosis	ICD-10-CM
D848	Other specified immunodeficiencies	Diagnosis	ICD-10-CM
D849	Immunodeficiency, unspecified	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D893	Immune reconstitution syndrome	Diagnosis	ICD-10-CM
D89810	Acute graft-versus-host disease	Diagnosis	ICD-10-CM
D89811	Chronic graft-versus-host disease	Diagnosis	ICD-10-CM
D89812	Acute on chronic graft-versus-host disease	Diagnosis	ICD-10-CM
D89813	Graft-versus-host disease, unspecified	Diagnosis	ICD-10-CM
D8982	Autoimmune lymphoproliferative syndrome [ALPS]	Diagnosis	ICD-10-CM
D8989	Other specified disorders involving the immune mechanism, not elsewhere classified	Diagnosis	ICD-10-CM
D899	Disorder involving the immune mechanism, unspecified	Diagnosis	ICD-10-CM
E0500	Thyrotoxicosis with diffuse goiter without thyrotoxic crisis or storm	Diagnosis	ICD-10-CM
E0501	Thyrotoxicosis with diffuse goiter with thyrotoxic crisis or storm	Diagnosis	ICD-10-CM
E0510	Thyrotoxicosis with toxic single thyroid nodule without thyrotoxic crisis or storm	Diagnosis	ICD-10-CM
E0511	Thyrotoxicosis with toxic single thyroid nodule with thyrotoxic crisis or storm	Diagnosis	ICD-10-CM
E0520	Thyrotoxicosis with toxic multinodular goiter without thyrotoxis crisis or storm	Diagnosis	ICD-10-CM
E0521	Thyrotoxicosis with toxic multinodular goiter with thyrotoxis crisis or storm	Diagnosis	ICD-10-CM
E0580	Other thyrotoxicosis without thyrotoxis crisis or storm	Diagnosis	ICD-10-CM
E0581	Other thyrotoxicosis with thyrotoxis crisis or storm	Diagnosis	ICD-10-CM
E0590	Thyrotoxicosis, unspecified without thyrotoxis crisis or storm	Diagnosis	ICD-10-CM
E0591	Thyrotoxicosis, unspecified with thyrotoxis crisis or storm	Diagnosis	ICD-10-CM
E060	Acute thyroiditis	Diagnosis	ICD-10-CM
E061	Subacute thyroiditis	Diagnosis	ICD-10-CM
E062	Chronic thyroiditis with transient thyrotoxicosis	Diagnosis	ICD-10-CM
E063	Autoimmune thyroiditis	Diagnosis	ICD-10-CM
E064	Drug-induced thyroiditis	Diagnosis	ICD-10-CM
E065	Other chronic thyroiditis	Diagnosis	ICD-10-CM
E069	Thyroiditis, unspecified	Diagnosis	ICD-10-CM
E1500	Centrifuge, for dialysis	Procedure	HCPCS
E1510	Kidney, dialysate delivery syst. kidney machine, pump recirculating, air removal syst, flowrate meter, power off, heater and temperature control with alarm, i.v.poles, pressure gauge, concentrate container	Procedure	HCPCS
E1520	Heparin infusion pump for dialysis	Procedure	HCPCS
E1530	Air bubble detector for dialysis	Procedure	HCPCS
E1540	Pressure alarm for dialysis	Procedure	HCPCS
E1550	Bath conductivity meter for dialysis	Procedure	HCPCS
E1560	Blood leak detector for dialysis	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E1570	Adjustable chair, for esrd patients	Procedure	HCPCS
E1575	Transducer protectors/fluid barriers, any size, each	Procedure	HCPCS
E1580	Unipuncture control system for dialysis	Procedure	HCPCS
E1590	Hemodialysis machine	Procedure	HCPCS
E1592	Automatic intermittent peritoneal dialysis system	Procedure	HCPCS
E1594	Cycler dialysis machine for peritoneal dialysis	Procedure	HCPCS
E1600	Delivery and/or installation charges for renal dialysis equipment	Procedure	HCPCS
E1610	Reverse osmosis water purification system	Procedure	HCPCS
E1615	Deionizer water purification system	Procedure	HCPCS
E1620	Blood pump for dialysis	Procedure	HCPCS
E1625	Water softening system	Procedure	HCPCS
E1630	Reciprocating peritoneal dialysis system	Procedure	HCPCS
E1632	Wearable artifical kidney	Procedure	HCPCS
E1634	Peritoneal dialysis clamps, each	Procedure	HCPCS
E1635	Compact (portable) travel hemodialyzer system	Procedure	HCPCS
E1636	Sorbent cartridges, per case	Procedure	HCPCS
E271	Primary adrenocortical insufficiency	Diagnosis	ICD-10-CM
E272	Addisonian crisis	Diagnosis	ICD-10-CM
E40	Kwashiorkor	Diagnosis	ICD-10-CM
E41	Nutritional marasmus	Diagnosis	ICD-10-CM
E42	Marasmic kwashiorkor	Diagnosis	ICD-10-CM
E43	Unspecified severe protein-calorie malnutrition	Diagnosis	ICD-10-CM
E803	Defects of catalase and peroxidase	Diagnosis	ICD-10-CM
G35	Multiple sclerosis	Diagnosis	ICD-10-CM
G7000	Myasthenia gravis without (acute) exacerbation	Diagnosis	ICD-10-CM
G7001	Myasthenia gravis with (acute) exacerbation	Diagnosis	ICD-10-CM
G7080	Lambert-Eaton syndrome, unspecified	Diagnosis	ICD-10-CM
G7081	Lambert-Eaton syndrome in disease classified elsewhere	Diagnosis	ICD-10-CM
G7241	Inclusion body myositis [IBM]	Diagnosis	ICD-10-CM
G7249	Other inflammatory and immune myopathies, not elsewhere classified	Diagnosis	ICD-10-CM
I120	Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease	Diagnosis	ICD-10-CM
I1311	Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
I132	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease	Diagnosis	ICD-10-CM
I25750	Atherosclerosis of native coronary artery of transplanted heart with unstable angina	Diagnosis	ICD-10-CM
I25751	Atherosclerosis of native coronary artery of transplanted heart with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25758	Atherosclerosis of native coronary artery of transplanted heart with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25759	Atherosclerosis of native coronary artery of transplanted heart with unspecified	Diagnosis	ICD-10-CM
I25760	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable	Diagnosis	ICD-10-CM
I25761	Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina pectoris with documented spasm	Diagnosis	ICD-10-CM
I25768	Atherosclerosis of bypass graft of coronary artery of transplanted heart with other forms of angina pectoris	Diagnosis	ICD-10-CM
I25769	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unspecified angina pectoris	Diagnosis	ICD-10-CM
I25811	Atherosclerosis of native coronary artery of transplanted heart without angina	Diagnosis	ICD-10-CM
I25812	Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina	Diagnosis	ICD-10-CM
I731	Thromboangiitis obliterans [Buerger's disease]	Diagnosis	ICD-10-CM
I776	Arteritis, unspecified	Diagnosis	ICD-10-CM
I8500	Esophageal varices without bleeding	Diagnosis	ICD-10-CM
I8501	Esophageal varices with bleeding	Diagnosis	ICD-10-CM
I8510	Secondary esophageal varices without bleeding	Diagnosis	ICD-10-CM
I8511	Secondary esophageal varices with bleeding	Diagnosis	ICD-10-CM
K7210	Chronic hepatic failure without coma	Diagnosis	ICD-10-CM
K7211	Chronic hepatic failure with coma	Diagnosis	ICD-10-CM
K7290	Hepatic failure, unspecified without coma	Diagnosis	ICD-10-CM
K7291	Hepatic failure, unspecified with coma	Diagnosis	ICD-10-CM
K743	Primary billiary cirrhosis	Diagnosis	ICD-10-CM
K763	Infarction of liver	Diagnosis	ICD-10-CM
K766	Portal hypertension	Diagnosis	ICD-10-CM
K7681	Hepatopulmonary syndrome	Diagnosis	ICD-10-CM
K912	Postsurgical malabsorption, not elsewhere classified	Diagnosis	ICD-10-CM
L100	Pemphigus vulgaris	Diagnosis	ICD-10-CM
L101	Pemphigus vegetans	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
L102	Pemphigus foliaceous	Diagnosis	ICD-10-CM
L103	Brazilian pemphigus [fogo selvagem]	Diagnosis	ICD-10-CM
L104	Pemphigus erythematosus	Diagnosis	ICD-10-CM
L1081	Paraneoplastic pemphigus	Diagnosis	ICD-10-CM
L1089	Other pemphigus	Diagnosis	ICD-10-CM
L109	Pemphigus, unspecified	Diagnosis	ICD-10-CM
L120	Bullous pemphigoid	Diagnosis	ICD-10-CM
L121	Cicatricial pemphigoid	Diagnosis	ICD-10-CM
L122	Chronic bullous disease of childhood	Diagnosis	ICD-10-CM
L128	Other pemphigoid	Diagnosis	ICD-10-CM
L129	Pemphigoid, unspecified	Diagnosis	ICD-10-CM
L130	Dermatitis herpetiformis	Diagnosis	ICD-10-CM
L138	Other specified bullous disorders	Diagnosis	ICD-10-CM
L139	Bullous disorder, unspecified	Diagnosis	ICD-10-CM
L400	Psoriasis vulgaris	Diagnosis	ICD-10-CM
L401	Generalized pustular psoriasis	Diagnosis	ICD-10-CM
L402	Acrodermatitis continua	Diagnosis	ICD-10-CM
L403	Pustulosis palmaris et plantaris	Diagnosis	ICD-10-CM
L404	Guttate psoriasis	Diagnosis	ICD-10-CM
L4050	Arthropathic psoriasis, unspecified	Diagnosis	ICD-10-CM
L4051	Distal interphalangeal psoriatic arthropathy	Diagnosis	ICD-10-CM
L4052	Psoriatic arthritis mutilans	Diagnosis	ICD-10-CM
L4053	Psoriatic spondylitis	Diagnosis	ICD-10-CM
L4054	Psoriatic juvenile arthropathy	Diagnosis	ICD-10-CM
L4059	Other psoriatic arthropathy	Diagnosis	ICD-10-CM
L408	Other psoriasis	Diagnosis	ICD-10-CM
L409	Psoriasis, unspecified	Diagnosis	ICD-10-CM
M308	Other conditions related to polyarteritis nodosa	Diagnosis	ICD-10-CM
M310	Hypersensitivity angiitis	Diagnosis	ICD-10-CM
M311	Thrombotic microangiopathy	Diagnosis	ICD-10-CM
M312	Lethal midline granuloma	Diagnosis	ICD-10-CM
M3130	Wegener's granulomatosis without renal involvement	Diagnosis	ICD-10-CM
M3131	Wegener's granulomatosis with renal involvement	Diagnosis	ICD-10-CM
M314	Aortic arch syndrome [Takayasu]	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
M315	Giant cell arteritis with polymyalgia rheumatica	Diagnosis	ICD-10-CM
M316	Other giant cell arteritis	Diagnosis	ICD-10-CM
M317	Microscopic polyangiitis	Diagnosis	ICD-10-CM
M318	Other specified necrotizing vasculopathies	Diagnosis	ICD-10-CM
M319	Necrotizing vasculopathy, unspecified	Diagnosis	ICD-10-CM
M3500	Sicca syndrome, unspecified	Diagnosis	ICD-10-CM
M3501	Sicca syndrome with keratoconjunctivitis	Diagnosis	ICD-10-CM
M3502	Sicca syndrome with lung involvement	Diagnosis	ICD-10-CM
M3503	Sicca syndrome with myopathy	Diagnosis	ICD-10-CM
M3504	Sicca syndrome with tubulo-interstitial nephropathy	Diagnosis	ICD-10-CM
M3509	Sicca syndrome with other organ involvement	Diagnosis	ICD-10-CM
M351	Other overlap syndromes	Diagnosis	ICD-10-CM
M352	Behçet's disease	Diagnosis	ICD-10-CM
M353	Polymyalgia rheumatica	Diagnosis	ICD-10-CM
M354	Diffuse (eosinophilic) fasciitis	Diagnosis	ICD-10-CM
M355	Multifocal fibrosclerosis	Diagnosis	ICD-10-CM
M356	Relapsing panniculitis [Weber-Christian]	Diagnosis	ICD-10-CM
M358	Other specified systemic involvement of connective tissue	Diagnosis	ICD-10-CM
M359	Systemic involvement of connective tissue, unspecified	Diagnosis	ICD-10-CM
N000	Acute nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N001	Acute nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N002	Acute nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N003	Acute nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N004	Acute nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N005	Acute nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N006	Acute nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N007	Acute nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N008	Acute nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N009	Acute nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N010	Rapidly progressive nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N011	Rapidly progressive nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N012	Rapidly progressive nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N013	Rapidly progressive nephritic syndrome with diffuse mesangial proliferative	Diagnosis	ICD-10-CM

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Code	Description	Code Category	Code Type
N014	Rapidly progressive nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N015	Rapidly progressive nephritic syndrome with diffuse mesangiocapillary	Diagnosis	ICD-10-CM
N016	Rapidly progressive nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N017	Rapidly progressive nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N018	Rapidly progressive nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N019	Rapidly progressive nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N020	Recurrent and persistent hematuria with minor glomerular abnormality	Diagnosis	ICD-10-CM
N021	Recurrent and persistent hematuria with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N022	Recurrent and persistent hematuria with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N023	Recurrent and persistent hematuria with diffuse mesangial proliferative	Diagnosis	ICD-10-CM
N024	Recurrent and persistent hematuria with diffuse endocapillary proliferative	Diagnosis	ICD-10-CM
N025	Recurrent and persistent hematuria with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N026	Recurrent and persistent hematuria with dense deposit disease	Diagnosis	ICD-10-CM
N027	Recurrent and persistent hematuria with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N028	Recurrent and persistent hematuria with other morphologic changes	Diagnosis	ICD-10-CM
N029	Recurrent and persistent hematuria with unspecified morphologic changes	Diagnosis	ICD-10-CM
N030	Chronic nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N031	Chronic nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N032	Chronic nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N033	Chronic nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N034	Chronic nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N035	Chronic nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N036	Chronic nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N037	Chronic nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N038	Chronic nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N039	Chronic nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N040	Nephrotic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N041	Nephrotic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N042	Nephrotic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N043	Nephrotic syndrome with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N044	Nephrotic syndrome with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N045	Nephrotic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N046	Nephrotic syndrome with dense deposit disease	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
N047	Nephrotic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N048	Nephrotic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N049	Nephrotic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N050	Unspecified nephritic syndrome with minor glomerular abnormality	Diagnosis	ICD-10-CM
N051	Unspecified nephritic syndrome with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N052	Unspecified nephritic syndrome with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N053	Unspecified nephritic syndrome with diffuse mesangial proliferative	Diagnosis	ICD-10-CM
N054	Unspecified nephritic syndrome with diffuse endocapillary proliferative	Diagnosis	ICD-10-CM
N055	Unspecified nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N056	Unspecified nephritic syndrome with dense deposit disease	Diagnosis	ICD-10-CM
N057	Unspecified nephritic syndrome with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N058	Unspecified nephritic syndrome with other morphologic changes	Diagnosis	ICD-10-CM
N059	Unspecified nephritic syndrome with unspecified morphologic changes	Diagnosis	ICD-10-CM
N060	Isolated proteinuria with minor glomerular abnormality	Diagnosis	ICD-10-CM
N061	Isolated proteinuria with focal and segmental glomerular lesions	Diagnosis	ICD-10-CM
N062	Isolated proteinuria with diffuse membranous glomerulonephritis	Diagnosis	ICD-10-CM
N063	Isolated proteinuria with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N064	Isolated proteinuria with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N065	Isolated proteinuria with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N066	Isolated proteinuria with dense deposit disease	Diagnosis	ICD-10-CM
N067	Isolated proteinuria with diffuse crescentic glomerulonephritis	Diagnosis	ICD-10-CM
N068	Isolated proteinuria with other morphologic lesion	Diagnosis	ICD-10-CM
N069	Isolated proteinuria with unspecified morphologic lesion	Diagnosis	ICD-10-CM
N070	Hereditary nephropathy, not elsewhere classified with minor glomerular abnormality	Diagnosis	ICD-10-CM
N071	Hereditary nephropathy, not elsewhere classified with focal and segmental glomerular	Diagnosis	ICD-10-CM
N072	Hereditary nephropathy, not elsewhere classified with diffuse membranous	Diagnosis	ICD-10-CM
N073	Hereditary nephropathy, not elsewhere classified with diffuse mesangial proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N074	Hereditary nephropathy, not elsewhere classified with diffuse endocapillary proliferative glomerulonephritis	Diagnosis	ICD-10-CM
N075	Hereditary nephropathy, not elsewhere classified with diffuse mesangiocapillary glomerulonephritis	Diagnosis	ICD-10-CM
N076	Hereditary nephropathy, not elsewhere classified with dense deposit disease	Diagnosis	ICD-10-CM
N077	Hereditary nephropathy, not elsewhere classified with diffuse crescentic	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
N078	Hereditary nephropathy, not elsewhere classified with other morphologic lesions	Diagnosis	ICD-10-CM
N079	Hereditary nephropathy, not elsewhere classified with unspecified morphologic lesions	Diagnosis	ICD-10-CM
N08	Glomerular disorders in diseases classified elsewhere	Diagnosis	ICD-10-CM
N140	Analgesic nephropathy	Diagnosis	ICD-10-CM
N141	Nephropathy induced by other drugs, medicaments and biological substances	Diagnosis	ICD-10-CM
N142	Nephropathy induced by unspecified drug, medicament or biological substance	Diagnosis	ICD-10-CM
N143	Nephropathy induced by heavy metals	Diagnosis	ICD-10-CM
N144	Toxic nephropathy, not elsewhere classified	Diagnosis	ICD-10-CM
N150	Balkan nephropathy	Diagnosis	ICD-10-CM
N158	Other specified renal tubulo-interstitial diseases	Diagnosis	ICD-10-CM
N159	Renal tubulo-interstitial disease, unspecified	Diagnosis	ICD-10-CM
N16	Renal tubulo-interstitial disorders in diseases classified elsewhere	Diagnosis	ICD-10-CM
N171	Acute kidney failure with acute cortical necrosis	Diagnosis	ICD-10-CM
N172	Acute kidney failure with medullary necrosis	Diagnosis	ICD-10-CM
N185	Chronic kidney disease, stage 5	Diagnosis	ICD-10-CM
N186	End stage renal disease	Diagnosis	ICD-10-CM
Q8901	Asplenia (congenital)	Diagnosis	ICD-10-CM
Q8909	Congenital malformations of spleen	Diagnosis	ICD-10-CM
R9082	White matter disease, unspecified	Diagnosis	ICD-10-CM
S2053	Transplantation of small intestine and liver allografts	Procedure	HCPCS
S2054	Transplantation of multivisceral organs	Procedure	HCPCS
S2060	Lobar lung transplantation	Procedure	HCPCS
S2065	Simultaneous pancreas kidney transplantation	Procedure	HCPCS
S2142	Cord blood-derived stem-cell transplantation, allogeneic	Procedure	HCPCS
S2150	Bone marrow or blood-derived stem cells (peripheral or umbilical), allogeneic or autologous, harvesting, transplantation, and related complications; including: pheresis and cell preparation/storage; marrow ablative therapy; drugs, supplies, hospitalization with outpatient follow-up; medical/surgical, diagnostic, emergency, and rehabilitative services; and the number of days of pre and post transplant care in the global definition	Procedure	HCPCS
S2152	Solid organ(s), complete or segmental, single organ or combination of organs; deceased or living donor (s), procurement, transplantation, and related complications; including: drugs; supplies; hospitalization with outpatient follow-up; medical/surgical, diagnostic, emergency, and rehabilitative services, and the number of days of pre and posttransplant care in the global definition	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
T8600	Unspecified complication of bone marrow transplant	Diagnosis	ICD-10-CM
T8601	Bone marrow transplant rejection	Diagnosis	ICD-10-CM
T8602	Bone marrow transplant failure	Diagnosis	ICD-10-CM
T8603	Bone marrow transplant infection	Diagnosis	ICD-10-CM
T8609	Other complications of bone marrow transplant	Diagnosis	ICD-10-CM
T8610	Unspecified complication of kidney transplant	Diagnosis	ICD-10-CM
T8611	Kidney transplant rejection	Diagnosis	ICD-10-CM
T8612	Kidney transplant failure	Diagnosis	ICD-10-CM
T8613	Kidney transplant infection	Diagnosis	ICD-10-CM
T8619	Other complication of kidney transplant	Diagnosis	ICD-10-CM
T8620	Unspecified complication of heart transplant	Diagnosis	ICD-10-CM
T8621	Heart transplant rejection	Diagnosis	ICD-10-CM
T8622	Heart transplant failure	Diagnosis	ICD-10-CM
T8623	Heart transplant infection	Diagnosis	ICD-10-CM
T86290	Cardiac allograft vasculopathy	Diagnosis	ICD-10-CM
T86298	Other complications of heart transplant	Diagnosis	ICD-10-CM
T8630	Unspecified complication of heart-lung transplant	Diagnosis	ICD-10-CM
T8631	Heart-lung transplant rejection	Diagnosis	ICD-10-CM
T8632	Heart-lung transplant failure	Diagnosis	ICD-10-CM
T8633	Heart-lung transplant infection	Diagnosis	ICD-10-CM
T8639	Other complications of heart-lung transplant	Diagnosis	ICD-10-CM
T8640	Unspecified complication of liver transplant	Diagnosis	ICD-10-CM
T8641	Liver transplant rejection	Diagnosis	ICD-10-CM
T8642	Liver transplant failure	Diagnosis	ICD-10-CM
T8643	Liver transplant infection	Diagnosis	ICD-10-CM
T8649	Other complications of liver transplant	Diagnosis	ICD-10-CM
T86810	Lung transplant rejection	Diagnosis	ICD-10-CM
T86811	Lung transplant failure	Diagnosis	ICD-10-CM
T86812	Lung transplant infection	Diagnosis	ICD-10-CM
T86818	Other complications of lung transplant	Diagnosis	ICD-10-CM
T86819	Unspecified complication of lung transplant	Diagnosis	ICD-10-CM
T86850	Intestine transplant rejection	Diagnosis	ICD-10-CM
T86851	Intestine transplant failure	Diagnosis	ICD-10-CM
T86852	Intestine transplant infection	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
T86858	Other complications of intestine transplant	Diagnosis	ICD-10-CM
T86859	Unspecified complication of intestine transplant	Diagnosis	ICD-10-CM
T86890	Other transplanted tissue rejection	Diagnosis	ICD-10-CM
T86891	Other transplanted tissue failure	Diagnosis	ICD-10-CM
T86892	Other transplanted tissue infection	Diagnosis	ICD-10-CM
T86898	Other complications of other transplanted tissue	Diagnosis	ICD-10-CM
T86899	Unspecified complication of other transplanted tissue	Diagnosis	ICD-10-CM
T8690	Unspecified complication of unspecified transplanted organ and tissue	Diagnosis	ICD-10-CM
T8691	Unspecified transplanted organ and tissue rejection	Diagnosis	ICD-10-CM
T8692	Unspecified transplanted organ and tissue failure	Diagnosis	ICD-10-CM
T8693	Unspecified transplanted organ and tissue infection	Diagnosis	ICD-10-CM
T8699	Other complications of unspecified transplanted organ and tissue	Diagnosis	ICD-10-CM
Y830	Surgical operation with transplant of whole organ as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure	Diagnosis	ICD-10-CM
Z21	Asymptomatic human immunodeficiency virus (HIV) infection status	Diagnosis	ICD-10-CM
Z4821	Encounter for aftercare following heart transplant	Diagnosis	ICD-10-CM
Z4822	Encounter for aftercare following kidney transplant	Diagnosis	ICD-10-CM
Z4823	Encounter for aftercare following liver transplant	Diagnosis	ICD-10-CM
Z4824	Encounter for aftercare following lung transplant	Diagnosis	ICD-10-CM
Z48280	Encounter for aftercare following heart-lung transplant	Diagnosis	ICD-10-CM
Z48288	Encounter for aftercare following multiple organ transplant	Diagnosis	ICD-10-CM
Z48290	Encounter for aftercare following bone marrow transplant	Diagnosis	ICD-10-CM
Z48298	Encounter for aftercare following other organ transplant	Diagnosis	ICD-10-CM
Z49	Encounter for care involving renal dialysis	Diagnosis	ICD-10-CM
Z4901	Encounter for fitting and adjustment of extracorporeal dialysis catheter	Diagnosis	ICD-10-CM
Z4902	Encounter for fitting and adjustment of peritoneal dialysis catheter	Diagnosis	ICD-10-CM
Z4931	Encounter for adequacy testing for hemodialysis	Diagnosis	ICD-10-CM
Z4932	Encounter for adequacy testing for peritoneal dialysis	Diagnosis	ICD-10-CM
Z940	Kidney transplant status	Diagnosis	ICD-10-CM
Z941	Heart transplant status	Diagnosis	ICD-10-CM
Z942	Lung transplant status	Diagnosis	ICD-10-CM
Z943	Heart and lungs transplant status	Diagnosis	ICD-10-CM
Z944	Liver transplant status	Diagnosis	ICD-10-CM
Z9481	Bone marrow transplant status	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Z9482	Intestine transplant status	Diagnosis	ICD-10-CM
Z9483	Pancreas transplant status	Diagnosis	ICD-10-CM
Z9484	Stem cells transplant status	Diagnosis	ICD-10-CM
Z9489	Other transplanted organ and tissue status	Diagnosis	ICD-10-CM
Z949	Transplanted organ and tissue status, unspecified	Diagnosis	ICD-10-CM
Z992	Dependence on renal dialysis	Diagnosis	ICD-10-CM
Smoking or Nicotine Use			
1032F	Current tobacco smoker or currently exposed to secondhand smoke (Asthma)	Procedure	CPT-2
1034F	Current tobacco smoker (CAD, CAP, COPD, PV) (DM)	Procedure	CPT-2
1035F	Current smokeless tobacco user (eg, chew, snuff) (PV)	Procedure	CPT-2
4000F	Tobacco use cessation intervention, counseling (COPD, CAP, CAD, Asthma) (DM) (PV)	Procedure	CPT-2
4001F	Tobacco use cessation intervention, pharmacologic therapy (COPD, CAD, CAP, PV, Asthma) (DM) (PV)	Procedure	CPT-2
4004F	Patient screened for tobacco use and received tobacco cessation intervention (counseling, pharmacotherapy, or both), if identified as a tobacco user (PV, CAD)	Procedure	CPT-2
99406	Smoking and tobacco use cessation counseling visit; intermediate, greater than 3 minutes up to 10 minutes	Procedure	CPT-4
99407	Smoking and tobacco use cessation counseling visit; intensive, greater than 10 minutes	Procedure	CPT-4
D1320	tobacco counseling for the control and prevention of oral disease	Procedure	HCPCS
F17	Nicotine dependence	Diagnosis	ICD-10-CM
F17.2	Nicotine dependence	Diagnosis	ICD-10-CM
F17.20	Nicotine dependence, unspecified	Diagnosis	ICD-10-CM
F17.200	Nicotine dependence, unspecified, uncomplicated	Diagnosis	ICD-10-CM
F17.201	Nicotine dependence, unspecified, in remission	Diagnosis	ICD-10-CM
F17.203	Nicotine dependence unspecified, with withdrawal	Diagnosis	ICD-10-CM
F17.208	Nicotine dependence, unspecified, with other nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.209	Nicotine dependence, unspecified, with unspecified nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.21	Nicotine dependence, cigarettes	Diagnosis	ICD-10-CM
F17.210	Nicotine dependence, cigarettes, uncomplicated	Diagnosis	ICD-10-CM
F17.211	Nicotine dependence, cigarettes, in remission	Diagnosis	ICD-10-CM
F17.213	Nicotine dependence, cigarettes, with withdrawal	Diagnosis	ICD-10-CM
F17.218	Nicotine dependence, cigarettes, with other nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.219	Nicotine dependence, cigarettes, with unspecified nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.22	Nicotine dependence, chewing tobacco	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
F17.220	Nicotine dependence, chewing tobacco, uncomplicated	Diagnosis	ICD-10-CM
F17.221	Nicotine dependence, chewing tobacco, in remission	Diagnosis	ICD-10-CM
F17.223	Nicotine dependence, chewing tobacco, with withdrawal	Diagnosis	ICD-10-CM
F17.228	Nicotine dependence, chewing tobacco, with other nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.229	Nicotine dependence, chewing tobacco, with unspecified nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.29	Nicotine dependence, other tobacco product	Diagnosis	ICD-10-CM
F17.290	Nicotine dependence, other tobacco product, uncomplicated	Diagnosis	ICD-10-CM
F17.291	Nicotine dependence, other tobacco product, in remission	Diagnosis	ICD-10-CM
F17.293	Nicotine dependence, other tobacco product, with withdrawal	Diagnosis	ICD-10-CM
F17.298	Nicotine dependence, other tobacco product, with other nicotine-induced disorders	Diagnosis	ICD-10-CM
F17.299	Nicotine dependence, other tobacco product, with unspecified nicotine-induced	Diagnosis	ICD-10-CM
G9016	Smoking cessation counseling, individual, in the absence of or in addition to any other evaluation and management service, per session (6-10 minutes) [demo project code only]	Procedure	HCPCS
G9276	Documentation that patient is a current tobacco user	Procedure	HCPCS
G9458	Patient documented as tobacco user and received tobacco cessation intervention (must include at least one of the following: advice given to quit smoking or tobacco use, counseling on the benefits of quitting smoking or tobacco use, assistance with or referral to external smoking or tobacco cessation support programs, or current enrollment in smoking or tobacco use cessation program) if identified as a tobacco user	Procedure	HCPCS
G9645	Patients who did not abstain from smoking prior to anesthesia on the day of surgery or procedure	Procedure	HCPCS
G9792	Most recent tobacco status is not tobacco free	Procedure	HCPCS
G9902	Patient screened for tobacco use and identified as a tobacco user	Procedure	HCPCS
G9906	Patient identified as a tobacco user received tobacco cessation intervention on the date of the encounter or within the previous 12 months (counseling and/or pharmacotherapy)	Procedure	HCPCS
G9908	Patient identified as tobacco user did not receive tobacco cessation intervention on the date of the encounter or within the previous 12 months (counseling and/or pharmacotherapy), reason not given	Procedure	HCPCS
G9909	Documentation of medical reason(s) for not providing tobacco cessation intervention on the date of the encounter or within the previous 12 months if identified as a tobacco user (e.g., limited life expectancy, other medical reason)	Procedure	HCPCS
O99.33	Tobacco use disorder complicating pregnancy, childbirth, and the puerperium	Diagnosis	ICD-10-CM
O99.330	Smoking (tobacco) complicating pregnancy, unspecified trimester	Diagnosis	ICD-10-CM
O99.331	Smoking (tobacco) complicating pregnancy, first trimester	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
O99.332	Smoking (tobacco) complicating pregnancy, second trimester	Diagnosis	ICD-10-CM
O99.333	Smoking (tobacco) complicating pregnancy, third trimester	Diagnosis	ICD-10-CM
O99.334	Smoking (tobacco) complicating childbirth	Diagnosis	ICD-10-CM
O99.335	Smoking (tobacco) complicating the puerperium	Diagnosis	ICD-10-CM
S4990	Nicotine patches, legend	Procedure	HCPCS
S4991	Nicotine patches, nonlegend	Procedure	HCPCS
S4995	Smoking cessation gum	Procedure	HCPCS
S9075	Smoking cessation treatment	Procedure	HCPCS
S9453	Smoking cessation classes, nonphysician provider, per session	Procedure	HCPCS
T65.2	Toxic effect of tobacco and nicotine	Diagnosis	ICD-10-CM
T65.21	Toxic effect of chewing tobacco	Diagnosis	ICD-10-CM
T65.211	Toxic effect of chewing tobacco, accidental (unintentional)	Diagnosis	ICD-10-CM
T65.211A	Toxic effect of chewing tobacco, accidental (unintentional), initial encounter	Diagnosis	ICD-10-CM
T65.211D	Toxic effect of chewing tobacco, accidental (unintentional), subsequent encounter	Diagnosis	ICD-10-CM
T65.211S	Toxic effect of chewing tobacco, accidental (unintentional), sequela	Diagnosis	ICD-10-CM
T65.212	Toxic effect of chewing tobacco, intentional self-harm	Diagnosis	ICD-10-CM
T65.212A	Toxic effect of chewing tobacco, intentional self-harm, initial encounter	Diagnosis	ICD-10-CM
T65.212D	Toxic effect of chewing tobacco, intentional self-harm, subsequent encounter	Diagnosis	ICD-10-CM
T65.212S	Toxic effect of chewing tobacco, intentional self-harm, sequela	Diagnosis	ICD-10-CM
T65.213	Toxic effect of chewing tobacco, assault	Diagnosis	ICD-10-CM
T65.213A	Toxic effect of chewing tobacco, assault, initial encounter	Diagnosis	ICD-10-CM
T65.213D	Toxic effect of chewing tobacco, assault, subsequent encounter	Diagnosis	ICD-10-CM
T65.213S	Toxic effect of chewing tobacco, assault, sequela	Diagnosis	ICD-10-CM
T65.214	Toxic effect of chewing tobacco, undetermined	Diagnosis	ICD-10-CM
T65.214A	Toxic effect of chewing tobacco, undetermined, initial encounter	Diagnosis	ICD-10-CM
T65.214D	Toxic effect of chewing tobacco, undetermined, subsequent encounter	Diagnosis	ICD-10-CM
T65.214S	Toxic effect of chewing tobacco, undetermined, sequela	Diagnosis	ICD-10-CM
T65.22	Toxic effect of tobacco cigarettes	Diagnosis	ICD-10-CM
T65.221	Toxic effect of tobacco cigarettes, accidental (unintentional)	Diagnosis	ICD-10-CM
T65.221A	Toxic effect of tobacco cigarettes, accidental (unintentional), initial encounter	Diagnosis	ICD-10-CM
T65.221D	Toxic effect of tobacco cigarettes, accidental (unintentional), subsequent encounter	Diagnosis	ICD-10-CM
T65.221S	Toxic effect of tobacco cigarettes, accidental (unintentional), sequela	Diagnosis	ICD-10-CM
T65.222	Toxic effect of tobacco cigarettes, intentional self-harm	Diagnosis	ICD-10-CM
T65.222A	Toxic effect of tobacco cigarettes, intentional self-harm, initial encounter	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
T65.222D	Toxic effect of tobacco cigarettes, intentional self-harm, subsequent encounter	Diagnosis	ICD-10-CM
T65.222S	Toxic effect of tobacco cigarettes, intentional self-harm, sequela	Diagnosis	ICD-10-CM
T65.223	Toxic effect of tobacco cigarettes, assault	Diagnosis	ICD-10-CM
T65.223A	Toxic effect of tobacco cigarettes, assault, initial encounter	Diagnosis	ICD-10-CM
T65.223D	Toxic effect of tobacco cigarettes, assault, subsequent encounter	Diagnosis	ICD-10-CM
T65.223S	Toxic effect of tobacco cigarettes, assault, sequela	Diagnosis	ICD-10-CM
T65.224	Toxic effect of tobacco cigarettes, undetermined	Diagnosis	ICD-10-CM
T65.224A	Toxic effect of tobacco cigarettes, undetermined, initial encounter	Diagnosis	ICD-10-CM
T65.224D	Toxic effect of tobacco cigarettes, undetermined, subsequent encounter	Diagnosis	ICD-10-CM
T65.224S	Toxic effect of tobacco cigarettes, undetermined, sequela	Diagnosis	ICD-10-CM
T65.29	Toxic effect of other tobacco and nicotine	Diagnosis	ICD-10-CM
T65.291	Toxic effect of other tobacco and nicotine, accidental (unintentional)	Diagnosis	ICD-10-CM
T65.291A	Toxic effect of other tobacco and nicotine, accidental (unintentional), initial encounter	Diagnosis	ICD-10-CM
T65.291D	Toxic effect of other tobacco and nicotine, accidental (unintentional), subsequent	Diagnosis	ICD-10-CM
T65.291S	Toxic effect of other tobacco and nicotine, accidental (unintentional), sequela	Diagnosis	ICD-10-CM
T65.292	Toxic effect of other tobacco and nicotine, intentional self-harm	Diagnosis	ICD-10-CM
T65.292A	Toxic effect of other tobacco and nicotine, intentional self-harm, initial encounter	Diagnosis	ICD-10-CM
T65.292D	Toxic effect of other tobacco and nicotine, intentional self-harm, subsequent	Diagnosis	ICD-10-CM
T65.292S	Toxic effect of other tobacco and nicotine, intentional self-harm, sequela	Diagnosis	ICD-10-CM
T65.293	Toxic effect of other tobacco and nicotine, assault	Diagnosis	ICD-10-CM
T65.293A	Toxic effect of other tobacco and nicotine, assault, initial encounter	Diagnosis	ICD-10-CM
T65.293D	Toxic effect of other tobacco and nicotine, assault, subsequent encounter	Diagnosis	ICD-10-CM
T65.293S	Toxic effect of other tobacco and nicotine, assault, sequela	Diagnosis	ICD-10-CM
T65.294	Toxic effect of other tobacco and nicotine, undetermined	Diagnosis	ICD-10-CM
T65.294A	Toxic effect of other tobacco and nicotine, undetermined, initial encounter	Diagnosis	ICD-10-CM
T65.294D	Toxic effect of other tobacco and nicotine, undetermined, subsequent encounter	Diagnosis	ICD-10-CM
T65.294S	Toxic effect of other tobacco and nicotine, undetermined, sequela	Diagnosis	ICD-10-CM
Z71.6	Tobacco abuse counseling	Diagnosis	ICD-10-CM
Z72.0	Tobacco use	Diagnosis	ICD-10-CM
Z87.891	Personal history of nicotine dependence	Diagnosis	ICD-10-CM
Hyperlipidemia			
E78.0	Pure hypercholesterolemia	Diagnosis	ICD-10-CM
E78.00	Pure hypercholesterolemia, unspecified	Diagnosis	ICD-10-CM
E78.01	Familial hypercholesterolemia	Diagnosis	ICD-10-CM

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
E78.1	Pure hyperglyceridemia	Diagnosis	ICD-10-CM
E78.2	Mixed hyperlipidemia	Diagnosis	ICD-10-CM
E78.3	Hyperchylomicronemia	Diagnosis	ICD-10-CM
E78.4	Other hyperlipidemia	Diagnosis	ICD-10-CM
E78.41	Elevated Lipoprotein(a)	Diagnosis	ICD-10-CM
E78.49	Other hyperlipidemia	Diagnosis	ICD-10-CM
E78.5	Hyperlipidemia, unspecified	Diagnosis	ICD-10-CM
COVID-19 Vaccine			
0001A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3mL dosage, diluent reconstituted; first dose	Procedure	CPT-4
0002A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3mL dosage, diluent reconstituted; second dose	Procedure	CPT-4
0003A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, diluent reconstituted; third dose	Procedure	CPT-4
0004A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, diluent reconstituted; booster dose	Procedure	CPT-4
0011A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 100 mcg/0.5mL dosage; first dose	Procedure	CPT-4
0012A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 100 mcg/0.5mL dosage; second dose	Procedure	CPT-4
0013A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 100 mcg/0.5 mL dosage; third dose	Procedure	CPT-4
0021A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, DNA, spike protein, chimpanzee adenovirus Oxford 1 (ChAdOx1) vector, preservative free, 5x1010 viral particles/0.5mL dosage; first dose	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0022A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, DNA, spike protein, chimpanzee adenovirus Oxford 1 (ChAdOx1) vector, preservative free, 5x1010 viral particles/0.5mL dosage; second dose	Procedure	CPT-4
0031A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, DNA, spike protein, adenovirus type 26 (Ad26) vector, preservative free, 5x1010 viral particles/0.5mL dosage; single dose	Procedure	CPT-4
0034A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, DNA, spike protein, adenovirus type 26 (Ad26) vector, preservative free, 5x1010 viral particles/0.5mL dosage; booster dose	Procedure	CPT-4
0041A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, recombinant spike protein nanoparticle, saponin-based adjuvant, preservative free, 5 mcg/0.5mL dosage; first dose	Procedure	CPT-4
0042A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, recombinant spike protein nanoparticle, saponin-based adjuvant, preservative free, 5 mcg/0.5mL dosage; second dose	Procedure	CPT-4
0044A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, recombinant spike protein nanoparticle, saponin-based adjuvant, preservative free, 5 mcg/0.5mL dosage; booster dose	Procedure	CPT-4
0051A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation; first dose	Procedure	CPT-4
0052A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation; second dose	Procedure	CPT-4
0053A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation; third dose	Procedure	CPT-4

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Code	Description	Code Category	Code Type
0054A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation; booster dose	Procedure	CPT-4
0064A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.25 mL dosage, booster dose	Procedure	CPT-4
0071A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; first dose	Procedure	CPT-4
0072A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; second dose	Procedure	CPT-4
0073A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; third dose	Procedure	CPT-4
0074A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; booster dose	Procedure	CPT-4
0081A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; first dose	Procedure	CPT-4
0082A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; second dose	Procedure	CPT-4
0083A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; third dose	Procedure	CPT-4

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Code	Description	Code Category	Code Type
0091A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.5 mL dosage; first dose, when administered to individuals 6 through 11 years	Procedure	CPT-4
0092A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.5 mL dosage; second dose, when administered to individuals 6 through 11 years	Procedure	CPT-4
0093A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.5 mL dosage; third dose, when administered to individuals 6 through 11 years	Procedure	CPT-4
0094A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.5 mL dosage; booster dose, when administered to individuals 18 years and over	Procedure	CPT-4
0104A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, monovalent, preservative free, 5 mcg/0.5 mL dosage, adjuvant AS03 emulsion, booster dose	Procedure	CPT-4
0111A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 25 mcg/0.25 mL dosage; first dose	Procedure	CPT-4
0112A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 25 mcg/0.25 mL dosage; second dose	Procedure	CPT-4
0113A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 25 mcg/0.25 mL dosage; third dose	Procedure	CPT-4
0121A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation; single dose	Procedure	CPT-4
0124A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation; additional dose	Procedure	CPT-4

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Code	Description	Code Category	Code Type
0134A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 50 mcg/0.5 mL dosage, additional dose	Procedure	CPT-4
0141A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 25 mcg/0.25 mL dosage; first dose	Procedure	CPT-4
0142A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 25 mcg/0.25 mL dosage; second dose	Procedure	CPT-4
0144A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 25 mcg/0.25 mL dosage; additional dose	Procedure	CPT-4
0151A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; single dose	Procedure	CPT-4
0154A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; additional dose	Procedure	CPT-4
0164A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 10 mcg/0.2 mL dosage, additional dose	Procedure	CPT-4
0171A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; first dose	Procedure	CPT-4
0172A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; second dose	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0173A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; third dose	Procedure	CPT-4
0174A	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation; additional dose	Procedure	CPT-4
207	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 100 mcg/0.5mL dose or 50 mcg/0.25mL dose	Procedure	CVX
208	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 30 mcg/0.3mL dose	Procedure	CVX
210	SARS-COV-2 (COVID-19) vaccine, vector non-replicating, recombinant spike protein-ChAdOx1, preservative free, 0.5 mL	Procedure	CVX
211	SARS-COV-2 (COVID-19) vaccine, subunit, recombinant spike protein-nanoparticle+Matrix-M1 Adjuvant, preservative free, 0.5mL dose	Procedure	CVX
212	SARS-COV-2 (COVID-19) vaccine, vector non-replicating, recombinant spike protein-Ad26, preservative free, 0.5 mL	Procedure	CVX
213	SARS-COV-2 (COVID-19) vaccine, UNSPECIFIED	Procedure	CVX
217	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 30 mcg/0.3mL dose, tris-sucrose formulation	Procedure	CVX
218	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 10 mcg/0.2mL dose, tris-sucrose formulation	Procedure	CVX
219	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 3 mcg/0.2mL dose, tris-sucrose formulation	Procedure	CVX
221	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 50 mcg/0.5 mL dose	Procedure	CVX
225	SARS-COV-2 (COVID-19) vaccine, D614, prefusion spike recombinant protein subunit (CoV2 preS dTM), AS03 adjuvant added, preservative free, 5mcg/0.5mL dose	Procedure	CVX
226	SARS-COV-2 (COVID-19) vaccine, D614, prefusion spike recombinant protein subunit (CoV2 preS dTM), AS03 adjuvant added, preservative free, 10mcg/0.5mL dose	Procedure	CVX
227	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, pediatric 50 mcg/0.5 mL dose	Procedure	CVX

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
228	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, pediatric 25 mcg/0.25 mL dose	Procedure	CVX
229	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, bivalent, preservative free, 50 mcg/0.5 mL or 25 mcg/0.25 mL dose	Procedure	CVX
230	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, bivalent, preservative free, 10 mcg/0.2 mL dose	Procedure	CVX
300	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, bivalent, preservative free, 30 mcg/0.3 mL dose, tris-sucrose formulation	Procedure	CVX
301	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, bivalent, preservative free, 10 mcg/0.2 mL dose, tris-sucrose formulation	Procedure	CVX
302	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, bivalent, preservative free, 3 mcg/0.2 mL dose, tris-sucrose formulation	Procedure	CVX
308	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, tris-sucrose, 3 mcg/0.3 mL dose	Procedure	CVX
309	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, tris-sucrose, 30 mcg/0.3 mL dose	Procedure	CVX
310	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, tris-sucrose, 10 mcg/0.3 mL dose	Procedure	CVX
311	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 25 mcg/0.25 mL dose	Procedure	CVX
312	SARS-COV-2 (COVID-19) vaccine, mRNA, spike protein, LNP, preservative free, 50 mcg/0.5 mL dose	Procedure	CVX
313	SARS-COV-2 (COVID-19) vaccine, subunit, recombinant spike protein-nanoparticle+Matrix-M1 Adjuvant, preservative free, 5 mcg/0.5 mL dose	Procedure	CVX
500	SARS-COV-2 COVID-19 Non-US Vaccine, Specific Product Unknown	Procedure	CVX
501	SARS-COV-2 COVID-19 Inactivated Virus Non-US Vaccine Product (QAZCOVID-IN)	Procedure	CVX
502	SARS-COV-2 COVID-19 Inactivated Virus Non-US Vaccine Product (COVAXIN)	Procedure	CVX
503	SARS-COV-2 COVID-19 Live Attenuated Virus Non-US Vaccine Product (COVIVAC)	Procedure	CVX
504	SARS-COV-2 COVID-19 Viral Vector Non-replicating Non-US Vaccine Product (Sputnik	Procedure	CVX
505	SARS-COV-2 COVID-19 Viral Vector Non-replicating Non-US Vaccine Product (Sputnik	Procedure	CVX
506	SARS-COV-2 COVID-19 Viral Vector Non-replicating Non-US Vaccine Product (CONVIDECIA), CanSino Biological Inc./Beijing Institute of Biotechnology	Procedure	CVX
507	SARS-COV-2 COVID-19 Protein Subunit Non-US Vaccine Product (Anhui Zhifei Longcom Biopharmaceutical + Institute of Microbiology, Chinese Academy of Sciences)	Procedure	CVX

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
508	SARS-COV-2 COVID-19 Protein Subunit Non-US Vaccine Product (Jiangsu Province Centers for Disease Control and Prevention)	Procedure	CVX
509	SARS-COV-2 COVID-19 Protein Subunit Non-US Vaccine Product (EpiVacCorona)	Procedure	CVX
510	SARS-COV-2 COVID-19 Inactivated Virus Non-US Vaccine Product (BIBP, Sinopharm)	Procedure	CVX
511	SARS-COV-2 COVID-19 Inactivated Virus Non-US Vaccine Product (CoronaVac, Sinovac)	Procedure	CVX
512	SARS-COV-2 COVID-19 Virus Like Particle (VLP) Non-US Vaccine Product (Medicago,	Procedure	CVX
513	SARS-COV-2 COVID-19 Protein Subunit Non-US Vaccine Product (Anhui Zhifei Longcom,	Procedure	CVX
514	SARS-COV-2 COVID-19 DNA Non-US Vaccine Product (Zydus Cadila, ZyCoV-D)	Procedure	CVX
515	SARS-COV-2 COVID-19 Protein Subunit Non-US Vaccine Product (Medigen, MVC-	Procedure	CVX
516	SARS-COV-2 COVID-19 Inactivated Non-US Vaccine Product (Minhai Biotechnology Co, KCONVAC)	Procedure	CVX
517	SARS-COV-2 COVID-19 Protein Subunit Non-US Vaccine Product (Biological E Limited,	Procedure	CVX
518	SARS-COV-2 COVID-19 Inactivated, Non-US Vaccine (VLA2001, Valneva)	Procedure	CVX
519	SARS-COV-2 COVID-19 mRNA, bivalent, original/Omicron BA.1, Non-US Vaccine (Spikevax Bivalent), Moderna	Procedure	CVX
520	SARS-COV-2 COVID-19 mRNA, bivalent, original/Omicron BA.1, Non-US Vaccine Product (Comirnaty Bivalent), Pfizer-BioNTech	Procedure	CVX
521	SARS-COV-2 (COVID-19) vaccine SP, protein-based, adjuvanted, B.1.351 strain (VidPrevtyn Beta), Sanofi-GSK	Procedure	CVX
90480	Immunization administration by intramuscular injection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, single dose	Procedure	CPT-4
91300	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3mL dosage, diluent reconstituted, for intramuscular use	Procedure	CPT-4
91301	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 100 mcg/0.5mL dosage, for intramuscular use	Procedure	CPT-4
91302	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, DNA, spike protein, chimpanzee adenovirus Oxford 1 (ChAdOx1) vector, preservative free, 5x1010 viral particles/0.5mL dosage, for intramuscular use	Procedure	CPT-4
91303	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, DNA, spike protein, adenovirus type 26 (Ad26) vector, preservative free, 5x1010 viral particles/0.5mL dosage, for intramuscular use	Procedure	CPT-4

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Code	Description	Code Category	Code Type
91304	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, recombinant spike protein nanoparticle, saponin-based adjuvant, 5 mcg/0.5 mL dosage, for intramuscular use	Procedure	CPT-4
91305	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91306	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.25 mL dosage, for intramuscular use	Procedure	CPT-4
91307	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91308	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91309	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 50 mcg/0.5 mL dosage, for intramuscular use	Procedure	CPT-4
91310	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, monovalent, preservative free, 5 mcg/0.5 mL dosage, adjuvant AS03 emulsion, for intramuscular use	Procedure	CPT-4
91311	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 25 mcg/0.25 mL dosage, for intramuscular use	Procedure	CPT-4
91312	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 30 mcg/0.3 mL dosage, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91313	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 50 mcg/0.5 mL dosage, for intramuscular use	Procedure	CPT-4
91314	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 25 mcg/0.25 mL dosage, for intramuscular use	Procedure	CPT-4

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Code	Description	Code Category	Code Type
91315	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, preservative free, 10 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91316	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, bivalent, preservative free, 10 mcg/0.2 mL dosage, for intramuscular use	Procedure	CPT-4
91317	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, bivalent spike protein, preservative free, 3 mcg/0.2 mL dosage, diluent reconstituted, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91318	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, 3 mcg/0.3 mL dosage, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91319	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, 10 mcg/0.3 mL dosage, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91320	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, spike protein, 30 mcg/0.3 mL dosage, tris-sucrose formulation, for intramuscular use	Procedure	CPT-4
91321	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, 25 mcg/0.25 mL dosage, for intramuscular use	Procedure	CPT-4
91322	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (coronavirus disease [COVID-19]) vaccine, mRNA-LNP, 50 mcg/0.5 mL dosage, for intramuscular use	Procedure	CPT-4
D1701	Pfizer-BioNTech Covid-19 vaccine administration - first dose	Procedure	HCPCS
D1702	Pfizer-BioNTech Covid-19 vaccine administration - second dose	Procedure	HCPCS
D1703	Moderna Covid-19 vaccine administration - first dose	Procedure	HCPCS
D1704	Moderna Covid-19 vaccine administration - second dose	Procedure	HCPCS
D1705	AstraZeneca Covid-19 vaccine administration - first dose	Procedure	HCPCS
D1706	AstraZeneca Covid-19 vaccine administration - second dose	Procedure	HCPCS
D1707	Janssen Covid-19 vaccine administration	Procedure	HCPCS
D1708	Pfizer-BioNTech Covid-19 vaccine administration-third dose	Procedure	HCPCS
D1709	Pfizer-BioNTech Covid-19 vaccine administration-booster dose	Procedure	HCPCS
D1710	Moderna Covid-19 vaccine administration-third dose	Procedure	HCPCS
D1711	Moderna Covid-19 vaccine administration-booster dose	Procedure	HCPCS
D1712	Janssen Covid-19 vaccine administration-booster dose	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D1713	Pfizer-BioNTech Covid-19 vaccine administration tris-sucrose pediatric-first dose	Procedure	HCPCS
D1714	Pfizer-BioNTech Covid-19 vaccine administration tris-sucrose pediatric-second dose	Procedure	HCPCS
U0004	2019-nCoV coronavirus, SARS-CoV-2/2019-nCoV (COVID-19), any technique, multiple types or subtypes (includes all targets), non-CDC, making use of high throughput technologies as described by CMS-2020-01-R	Procedure	HCPCS
XW013S6	Introduction of COVID-19 Vaccine Dose 1 into Subcutaneous Tissue, Percutaneous Approach, New Technology Group 6	Procedure	ICD-10-PCS
XW013T6	Introduction of COVID-19 Vaccine Dose 2 into Subcutaneous Tissue, Percutaneous Approach, New Technology Group 6	Procedure	ICD-10-PCS
XW013U6	Introduction of COVID-19 Vaccine into Subcutaneous Tissue, Percutaneous Approach, New Technology Group 6	Procedure	ICD-10-PCS
XW013V7	Introduction of COVID-19 Vaccine Dose 3 into Subcutaneous Tissue, Percutaneous Approach, New Technology Group 7	Procedure	ICD-10-PCS
XW013W7	Introduction of COVID-19 Vaccine Booster into Subcutaneous Tissue, Percutaneous Approach, New Technology Group 7	Procedure	ICD-10-PCS
XW023S6	Introduction of COVID-19 Vaccine Dose 1 into Muscle, Percutaneous Approach, New Technology Group 6	Procedure	ICD-10-PCS
XW023T6	Introduction of COVID-19 Vaccine Dose 2 into Muscle, Percutaneous Approach, New Technology Group 6	Procedure	ICD-10-PCS
XW023U6	Introduction of COVID-19 Vaccine into Muscle, Percutaneous Approach, New Technology Group 6	Procedure	ICD-10-PCS
XW023V7	Introduction of COVID-19 Vaccine Dose 3 into Muscle, Percutaneous Approach, New Technology Group 7	Procedure	ICD-10-PCS
XW023W7	Introduction of COVID-19 Vaccine Booster into Muscle, Percutaneous Approach, New Technology Group 7	Procedure	ICD-10-PCS
Z28.31	Underimmunization for COVID-19 status	Diagnosis	ICD-10-CM
Z28.311	Partially vaccinated for COVID-19	Diagnosis	ICD-10-CM
ACEI/ARB			
4009F	Angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy prescribed (CKD), (DM)	Procedure	CPT-2
4010F	Angiotensin Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) therapy prescribed or currently being taken (CAD, CKD, HF) (DM)	Procedure	CPT-2
4188F	Appropriate angiotensin converting enzyme (ACE)/angiotensin receptor blockers (ARB) therapeutic monitoring test ordered or performed (AM)	Procedure	CPT-2

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
4210F	Angiotensin converting enzyme (ACE) or angiotensin receptor blockers (ARB) medication therapy for 6 months or more (MM)	Procedure	CPT-2
G2092	Angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) or angiotensin receptor-neprilysin inhibitor (ARNI) therapy prescribed or currently being taken	Procedure	HCPCS
G8027	Heart failure patient with left ventricular systolic dysfunction (LVSD) documented to be on either angiotensin-converting enzyme-inhibitor or angiotensin-receptor blocker (ACE-1 or ARB) therapy	Procedure	HCPCS
G8028	Heart failure patient with left ventricular systolic dysfunction (LVSD) not documented to be on either angiotensin-converting enzyme-inhibitor or angiotensin-receptor blocker (ACE-1 or ARB) therapy	Procedure	HCPCS
G8468	Angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy prescribed for patients with a left ventricular ejection fraction (LVEF) < 40% or documentation of moderately or severely depressed left ventricular systolic function	Procedure	HCPCS
G8473	Angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy prescribed	Procedure	HCPCS
G8479	Clinician prescribed angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy	Procedure	HCPCS
G8506	Patient receiving angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy	Procedure	HCPCS
G8935	Clinician prescribed angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy	Procedure	HCPCS
Antidepressants			
4064F	Antidepressant pharmacotherapy prescribed (MDD, MDD ADOL)	Procedure	CPT-2
80332	Antidepressants, serotonergic class; 1 or 2	Procedure	CPT-4
80333	Antidepressants, serotonergic class; 3-5	Procedure	CPT-4
80334	Antidepressants, serotonergic class; 6 or more	Procedure	CPT-4
80335	Antidepressants, tricyclic and other cyclicals; 1 or 2	Procedure	CPT-4
80336	Antidepressants, tricyclic and other cyclicals; 3-5	Procedure	CPT-4
80337	Antidepressants, tricyclic and other cyclicals; 6 or more	Procedure	CPT-4
80338	Antidepressants, not otherwise specified	Procedure	CPT-4
Statins			
0006F	Statin therapy, prescribed	Procedure	CPT-2
4002F	Statin therapy, prescribed (CAD)	Procedure	CPT-2
4013F	Statin therapy prescribed or currently being taken (CAD)	Procedure	CPT-2

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
G9664	Patients who are currently statin therapy users or received an order (prescription) for statin therapy	Procedure	HCPCS
G9796	Patient is currently on a statin therapy	Procedure	HCPCS
Insulin			
3E013VG	Introduction of Insulin into Subcutaneous Tissue, Percutaneous Approach	Procedure	ICD-10-PCS
3E030VG	Introduction of Insulin into Peripheral Vein, Open Approach	Procedure	ICD-10-PCS
3E033VG	Introduction of Insulin into Peripheral Vein, Percutaneous Approach	Procedure	ICD-10-PCS
3E040VG	Introduction of Insulin into Central Vein, Open Approach	Procedure	ICD-10-PCS
3E043VG	Introduction of Insulin into Central Vein, Percutaneous Approach	Procedure	ICD-10-PCS
3E050VG	Introduction of Insulin into Peripheral Artery, Open Approach	Procedure	ICD-10-PCS
3E053VG	Introduction of Insulin into Peripheral Artery, Percutaneous Approach	Procedure	ICD-10-PCS
3E060VG	Introduction of Insulin into Central Artery, Open Approach	Procedure	ICD-10-PCS
3E063VG	Introduction of Insulin into Central Artery, Percutaneous Approach	Procedure	ICD-10-PCS
A4224	Supplies for maintenance of insulin infusion catheter, per week	Procedure	HCPCS
A4225	Supplies for external insulin infusion pump, syringe type cartridge, sterile, each	Procedure	HCPCS
A4226	Supplies for maintenance of insulin infusion pump with dosage rate adjustment using therapeutic continuous glucose sensing, per week	Procedure	HCPCS
A4230	Infusion set for external insulin pump, nonneedle cannula type	Procedure	HCPCS
A4231	Infusion set for external insulin pump, needle type	Procedure	HCPCS
A4232	Syringe with needle for external insulin pump, sterile, 3 cc	Procedure	HCPCS
A9274	External ambulatory insulin delivery system, disposable, each, includes all supplies and accessories	Procedure	HCPCS
E0784	External ambulatory infusion pump, insulin	Procedure	HCPCS
E0787	External ambulatory infusion pump, insulin, dosage rate adjustment using therapeutic continuous glucose sensing	Procedure	HCPCS
G9147	Outpatient Intravenous Insulin Treatment (OIVIT) either pulsatile or continuous, by any means, guided by the results of measurements for: respiratory quotient; and/or, urine urea nitrogen (UUN); and/or, arterial, venous or capillary glucose; and/or potassium concentration	Procedure	HCPCS
J1815	Injection, insulin, per 5 units	Procedure	HCPCS
J1817	Insulin for administration through DME (i.e., insulin pump) per 50 units	Procedure	HCPCS
J1820	Injection, insulin, up to 100 units	Procedure	HCPCS
K0548	Injection, insulin lispro, up to 50 units	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
S1034	Artificial pancreas device system (e.g., low glucose suspend [LGS] feature) including continuous glucose monitor, blood glucose device, insulin pump and computer algorithm that communicates with all of the devices	Procedure	HCPCS
S5550	Insulin, rapid onset, 5 units	Procedure	HCPCS
S5551	Insulin, most rapid onset (Lispro or Aspart); 5 units	Procedure	HCPCS
S5552	Insulin, intermediate acting (NPH or LENTE); 5 units	Procedure	HCPCS
S5553	Insulin, long acting; 5 units	Procedure	HCPCS
S5560	Insulin delivery device, reusable pen; 1.5 ml size	Procedure	HCPCS
S5561	Insulin delivery device, reusable pen; 3 ml size	Procedure	HCPCS
S5565	Insulin cartridge for use in insulin delivery device other than pump; 150 units	Procedure	HCPCS
S5566	Insulin cartridge for use in insulin delivery device other than pump; 300 units	Procedure	HCPCS
S5570	Insulin delivery device, disposable pen (including insulin); 1.5 ml size	Procedure	HCPCS
S5571	Insulin delivery device, disposable pen (including insulin); 3 ml size	Procedure	HCPCS
S9145	Insulin pump initiation, instruction in initial use of pump (pump not included)	Procedure	HCPCS
Antihypertensive Drugs			
4145F	Two or more anti-hypertensive agents prescribed or currently being taken (CAD, HTN)	Procedure	CPT-2
Anticoagulants			
4075F	Anticoagulant therapy prescribed at discharge (STR)	Procedure	CPT-2
93793	Anticoagulant management for a patient taking warfarin, must include review and interpretation of a new home, office, or lab international normalized ratio (INR) test result, patient instructions, dosage adjustment (as needed), and scheduling of additional test(s), when performed	Procedure	CPT-4
99363	Anticoagulant management for an outpatient taking warfarin, physician review and interpretation of International Normalized Ratio (INR) testing, patient instructions, dosage adjustment (as needed), and ordering of additional tests; initial 90 days of therapy (must include a minimum of 8 INR measurements)	Procedure	CPT-4
99364	Anticoagulant management for an outpatient taking warfarin, physician review and interpretation of International Normalized Ratio (INR) testing, patient instructions, dosage adjustment (as needed), and ordering of additional tests; each subsequent 90 days of therapy (must include a minimum of 3 INR measurements)	Procedure	CPT-4
99557	Home infusion of continuous anticoagulant therapy (eg, heparin), per visit	Procedure	CPT-4
G8967	Warfarin or another FDA-approved oral anticoagulant is prescribed	Procedure	HCPCS
G9724	Patients who had documentation of use of anticoagulant medications overlapping the measurement year	Procedure	HCPCS

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Code	Description	Code Category	Code Type
S9336	Home infusion therapy, continuous anticoagulant infusion therapy (e.g., Heparin), administrative services, professional pharmacy services, care coordination and all necessary supplies and equipment (drugs and nursing visits coded separately), per diem	Procedure	HCPCS
S9372	Home therapy; intermittent anticoagulant injection therapy (e.g., Heparin); administrative services, professional pharmacy services, care coordination, and all necessary supplies and equipment (drugs and nursing visits coded separately), per diem (do not use this code for flushing of infusion devices with Heparin to maintain patency)	Procedure	HCPCS
Corticosteroids (Systemic Glucocorticoids)			
4193F	Patient receiving <10 mg daily prednisone (or equivalent), or RA activity is worsening, or glucocorticoid use is for less than 6 months (RA)	Procedure	CPT-2
G2112	Patient receiving <=5 mg daily prednisone (or equivalent), or RA activity is worsening, or glucocorticoid use is for less than 6 months	Procedure	HCPCS
Acetaminophen			
80143	Acetaminophen	Procedure	CPT-4
82003	Acetaminophen	Procedure	CPT-4
C9283	Injection, acetaminophen, 10 mg	Procedure	HCPCS
J0131	Injection, acetaminophen, 10 mg	Procedure	HCPCS
TNF Inhibitors			
80230	Infliximab	Procedure	CPT-4
C9249	Injection, certolizumab pegol, 1 mg	Procedure	HCPCS
G8868	Patients receiving a first course of anti-TNF therapy	Procedure	HCPCS
G8869	Patient has documented immunity to hepatitis B and initiating anti-TNF therapy	Procedure	HCPCS
G9914	Patient receiving an anti-TNF agent	Procedure	HCPCS
J0135	Injection, adalimumab, 20 mg	Procedure	HCPCS
J0717	Injection, certolizumab pegol, 1 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self-administered)	Procedure	HCPCS
J0718	Injection, certolizumab pegol, 1 mg	Procedure	HCPCS
J1438	Injection, etanercept, 25 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self-administered)	Procedure	HCPCS
J1602	Injection, golimumab, 1 mg, for intravenous use	Procedure	HCPCS
J1745	Injection, infliximab, excludes biosimilar, 10 mg	Procedure	HCPCS
Q5102	Injection, infliximab, biosimilar, 10 mg	Procedure	HCPCS
Q5103	Injection, infliximab-dyyb, biosimilar, (Inflectra), 10 mg	Procedure	HCPCS
Q5104	Injection, infliximab-abda, biosimilar, (Renflexis), 10 mg	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
Q5109	Injection, infliximab-qbtx, biosimilar, (Ixifi), 10 mg	Procedure	HCPCS
Q5121	Injection, infliximab-axxq, biosimilar, (AVSOLA), 10 mg	Procedure	HCPCS
Immunosuppressants			
0182T	High dose rate electronic brachytherapy	Procedure	CPT-3
0190T	Insertion of radiation source applicator into eye	Procedure	CPT-3
0394T	High dose rate electronic brachytherapy	Procedure	CPT-3
0395T	High dose rate electronic brachytherapy	Procedure	CPT-3
0BH001Z	Insertion of Radioactive Element into Tracheobronchial Tree, Open Approach	Procedure	ICD-10-PCS
0BH031Z	Insertion of Radioactive Element into Tracheobronchial Tree, Percutaneous Approach	Procedure	ICD-10-PCS
0BH041Z	Insertion of Radioactive Element into Tracheobronchial Tree, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0BH071Z	Insertion of Radioactive Element into Tracheobronchial Tree, Via Natural or Artificial	Procedure	ICD-10-PCS
0BH081Z	Insertion of Radioactive Element into Tracheobronchial Tree, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0BHK01Z	Insertion of Radioactive Element into Right Lung, Open Approach	Procedure	ICD-10-PCS
0BHK31Z	Insertion of Radioactive Element into Right Lung, Percutaneous Approach	Procedure	ICD-10-PCS
0BHK41Z	Insertion of Radioactive Element into Right Lung, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0BHK71Z	Insertion of Radioactive Element into Right Lung, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0BHK81Z	Insertion of Radioactive Element into Right Lung, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0BHL01Z	Insertion of Radioactive Element into Left Lung, Open Approach	Procedure	ICD-10-PCS
0BHL31Z	Insertion of Radioactive Element into Left Lung, Percutaneous Approach	Procedure	ICD-10-PCS
0BHL41Z	Insertion of Radioactive Element into Left Lung, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0BHL71Z	Insertion of Radioactive Element into Left Lung, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0BHL81Z	Insertion of Radioactive Element into Left Lung, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0CH701Z	Insertion of Radioactive Element into Tongue, Open Approach	Procedure	ICD-10-PCS
0CH731Z	Insertion of Radioactive Element into Tongue, Percutaneous Approach	Procedure	ICD-10-PCS
0CH7X1Z	Insertion of Radioactive Element into Tongue, External Approach	Procedure	ICD-10-PCS
0DH501Z	Insertion of Radioactive Element into Esophagus, Open Approach	Procedure	ICD-10-PCS
0DH531Z	Insertion of Radioactive Element into Esophagus, Percutaneous Approach	Procedure	ICD-10-PCS
0DH541Z	Insertion of Radioactive Element into Esophagus, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0DH571Z	Insertion of Radioactive Element into Esophagus, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0DH581Z	Insertion of Radioactive Element into Esophagus, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0DHP01Z	Insertion of Radioactive Element into Rectum, Open Approach	Procedure	ICD-10-PCS
0DHP31Z	Insertion of Radioactive Element into Rectum, Percutaneous Approach	Procedure	ICD-10-PCS

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Code	Description	Code Category	Code Type
0DHP41Z	Insertion of Radioactive Element into Rectum, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0DHP71Z	Insertion of Radioactive Element into Rectum, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0DHP81Z	Insertion of Radioactive Element into Rectum, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0FHB01Z	Insertion of Radioactive Element into Hepatobiliary Duct, Open Approach	Procedure	ICD-10-PCS
0FHB31Z	Insertion of Radioactive Element into Hepatobiliary Duct, Percutaneous Approach	Procedure	ICD-10-PCS
0FHB41Z	Insertion of Radioactive Element into Hepatobiliary Duct, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0FHB71Z	Insertion of Radioactive Element into Hepatobiliary Duct, Via Natural or Artificial	Procedure	ICD-10-PCS
0FHB81Z	Insertion of Radioactive Element into Hepatobiliary Duct, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0FHD01Z	Insertion of Radioactive Element into Pancreatic Duct, Open Approach	Procedure	ICD-10-PCS
0FHD31Z	Insertion of Radioactive Element into Pancreatic Duct, Percutaneous Approach	Procedure	ICD-10-PCS
0FHD41Z	Insertion of Radioactive Element into Pancreatic Duct, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0FHD71Z	Insertion of Radioactive Element into Pancreatic Duct, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0FHD81Z	Insertion of Radioactive Element into Pancreatic Duct, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0HHT01Z	Insertion of Radioactive Element into Right Breast, Open Approach	Procedure	ICD-10-PCS
0HHT31Z	Insertion of Radioactive Element into Right Breast, Percutaneous Approach	Procedure	ICD-10-PCS
0HHT71Z	Insertion of Radioactive Element into Right Breast, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHT81Z	Insertion of Radioactive Element into Right Breast, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHTX1Z	Insertion of Radioactive Element into Right Breast, External Approach	Procedure	ICD-10-PCS
0HHU01Z	Insertion of Radioactive Element into Left Breast, Open Approach	Procedure	ICD-10-PCS
0HHU31Z	Insertion of Radioactive Element into Left Breast, Percutaneous Approach	Procedure	ICD-10-PCS
0HHU71Z	Insertion of Radioactive Element into Left Breast, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHU81Z	Insertion of Radioactive Element into Left Breast, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHUX1Z	Insertion of Radioactive Element into Left Breast, External Approach	Procedure	ICD-10-PCS
0HHV01Z	Insertion of Radioactive Element into Bilateral Breast, Open Approach	Procedure	ICD-10-PCS
0HHV31Z	Insertion of Radioactive Element into Bilateral Breast, Percutaneous Approach	Procedure	ICD-10-PCS
0HHV71Z	Insertion of Radioactive Element into Bilateral Breast, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHV81Z	Insertion of Radioactive Element into Bilateral Breast, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0HHVX1Z	Insertion of Radioactive Element into Bilateral Breast, External Approach	Procedure	ICD-10-PCS
0HHW01Z	Insertion of Radioactive Element into Right Nipple, Open Approach	Procedure	ICD-10-PCS
0HHW31Z	Insertion of Radioactive Element into Right Nipple, Percutaneous Approach	Procedure	ICD-10-PCS
0HHW71Z	Insertion of Radioactive Element into Right Nipple, Via Natural or Artificial Opening	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0HHW81Z	Insertion of Radioactive Element into Right Nipple, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHWX1Z	Insertion of Radioactive Element into Right Nipple, External Approach	Procedure	ICD-10-PCS
0HHX01Z	Insertion of Radioactive Element into Left Nipple, Open Approach	Procedure	ICD-10-PCS
0HHX31Z	Insertion of Radioactive Element into Left Nipple, Percutaneous Approach	Procedure	ICD-10-PCS
0HHX71Z	Insertion of Radioactive Element into Left Nipple, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHX81Z	Insertion of Radioactive Element into Left Nipple, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0HHXX1Z	Insertion of Radioactive Element into Left Nipple, External Approach	Procedure	ICD-10-PCS
0JHS01Z	Insertion of Radioactive Element into Head and Neck Subcutaneous Tissue and Fascia, Open Approach	Procedure	ICD-10-PCS
0JHS31Z	Insertion of Radioactive Element into Head and Neck Subcutaneous Tissue and Fascia, Percutaneous Approach	Procedure	ICD-10-PCS
0JHT01Z	Insertion of Radioactive Element into Trunk Subcutaneous Tissue and Fascia, Open	Procedure	ICD-10-PCS
0JHT31Z	Insertion of Radioactive Element into Trunk Subcutaneous Tissue and Fascia, Percutaneous Approach	Procedure	ICD-10-PCS
0JHV01Z	Insertion of Radioactive Element into Upper Extremity Subcutaneous Tissue and Fascia, Open Approach	Procedure	ICD-10-PCS
0JHV31Z	Insertion of Radioactive Element into Upper Extremity Subcutaneous Tissue and Fascia, Percutaneous Approach	Procedure	ICD-10-PCS
0JHW01Z	Insertion of Radioactive Element into Lower Extremity Subcutaneous Tissue and Fascia, Open Approach	Procedure	ICD-10-PCS
0JHW31Z	Insertion of Radioactive Element into Lower Extremity Subcutaneous Tissue and Fascia, Percutaneous Approach	Procedure	ICD-10-PCS
0UHC01Z	Insertion of Radioactive Element into Cervix, Open Approach	Procedure	ICD-10-PCS
0UHC31Z	Insertion of Radioactive Element into Cervix, Percutaneous Approach	Procedure	ICD-10-PCS
0UHC41Z	Insertion of Radioactive Element into Cervix, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0UHC71Z	Insertion of Radioactive Element into Cervix, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0UHC81Z	Insertion of Radioactive Element into Cervix, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0UHG01Z	Insertion of Radioactive Element into Vagina, Open Approach	Procedure	ICD-10-PCS
0UHG31Z	Insertion of Radioactive Element into Vagina, Percutaneous Approach	Procedure	ICD-10-PCS
0UHG41Z	Insertion of Radioactive Element into Vagina, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0UHG71Z	Insertion of Radioactive Element into Vagina, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0UHG81Z	Insertion of Radioactive Element into Vagina, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0UHGX1Z	Insertion of Radioactive Element into Vagina, External Approach	Procedure	ICD-10-PCS
0VH001Z	Insertion of Radioactive Element into Prostate, Open Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0VH031Z	Insertion of Radioactive Element into Prostate, Percutaneous Approach	Procedure	ICD-10-PCS
0VH041Z	Insertion of Radioactive Element into Prostate, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0VH071Z	Insertion of Radioactive Element into Prostate, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0VH081Z	Insertion of Radioactive Element into Prostate, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
0WH001Z	Insertion of Radioactive Element into Head, Open Approach	Procedure	ICD-10-PCS
0WH031Z	Insertion of Radioactive Element into Head, Percutaneous Approach	Procedure	ICD-10-PCS
0WH041Z	Insertion of Radioactive Element into Head, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH101Z	Insertion of Radioactive Element into Cranial Cavity, Open Approach	Procedure	ICD-10-PCS
0WH131Z	Insertion of Radioactive Element into Cranial Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
0WH141Z	Insertion of Radioactive Element into Cranial Cavity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WH201Z	Insertion of Radioactive Element into Face, Open Approach	Procedure	ICD-10-PCS
0WH231Z	Insertion of Radioactive Element into Face, Percutaneous Approach	Procedure	ICD-10-PCS
0WH241Z	Insertion of Radioactive Element into Face, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH301Z	Insertion of Radioactive Element into Oral Cavity and Throat, Open Approach	Procedure	ICD-10-PCS
0WH331Z	Insertion of Radioactive Element into Oral Cavity and Throat, Percutaneous Approach	Procedure	ICD-10-PCS
0WH341Z	Insertion of Radioactive Element into Oral Cavity and Throat, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH401Z	Insertion of Radioactive Element into Upper Jaw, Open Approach	Procedure	ICD-10-PCS
0WH431Z	Insertion of Radioactive Element into Upper Jaw, Percutaneous Approach	Procedure	ICD-10-PCS
0WH441Z	Insertion of Radioactive Element into Upper Jaw, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH501Z	Insertion of Radioactive Element into Lower Jaw, Open Approach	Procedure	ICD-10-PCS
0WH531Z	Insertion of Radioactive Element into Lower Jaw, Percutaneous Approach	Procedure	ICD-10-PCS
0WH541Z	Insertion of Radioactive Element into Lower Jaw, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH601Z	Insertion of Radioactive Element into Neck, Open Approach	Procedure	ICD-10-PCS
0WH631Z	Insertion of Radioactive Element into Neck, Percutaneous Approach	Procedure	ICD-10-PCS
0WH641Z	Insertion of Radioactive Element into Neck, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH801Z	Insertion of Radioactive Element into Chest Wall, Open Approach	Procedure	ICD-10-PCS
0WH831Z	Insertion of Radioactive Element into Chest Wall, Percutaneous Approach	Procedure	ICD-10-PCS
0WH841Z	Insertion of Radioactive Element into Chest Wall, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WH901Z	Insertion of Radioactive Element into Right Pleural Cavity, Open Approach	Procedure	ICD-10-PCS
0WH931Z	Insertion of Radioactive Element into Right Pleural Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
0WH941Z	Insertion of Radioactive Element into Right Pleural Cavity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHB01Z	Insertion of Radioactive Element into Left Pleural Cavity, Open Approach	Procedure	ICD-10-PCS
0WHB31Z	Insertion of Radioactive Element into Left Pleural Cavity, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0WHB41Z	Insertion of Radioactive Element into Left Pleural Cavity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHC01Z	Insertion of Radioactive Element into Mediastinum, Open Approach	Procedure	ICD-10-PCS
0WHC31Z	Insertion of Radioactive Element into Mediastinum, Percutaneous Approach	Procedure	ICD-10-PCS
0WHC41Z	Insertion of Radioactive Element into Mediastinum, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHD01Z	Insertion of Radioactive Element into Pericardial Cavity, Open Approach	Procedure	ICD-10-PCS
0WHD31Z	Insertion of Radioactive Element into Pericardial Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
0WHD41Z	Insertion of Radioactive Element into Pericardial Cavity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHF01Z	Insertion of Radioactive Element into Abdominal Wall, Open Approach	Procedure	ICD-10-PCS
0WHF31Z	Insertion of Radioactive Element into Abdominal Wall, Percutaneous Approach	Procedure	ICD-10-PCS
0WHF41Z	Insertion of Radioactive Element into Abdominal Wall, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHG01Z	Insertion of Radioactive Element into Peritoneal Cavity, Open Approach	Procedure	ICD-10-PCS
0WHG31Z	Insertion of Radioactive Element into Peritoneal Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
0WHG41Z	Insertion of Radioactive Element into Peritoneal Cavity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHH01Z	Insertion of Radioactive Element into Retroperitoneum, Open Approach	Procedure	ICD-10-PCS
0WHH31Z	Insertion of Radioactive Element into Retroperitoneum, Percutaneous Approach	Procedure	ICD-10-PCS
0WHH41Z	Insertion of Radioactive Element into Retroperitoneum, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHJ01Z	Insertion of Radioactive Element into Pelvic Cavity, Open Approach	Procedure	ICD-10-PCS
0WHJ31Z	Insertion of Radioactive Element into Pelvic Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
0WHJ41Z	Insertion of Radioactive Element into Pelvic Cavity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHK01Z	Insertion of Radioactive Element into Upper Back, Open Approach	Procedure	ICD-10-PCS
0WHK31Z	Insertion of Radioactive Element into Upper Back, Percutaneous Approach	Procedure	ICD-10-PCS
0WHK41Z	Insertion of Radioactive Element into Upper Back, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WHL01Z	Insertion of Radioactive Element into Lower Back, Open Approach	Procedure	ICD-10-PCS
0WHL31Z	Insertion of Radioactive Element into Lower Back, Percutaneous Approach	Procedure	ICD-10-PCS
0WHL41Z	Insertion of Radioactive Element into Lower Back, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0WHM01Z	Insertion of Radioactive Element into Male Perineum, Open Approach	Procedure	ICD-10-PCS
0WHM31Z	Insertion of Radioactive Element into Male Perineum, Percutaneous Approach	Procedure	ICD-10-PCS
0WHM41Z	Insertion of Radioactive Element into Male Perineum, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHN01Z	Insertion of Radioactive Element into Female Perineum, Open Approach	Procedure	ICD-10-PCS
0WHN31Z	Insertion of Radioactive Element into Female Perineum, Percutaneous Approach	Procedure	ICD-10-PCS
0WHN41Z	Insertion of Radioactive Element into Female Perineum, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHP01Z	Insertion of Radioactive Element into Gastrointestinal Tract, Open Approach	Procedure	ICD-10-PCS
0WHP31Z	Insertion of Radioactive Element into Gastrointestinal Tract, Percutaneous Approach	Procedure	ICD-10-PCS
0WHP41Z	Insertion of Radioactive Element into Gastrointestinal Tract, Percutaneous Endoscopic	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0WHP71Z	Insertion of Radioactive Element into Gastrointestinal Tract, Via Natural or Artificial	Procedure	ICD-10-PCS
0WHP81Z	Insertion of Radioactive Element into Gastrointestinal Tract, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0WHQ01Z	Insertion of Radioactive Element into Respiratory Tract, Open Approach	Procedure	ICD-10-PCS
0WHQ31Z	Insertion of Radioactive Element into Respiratory Tract, Percutaneous Approach	Procedure	ICD-10-PCS
0WHQ41Z	Insertion of Radioactive Element into Respiratory Tract, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHQ71Z	Insertion of Radioactive Element into Respiratory Tract, Via Natural or Artificial	Procedure	ICD-10-PCS
0WHQ81Z	Insertion of Radioactive Element into Respiratory Tract, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0WHR01Z	Insertion of Radioactive Element into Genitourinary Tract, Open Approach	Procedure	ICD-10-PCS
0WHR31Z	Insertion of Radioactive Element into Genitourinary Tract, Percutaneous Approach	Procedure	ICD-10-PCS
0WHR41Z	Insertion of Radioactive Element into Genitourinary Tract, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0WHR71Z	Insertion of Radioactive Element into Genitourinary Tract, Via Natural or Artificial	Procedure	ICD-10-PCS
0WHR81Z	Insertion of Radioactive Element into Genitourinary Tract, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
0XH201Z	Insertion of Radioactive Element into Right Shoulder Region, Open Approach	Procedure	ICD-10-PCS
0XH231Z	Insertion of Radioactive Element into Right Shoulder Region, Percutaneous Approach	Procedure	ICD-10-PCS
0XH241Z	Insertion of Radioactive Element into Right Shoulder Region, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0XH301Z	Insertion of Radioactive Element into Left Shoulder Region, Open Approach	Procedure	ICD-10-PCS
0XH331Z	Insertion of Radioactive Element into Left Shoulder Region, Percutaneous Approach	Procedure	ICD-10-PCS
0XH341Z	Insertion of Radioactive Element into Left Shoulder Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XH401Z	Insertion of Radioactive Element into Right Axilla, Open Approach	Procedure	ICD-10-PCS
0XH431Z	Insertion of Radioactive Element into Right Axilla, Percutaneous Approach	Procedure	ICD-10-PCS
0XH441Z	Insertion of Radioactive Element into Right Axilla, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0XH501Z	Insertion of Radioactive Element into Left Axilla, Open Approach	Procedure	ICD-10-PCS
0XH531Z	Insertion of Radioactive Element into Left Axilla, Percutaneous Approach	Procedure	ICD-10-PCS
0XH541Z	Insertion of Radioactive Element into Left Axilla, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0XH601Z	Insertion of Radioactive Element into Right Upper Extremity, Open Approach	Procedure	ICD-10-PCS
0XH631Z	Insertion of Radioactive Element into Right Upper Extremity, Percutaneous Approach	Procedure	ICD-10-PCS
0XH641Z	Insertion of Radioactive Element into Right Upper Extremity, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0XH701Z	Insertion of Radioactive Element into Left Upper Extremity, Open Approach	Procedure	ICD-10-PCS
0XH731Z	Insertion of Radioactive Element into Left Upper Extremity, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0XH741Z	Insertion of Radioactive Element into Left Upper Extremity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XH801Z	Insertion of Radioactive Element into Right Upper Arm, Open Approach	Procedure	ICD-10-PCS
0XH831Z	Insertion of Radioactive Element into Right Upper Arm, Percutaneous Approach	Procedure	ICD-10-PCS
0XH841Z	Insertion of Radioactive Element into Right Upper Arm, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XH901Z	Insertion of Radioactive Element into Left Upper Arm, Open Approach	Procedure	ICD-10-PCS
0XH931Z	Insertion of Radioactive Element into Left Upper Arm, Percutaneous Approach	Procedure	ICD-10-PCS
0XH941Z	Insertion of Radioactive Element into Left Upper Arm, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHB01Z	Insertion of Radioactive Element into Right Elbow Region, Open Approach	Procedure	ICD-10-PCS
0XHB31Z	Insertion of Radioactive Element into Right Elbow Region, Percutaneous Approach	Procedure	ICD-10-PCS
0XHB41Z	Insertion of Radioactive Element into Right Elbow Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHC01Z	Insertion of Radioactive Element into Left Elbow Region, Open Approach	Procedure	ICD-10-PCS
0XHC31Z	Insertion of Radioactive Element into Left Elbow Region, Percutaneous Approach	Procedure	ICD-10-PCS
0XHC41Z	Insertion of Radioactive Element into Left Elbow Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHD01Z	Insertion of Radioactive Element into Right Lower Arm, Open Approach	Procedure	ICD-10-PCS
0XHD31Z	Insertion of Radioactive Element into Right Lower Arm, Percutaneous Approach	Procedure	ICD-10-PCS
0XHD41Z	Insertion of Radioactive Element into Right Lower Arm, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHF01Z	Insertion of Radioactive Element into Left Lower Arm, Open Approach	Procedure	ICD-10-PCS
0XHF31Z	Insertion of Radioactive Element into Left Lower Arm, Percutaneous Approach	Procedure	ICD-10-PCS
0XHF41Z	Insertion of Radioactive Element into Left Lower Arm, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHG01Z	Insertion of Radioactive Element into Right Wrist Region, Open Approach	Procedure	ICD-10-PCS
0XHG31Z	Insertion of Radioactive Element into Right Wrist Region, Percutaneous Approach	Procedure	ICD-10-PCS
0XHG41Z	Insertion of Radioactive Element into Right Wrist Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHH01Z	Insertion of Radioactive Element into Left Wrist Region, Open Approach	Procedure	ICD-10-PCS
0XHH31Z	Insertion of Radioactive Element into Left Wrist Region, Percutaneous Approach	Procedure	ICD-10-PCS
0XHH41Z	Insertion of Radioactive Element into Left Wrist Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0XHJ01Z	Insertion of Radioactive Element into Right Hand, Open Approach	Procedure	ICD-10-PCS
0XHJ31Z	Insertion of Radioactive Element into Right Hand, Percutaneous Approach	Procedure	ICD-10-PCS
0XHJ41Z	Insertion of Radioactive Element into Right Hand, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0XHK01Z	Insertion of Radioactive Element into Left Hand, Open Approach	Procedure	ICD-10-PCS
0XHK31Z	Insertion of Radioactive Element into Left Hand, Percutaneous Approach	Procedure	ICD-10-PCS
0XHK41Z	Insertion of Radioactive Element into Left Hand, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0YH001Z	Insertion of Radioactive Element into Right Buttock, Open Approach	Procedure	ICD-10-PCS
0YH031Z	Insertion of Radioactive Element into Right Buttock, Percutaneous Approach	Procedure	ICD-10-PCS
0YH041Z	Insertion of Radioactive Element into Right Buttock, Percutaneous Endoscopic	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0YH101Z	Insertion of Radioactive Element into Left Buttock, Open Approach	Procedure	ICD-10-PCS
0YH131Z	Insertion of Radioactive Element into Left Buttock, Percutaneous Approach	Procedure	ICD-10-PCS
0YH141Z	Insertion of Radioactive Element into Left Buttock, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0YH501Z	Insertion of Radioactive Element into Right Inguinal Region, Open Approach	Procedure	ICD-10-PCS
0YH531Z	Insertion of Radioactive Element into Right Inguinal Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YH541Z	Insertion of Radioactive Element into Right Inguinal Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YH601Z	Insertion of Radioactive Element into Left Inguinal Region, Open Approach	Procedure	ICD-10-PCS
0YH631Z	Insertion of Radioactive Element into Left Inguinal Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YH641Z	Insertion of Radioactive Element into Left Inguinal Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YH701Z	Insertion of Radioactive Element into Right Femoral Region, Open Approach	Procedure	ICD-10-PCS
0YH731Z	Insertion of Radioactive Element into Right Femoral Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YH741Z	Insertion of Radioactive Element into Right Femoral Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YH801Z	Insertion of Radioactive Element into Left Femoral Region, Open Approach	Procedure	ICD-10-PCS
0YH831Z	Insertion of Radioactive Element into Left Femoral Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YH841Z	Insertion of Radioactive Element into Left Femoral Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YH901Z	Insertion of Radioactive Element into Right Lower Extremity, Open Approach	Procedure	ICD-10-PCS
0YH931Z	Insertion of Radioactive Element into Right Lower Extremity, Percutaneous Approach	Procedure	ICD-10-PCS
0YH941Z	Insertion of Radioactive Element into Right Lower Extremity, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0YHB01Z	Insertion of Radioactive Element into Left Lower Extremity, Open Approach	Procedure	ICD-10-PCS
0YHB31Z	Insertion of Radioactive Element into Left Lower Extremity, Percutaneous Approach	Procedure	ICD-10-PCS
0YHB41Z	Insertion of Radioactive Element into Left Lower Extremity, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHC01Z	Insertion of Radioactive Element into Right Upper Leg, Open Approach	Procedure	ICD-10-PCS
0YHC31Z	Insertion of Radioactive Element into Right Upper Leg, Percutaneous Approach	Procedure	ICD-10-PCS
0YHC41Z	Insertion of Radioactive Element into Right Upper Leg, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHD01Z	Insertion of Radioactive Element into Left Upper Leg, Open Approach	Procedure	ICD-10-PCS
0YHD31Z	Insertion of Radioactive Element into Left Upper Leg, Percutaneous Approach	Procedure	ICD-10-PCS
0YHD41Z	Insertion of Radioactive Element into Left Upper Leg, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHF01Z	Insertion of Radioactive Element into Right Knee Region, Open Approach	Procedure	ICD-10-PCS
0YHF31Z	Insertion of Radioactive Element into Right Knee Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YHF41Z	Insertion of Radioactive Element into Right Knee Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHG01Z	Insertion of Radioactive Element into Left Knee Region, Open Approach	Procedure	ICD-10-PCS
0YHG31Z	Insertion of Radioactive Element into Left Knee Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YHG41Z	Insertion of Radioactive Element into Left Knee Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
0YHH01Z	Insertion of Radioactive Element into Right Lower Leg, Open Approach	Procedure	ICD-10-PCS
0YHH31Z	Insertion of Radioactive Element into Right Lower Leg, Percutaneous Approach	Procedure	ICD-10-PCS
0YHH41Z	Insertion of Radioactive Element into Right Lower Leg, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHJ01Z	Insertion of Radioactive Element into Left Lower Leg, Open Approach	Procedure	ICD-10-PCS
0YHJ31Z	Insertion of Radioactive Element into Left Lower Leg, Percutaneous Approach	Procedure	ICD-10-PCS
0YHJ41Z	Insertion of Radioactive Element into Left Lower Leg, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHK01Z	Insertion of Radioactive Element into Right Ankle Region, Open Approach	Procedure	ICD-10-PCS
0YHK31Z	Insertion of Radioactive Element into Right Ankle Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YHK41Z	Insertion of Radioactive Element into Right Ankle Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHL01Z	Insertion of Radioactive Element into Left Ankle Region, Open Approach	Procedure	ICD-10-PCS
0YHL31Z	Insertion of Radioactive Element into Left Ankle Region, Percutaneous Approach	Procedure	ICD-10-PCS
0YHL41Z	Insertion of Radioactive Element into Left Ankle Region, Percutaneous Endoscopic	Procedure	ICD-10-PCS
0YHM01Z	Insertion of Radioactive Element into Right Foot, Open Approach	Procedure	ICD-10-PCS
0YHM31Z	Insertion of Radioactive Element into Right Foot, Percutaneous Approach	Procedure	ICD-10-PCS
0YHM41Z	Insertion of Radioactive Element into Right Foot, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
0YHN01Z	Insertion of Radioactive Element into Left Foot, Open Approach	Procedure	ICD-10-PCS
0YHN31Z	Insertion of Radioactive Element into Left Foot, Percutaneous Approach	Procedure	ICD-10-PCS
0YHN41Z	Insertion of Radioactive Element into Left Foot, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
19294	Preparation of tumor cavity and placement of radiation therapy applicator into breast for radiation therapy concurrent with partial breast removal	Procedure	CPT-4
19296	Insertion of catheter into breast for radiation therapy using imaging guidance	Procedure	CPT-4
19297	Insertion of catheter into breast for radiation therapy concurrent with partial breast removal using imaging guidance	Procedure	CPT-4
19298	Insertion of catheters into breast for radiation therapy with or after breast removal using imaging guidance	Procedure	CPT-4
20555	Insertion of needles or catheters into muscle and/or tissue for radiation therapy	Procedure	CPT-4
31643	Insertion of catheters for radiation delivery in lung airway using an endoscope	Procedure	CPT-4
32701	Thoracic targets delineation for stereotactic body radiation therapy	Procedure	CPT-4
3E00X05	Introduction of other antineoplastic into skin and mucous membranes, external	Procedure	ICD-10-PCS
3E00X0M	Introduction of monoclonal antibody into skin and mucous membranes, external	Procedure	ICD-10-PCS
3E01305	Introduction of other antineoplastic into subcutaneous tissue, percutaneous approach	Procedure	ICD-10-PCS
3E0130M	Introduction of monoclonal antibody into subcutaneous tissue, percutaneous	Procedure	ICD-10-PCS
3E02305	Introduction of other antineoplastic into muscle, percutaneous approach	Procedure	ICD-10-PCS
3E0230M	Introduction of monoclonal antibody into muscle, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E03002	Introduction of high-dose interleukin-2 into peripheral vein, open approach	Procedure	ICD-10-PCS
3E03003	Introduction of low-dose interleukin-2 into peripheral vein, open approach	Procedure	ICD-10-PCS
3E03005	Introduction of Other Antineoplastic into Peripheral Vein, Open Approach	Procedure	ICD-10-PCS
3E0300M	Introduction of monoclonal antibody into peripheral vein, open approach	Procedure	ICD-10-PCS
3E0300P	Introduction of clofarabine into peripheral vein, open approach	Procedure	ICD-10-PCS
3E030WL	Introduction of Immunosuppressive into Peripheral Vein, Open	Procedure	ICD-10-PCS
3E03302	Introduction of high-dose interleukin-2 into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
3E03303	Introduction of low-dose interleukin-2 into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
3E03305	Introduction of Other Antineoplastic into Peripheral Vein, Percutaneous Approach	Procedure	ICD-10-PCS
3E0330M	Introduction of monoclonal antibody into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
3E0330P	Introduction of clofarabine into peripheral vein, percutaneous approach	Procedure	ICD-10-PCS
3E033WL	Introduction of immunosuppressive into peripheral vein, percutaneous	Procedure	ICD-10-PCS
3E04002	Introduction of high-dose interleukin-2 into central vein, open approach	Procedure	ICD-10-PCS
3E04003	Introduction of low-dose interleukin-2 into central vein, open approach	Procedure	ICD-10-PCS
3E04005	Introduction of Other Antineoplastic into Central Vein, Open Approach	Procedure	ICD-10-PCS
3E0400M	Introduction of monoclonal antibody into central vein, open approach	Procedure	ICD-10-PCS
3E0400P	Introduction of clofarabine into central vein, open approach	Procedure	ICD-10-PCS
3E040WL	Introduction of immunosuppressive into central vein, open	Procedure	ICD-10-PCS
3E04302	Introduction of high-dose interleukin-2 into central vein, percutaneous approach	Procedure	ICD-10-PCS
3E04303	Introduction of low-dose interleukin-2 into central vein, percutaneous approach	Procedure	ICD-10-PCS
3E04305	Introduction of Other Antineoplastic into Central Vein, Percutaneous Approach	Procedure	ICD-10-PCS
3E0430M	Introduction of monoclonal antibody into central vein, percutaneous approach	Procedure	ICD-10-PCS
3E0430P	Introduction of clofarabine into central vein, percutaneous approach	Procedure	ICD-10-PCS
3E043WL	Introduction of immunosuppressive into central vein, percutaneous	Procedure	ICD-10-PCS
3E05002	Introduction of high-dose interleukin-2 into peripheral artery, open approach	Procedure	ICD-10-PCS
3E05003	Introduction of low-dose interleukin-2 into peripheral artery, open approach	Procedure	ICD-10-PCS
3E05005	Introduction of Other Antineoplastic into Peripheral Artery, Open Approach	Procedure	ICD-10-PCS
3E0500M	Introduction of monoclonal antibody into peripheral artery, open approach	Procedure	ICD-10-PCS
3E0500P	Introduction of clofarabine into peripheral artery, open approach	Procedure	ICD-10-PCS
3E050WL	Introduction of immunosuppressive into peripheral artery, open	Procedure	ICD-10-PCS
3E05302	Introduction of high-dose interleukin-2 into peripheral artery, percutaneous approach	Procedure	ICD-10-PCS
3E05303	Introduction of low-dose interleukin-2 into peripheral artery, percutaneous approach	Procedure	ICD-10-PCS
3E05305	Introduction of Other Antineoplastic into Peripheral Artery, Percutaneous Approach	Procedure	ICD-10-PCS
3E0530M	Introduction of monoclonal antibody into peripheral artery, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0530P	Introduction of clofarabine into peripheral artery, percutaneous approach	Procedure	ICD-10-PCS
3E053WL	Introduction of immunosuppressive into peripheral artery, percutaneous	Procedure	ICD-10-PCS
3E06002	Introduction of high-dose interleukin-2 into central artery, open approach	Procedure	ICD-10-PCS
3E06003	Introduction of low-dose interleukin-2 into central artery, open approach	Procedure	ICD-10-PCS
3E06005	Introduction of Other Antineoplastic into Central Artery, Open Approach	Procedure	ICD-10-PCS
3E0600M	Introduction of monoclonal antibody into central artery, open approach	Procedure	ICD-10-PCS
3E0600P	Introduction of clofarabine into central artery, open approach	Procedure	ICD-10-PCS
3E060WL	Introduction of immunosuppressive into central artery, open	Procedure	ICD-10-PCS
3E06302	Introduction of high-dose interleukin-2 into central artery, percutaneous approach	Procedure	ICD-10-PCS
3E06303	Introduction of low-dose interleukin-2 into central artery, percutaneous approach	Procedure	ICD-10-PCS
3E06305	Introduction of Other Antineoplastic into Central Artery, Percutaneous Approach	Procedure	ICD-10-PCS
3E0630M	Introduction of monoclonal antibody into central artery, percutaneous approach	Procedure	ICD-10-PCS
3E0630P	Introduction of clofarabine into central artery, percutaneous approach	Procedure	ICD-10-PCS
3E063WL	Introduction of immunosuppressive into central artery, percutaneous	Procedure	ICD-10-PCS
3E09305	Introduction of other antineoplastic into nose, percutaneous approach	Procedure	ICD-10-PCS
3E0930M	Introduction of monoclonal antibody into nose, percutaneous approach	Procedure	ICD-10-PCS
3E09705	Introduction of other antineoplastic into nose, via natural or artificial opening	Procedure	ICD-10-PCS
3E0970M	Introduction of monoclonal antibody into nose, via natural or artificial opening	Procedure	ICD-10-PCS
3E09X05	Introduction of other antineoplastic into nose, external approach	Procedure	ICD-10-PCS
3E09X0M	Introduction of monoclonal antibody into nose, external approach	Procedure	ICD-10-PCS
3E0A305	Introduction of other antineoplastic into bone marrow, percutaneous approach	Procedure	ICD-10-PCS
3E0A30M	Introduction of monoclonal antibody into bone marrow, percutaneous approach	Procedure	ICD-10-PCS
3E0B304	Introduction of Liquid Brachytherapy Radioisotope into Ear, Percutaneous Approach	Procedure	ICD-10-PCS
3E0B305	Introduction of other antineoplastic into ear, percutaneous approach	Procedure	ICD-10-PCS
3E0B30M	Introduction of monoclonal antibody into ear, percutaneous approach	Procedure	ICD-10-PCS
3E0B704	Introduction of Liquid Brachytherapy Radioisotope into Ear, Via Natural or Artificial	Procedure	ICD-10-PCS
3E0B705	Introduction of other antineoplastic into ear, via natural or artificial opening	Procedure	ICD-10-PCS
3E0B70M	Introduction of monoclonal antibody into ear, via natural or artificial opening	Procedure	ICD-10-PCS
3E0BX04	Introduction of Liquid Brachytherapy Radioisotope into Ear, External Approach	Procedure	ICD-10-PCS
3E0BX05	Introduction of other antineoplastic into ear, external approach	Procedure	ICD-10-PCS
3E0BX0M	Introduction of monoclonal antibody into ear, external approach	Procedure	ICD-10-PCS
3E0C304	Introduction of Liquid Brachytherapy Radioisotope into Eye, Percutaneous Approach	Procedure	ICD-10-PCS
3E0C305	Introduction of other antineoplastic into eye, percutaneous approach	Procedure	ICD-10-PCS
3E0C30M	Introduction of monoclonal antibody into eye, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0C704	Introduction of Liquid Brachytherapy Radioisotope into Eye, Via Natural or Artificial	Procedure	ICD-10-PCS
3E0C705	Introduction of other antineoplastic into eye, via natural or artificial opening	Procedure	ICD-10-PCS
3E0C70M	Introduction of monoclonal antibody into eye, via natural or artificial opening	Procedure	ICD-10-PCS
3E0CX04	Introduction of Liquid Brachytherapy Radioisotope into Eye, External Approach	Procedure	ICD-10-PCS
3E0CX05	Introduction of other antineoplastic into eye, external approach	Procedure	ICD-10-PCS
3E0CX0M	Introduction of monoclonal antibody into eye, external approach	Procedure	ICD-10-PCS
3E0D304	Introduction of Liquid Brachytherapy Radioisotope into Mouth and Pharynx, Percutaneous Approach	Procedure	ICD-10-PCS
3E0D305	Introduction of other antineoplastic into mouth and pharynx, percutaneous approach	Procedure	ICD-10-PCS
3E0D30M	Introduction of monoclonal antibody into mouth and pharynx, percutaneous approach	Procedure	ICD-10-PCS
3E0D704	Introduction of Liquid Brachytherapy Radioisotope into Mouth and Pharynx, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0D705	Introduction of other antineoplastic into mouth and pharynx, via natural or artificial	Procedure	ICD-10-PCS
3E0D70M	Introduction of monoclonal antibody into mouth and pharynx, via natural or artificial	Procedure	ICD-10-PCS
3E0DX04	Introduction of Liquid Brachytherapy Radioisotope into Mouth and Pharynx, External	Procedure	ICD-10-PCS
3E0DX05	Introduction of other antineoplastic into mouth and pharynx, external approach	Procedure	ICD-10-PCS
3E0DX0M	Introduction of monoclonal antibody into mouth and pharynx, external approach	Procedure	ICD-10-PCS
3E0E304	Introduction of Liquid Brachytherapy Radioisotope into Products of Conception, Percutaneous Approach	Procedure	ICD-10-PCS
3E0E305	Introduction of other antineoplastic into products of conception, percutaneous	Procedure	ICD-10-PCS
3E0E30M	Introduction of monoclonal antibody into products of conception, percutaneous	Procedure	ICD-10-PCS
3E0E704	Introduction of Liquid Brachytherapy Radioisotope into Products of Conception, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0E705	Introduction of other antineoplastic into products of conception, via natural or	Procedure	ICD-10-PCS
3E0E70M	Introduction of monoclonal antibody into products of conception, via natural or artificial opening	Procedure	ICD-10-PCS
3E0E804	Introduction of Liquid Brachytherapy Radioisotope into Products of Conception, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0E805	Introduction of other antineoplastic into products of conception, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0E80M	Introduction of monoclonal antibody into products of conception, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0F304	Introduction of Liquid Brachytherapy Radioisotope into Respiratory Tract, Percutaneous Approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0F305	Introduction of other antineoplastic into respiratory tract, percutaneous approach	Procedure	ICD-10-PCS
3E0F30M	Introduction of monoclonal antibody into respiratory tract, percutaneous approach	Procedure	ICD-10-PCS
3E0F704	Introduction of Liquid Brachytherapy Radioisotope into Respiratory Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0F705	Introduction of other antineoplastic into respiratory tract, via natural or artificial	Procedure	ICD-10-PCS
3E0F70M	Introduction of monoclonal antibody into respiratory tract, via natural or artificial	Procedure	ICD-10-PCS
3E0F804	Introduction of Liquid Brachytherapy Radioisotope into Respiratory Tract, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0F805	Introduction of other antineoplastic into respiratory tract, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0F80M	Introduction of monoclonal antibody into respiratory tract, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0G304	Introduction of Liquid Brachytherapy Radioisotope into Upper GI, Percutaneous	Procedure	ICD-10-PCS
3E0G305	Introduction of other antineoplastic into upper gi, percutaneous approach	Procedure	ICD-10-PCS
3E0G30M	Introduction of monoclonal antibody into upper gi, percutaneous approach	Procedure	ICD-10-PCS
3E0G704	Introduction of Liquid Brachytherapy Radioisotope into Upper GI, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0G705	Introduction of other antineoplastic into upper gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0G70M	Introduction of monoclonal antibody into upper gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0G804	Introduction of Liquid Brachytherapy Radioisotope into Upper GI, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0G805	Introduction of other antineoplastic into upper gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0G80M	Introduction of monoclonal antibody into upper gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0H304	Introduction of Liquid Brachytherapy Radioisotope into Lower GI, Percutaneous	Procedure	ICD-10-PCS
3E0H305	Introduction of other antineoplastic into lower gi, percutaneous approach	Procedure	ICD-10-PCS
3E0H30M	Introduction of monoclonal antibody into lower gi, percutaneous approach	Procedure	ICD-10-PCS
3E0H704	Introduction of Liquid Brachytherapy Radioisotope into Lower GI, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0H705	Introduction of other antineoplastic into lower gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0H70M	Introduction of monoclonal antibody into lower gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0H804	Introduction of Liquid Brachytherapy Radioisotope into Lower GI, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0H805	Introduction of other antineoplastic into lower gi, via natural or artificial opening	Procedure	ICD-10-PCS
3E0H80M	Introduction of monoclonal antibody into lower gi, via natural or artificial opening	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0J304	Introduction of Liquid Brachytherapy Radioisotope into Biliary and Pancreatic Tract, Percutaneous Approach	Procedure	ICD-10-PCS
3E0J305	Introduction of other antineoplastic into biliary and pancreatic tract, percutaneous	Procedure	ICD-10-PCS
3E0J30M	Introduction of monoclonal antibody into biliary and pancreatic tract, percutaneous	Procedure	ICD-10-PCS
3E0J704	Introduction of Liquid Brachytherapy Radioisotope into Biliary and Pancreatic Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0J705	Introduction of other antineoplastic into biliary and pancreatic tract, via natural or artificial opening	Procedure	ICD-10-PCS
3E0J70M	Introduction of monoclonal antibody into biliary and pancreatic tract, via natural or artificial opening	Procedure	ICD-10-PCS
3E0J804	Introduction of Liquid Brachytherapy Radioisotope into Biliary and Pancreatic Tract, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0J805	Introduction of other antineoplastic into biliary and pancreatic tract, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0J80M	Introduction of monoclonal antibody into biliary and pancreatic tract, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0K304	Introduction of Liquid Brachytherapy Radioisotope into Genitourinary Tract, Percutaneous Approach	Procedure	ICD-10-PCS
3E0K305	Introduction of other antineoplastic into genitourinary tract, percutaneous approach	Procedure	ICD-10-PCS
3E0K30M	Introduction of monoclonal antibody into genitourinary tract, percutaneous approach	Procedure	ICD-10-PCS
3E0K704	Introduction of Liquid Brachytherapy Radioisotope into Genitourinary Tract, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0K705	Introduction of other antineoplastic into genitourinary tract, via natural or artificial	Procedure	ICD-10-PCS
3E0K70M	Introduction of monoclonal antibody into genitourinary tract, via natural or artificial	Procedure	ICD-10-PCS
3E0K804	Introduction of Liquid Brachytherapy Radioisotope into Genitourinary Tract, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0K805	Introduction of other antineoplastic into genitourinary tract, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0K80M	Introduction of monoclonal antibody into genitourinary tract, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0L304	Introduction of Liquid Brachytherapy Radioisotope into Pleural Cavity, Percutaneous	Procedure	ICD-10-PCS
3E0L305	Introduction of other antineoplastic into pleural cavity, percutaneous approach	Procedure	ICD-10-PCS
3E0L30M	Introduction of monoclonal antibody into pleural cavity, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0L704	Introduction of Liquid Brachytherapy Radioisotope into Pleural Cavity, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0L705	Introduction of other antineoplastic into pleural cavity, via natural or artificial opening	Procedure	ICD-10-PCS
3E0L70M	Introduction of monoclonal antibody into pleural cavity, via natural or artificial	Procedure	ICD-10-PCS
3E0M304	Introduction of Liquid Brachytherapy Radioisotope into Peritoneal Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
3E0M305	Introduction of other antineoplastic into peritoneal cavity, percutaneous approach	Procedure	ICD-10-PCS
3E0M30M	Introduction of monoclonal antibody into peritoneal cavity, percutaneous approach	Procedure	ICD-10-PCS
3E0M704	Introduction of Liquid Brachytherapy Radioisotope into Peritoneal Cavity, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0M705	Introduction of other antineoplastic into peritoneal cavity, via natural or artificial	Procedure	ICD-10-PCS
3E0M70M	Introduction of monoclonal antibody into peritoneal cavity, via natural or artificial	Procedure	ICD-10-PCS
3E0N304	Introduction of Liquid Brachytherapy Radioisotope into Male Reproductive, Percutaneous Approach	Procedure	ICD-10-PCS
3E0N305	Introduction of other antineoplastic into male reproductive, percutaneous approach	Procedure	ICD-10-PCS
3E0N30M	Introduction of monoclonal antibody into male reproductive, percutaneous approach	Procedure	ICD-10-PCS
3E0N704	Introduction of Liquid Brachytherapy Radioisotope into Male Reproductive, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0N705	Introduction of other antineoplastic into male reproductive, via natural or artificial	Procedure	ICD-10-PCS
3E0N70M	Introduction of monoclonal antibody into male reproductive, via natural or artificial	Procedure	ICD-10-PCS
3E0N804	Introduction of Liquid Brachytherapy Radioisotope into Male Reproductive, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0N805	Introduction of other antineoplastic into male reproductive, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0N80M	Introduction of monoclonal antibody into male reproductive, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0P304	Introduction of Liquid Brachytherapy Radioisotope into Female Reproductive, Percutaneous Approach	Procedure	ICD-10-PCS
3E0P305	Introduction of other antineoplastic into female reproductive, percutaneous approach	Procedure	ICD-10-PCS
3E0P30M	Introduction of monoclonal antibody into female reproductive, percutaneous	Procedure	ICD-10-PCS
3E0P704	Introduction of Liquid Brachytherapy Radioisotope into Female Reproductive, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0P705	Introduction of other antineoplastic into female reproductive, via natural or artificial	Procedure	ICD-10-PCS
3E0P70M	Introduction of monoclonal antibody into female reproductive, via natural or artificial	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0P804	Introduction of Liquid Brachytherapy Radioisotope into Female Reproductive, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
3E0P805	Introduction of other antineoplastic into female reproductive, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0P80M	Introduction of monoclonal antibody into female reproductive, via natural or artificial opening endoscopic	Procedure	ICD-10-PCS
3E0Q004	Introduction of Liquid Brachytherapy Radioisotope into Cranial Cavity and Brain, Open	Procedure	ICD-10-PCS
3E0Q005	Introduction of other antineoplastic into cranial cavity and brain, open approach	Procedure	ICD-10-PCS
3E0Q00M	Introduction of monoclonal antibody into cranial cavity and brain, open approach	Procedure	ICD-10-PCS
3E0Q304	Introduction of Liquid Brachytherapy Radioisotope into Cranial Cavity and Brain, Percutaneous Approach	Procedure	ICD-10-PCS
3E0Q305	Introduction of other antineoplastic into cranial cavity and brain, percutaneous	Procedure	ICD-10-PCS
3E0Q30M	Introduction of monoclonal antibody into cranial cavity and brain, percutaneous	Procedure	ICD-10-PCS
3E0Q704	Introduction of Liquid Brachytherapy Radioisotope into Cranial Cavity and Brain, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0Q705	Introduction of other antineoplastic into cranial cavity and brain, via natural or	Procedure	ICD-10-PCS
3E0Q70M	Introduction of monoclonal antibody into cranial cavity and brain, via natural or artificial opening	Procedure	ICD-10-PCS
3E0R302	Introduction of high-dose interleukin-2 into spinal canal, percutaneous approach	Procedure	ICD-10-PCS
3E0R303	Introduction of low-dose interleukin-2 into spinal canal, percutaneous approach	Procedure	ICD-10-PCS
3E0R304	Introduction of Liquid Brachytherapy Radioisotope into Spinal Canal, Percutaneous	Procedure	ICD-10-PCS
3E0R305	Introduction of Other Antineoplastic into Spinal Canal, Percutaneous Approach	Procedure	ICD-10-PCS
3E0R30M	Introduction of monoclonal antibody into spinal canal, percutaneous approach	Procedure	ICD-10-PCS
3E0S302	Introduction of high-dose interleukin-2 into epidural space, percutaneous approach	Procedure	ICD-10-PCS
3E0S303	Introduction of low-dose interleukin-2 into epidural space, percutaneous approach	Procedure	ICD-10-PCS
3E0S304	Introduction of Liquid Brachytherapy Radioisotope into Epidural Space, Percutaneous	Procedure	ICD-10-PCS
3E0S305	Introduction of Other Antineoplastic into Epidural Space, Percutaneous Approach	Procedure	ICD-10-PCS
3E0S30M	Introduction of monoclonal antibody into epidural space, percutaneous approach	Procedure	ICD-10-PCS
3E0U304	Introduction of Liquid Brachytherapy Radioisotope into Joints, Percutaneous Approach	Procedure	ICD-10-PCS
3E0U305	Introduction of other antineoplastic into joints, percutaneous approach	Procedure	ICD-10-PCS
3E0U30M	Introduction of monoclonal antibody into joints, percutaneous approach	Procedure	ICD-10-PCS
3E0V305	Introduction of other antineoplastic into bones, percutaneous approach	Procedure	ICD-10-PCS
3E0V30M	Introduction of monoclonal antibody into bones, percutaneous approach	Procedure	ICD-10-PCS
3E0W305	Introduction of other antineoplastic into lymphatics, percutaneous approach	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
3E0W30M	Introduction of monoclonal antibody into lymphatics, percutaneous approach	Procedure	ICD-10-PCS
3E0Y304	Introduction of Liquid Brachytherapy Radioisotope into Pericardial Cavity, Percutaneous Approach	Procedure	ICD-10-PCS
3E0Y305	Introduction of other antineoplastic into pericardial cavity, percutaneous approach	Procedure	ICD-10-PCS
3E0Y30M	Introduction of monoclonal antibody into pericardial cavity, percutaneous approach	Procedure	ICD-10-PCS
3E0Y704	Introduction of Liquid Brachytherapy Radioisotope into Pericardial Cavity, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
3E0Y705	Introduction of other antineoplastic into pericardial cavity, via natural or artificial	Procedure	ICD-10-PCS
3E0Y70M	Introduction of monoclonal antibody into pericardial cavity, via natural or artificial	Procedure	ICD-10-PCS
41019	Insertion of needles, catheters, or devices into head and/or neck for radiation delivery	Procedure	CPT-4
4153F	Combination peginterferon and ribavirin therapy prescribed (HEP-C)	Procedure	CPT-2
49411	Insertion of devices in abdominal cavity for radiation therapy guidance, accessed through the skin	Procedure	CPT-4
49412	Insertion of devices for radiation therapy guidance in abdominal cavity, open	Procedure	CPT-4
55859	Transperineal placement of needles or catheters into prostate for interstitial radioelement application, with or without cystoscopy	Procedure	CPT-4
55860	Exposure of prostate, any approach, for insertion of radioactive substance;	Procedure	CPT-4
55862	Exposure of prostate, any approach, for insertion of radioactive substance; with lymph node biopsy(s) (limited pelvic lymphadenectomy)	Procedure	CPT-4
55865	Exposure of prostate, any approach, for insertion of radioactive substance; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric and obturator nodes	Procedure	CPT-4
55875	Transperineal placement of needles or catheters into prostate for interstitial radioelement application, with or without cystoscopy	Procedure	CPT-4
55920	Placement of needles or catheters into pelvic organs and/or genitalia (except prostate) for subsequent interstitial radioelement application	Procedure	CPT-4
57155	Insertion of radiation therapy devices in uterus for radiation therapy	Procedure	CPT-4
57156	Insertion of radiation therapy devices in vagina for radiation therapy	Procedure	CPT-4
58346	Insertion of capsules into uterus for placement of radiation therapy	Procedure	CPT-4
77371	Radiation therapy delivery, stereotactic radiosurgery (SRS) for cranial growths, per	Procedure	CPT-4
77372	Radiation therapy delivery, stereotactic radiosurgery (SRS) for cranial growths, per	Procedure	CPT-4
77373	Stereotactic body radiation therapy 1 or more lesions using imaging guidance	Procedure	CPT-4
77385	Radiation therapy delivery	Procedure	CPT-4
77386	Radiation therapy delivery	Procedure	CPT-4
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
77402	Radiation treatment delivery,=>1 MeV; simple	Procedure	CPT-4
77403	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks; 6-10 MeV	Procedure	CPT-4
77404	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks; 11-19 MeV	Procedure	CPT-4
77406	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks; 20 MeV or greater	Procedure	CPT-4
77407	Radiation treatment delivery, =>1 MeV; intermediate	Procedure	CPT-4
77408	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks; 6-10 MeV	Procedure	CPT-4
77409	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks; 11-19 MeV	Procedure	CPT-4
77411	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks; 20 MeV or greater	Procedure	CPT-4
77412	Radiation treatment delivery, =>1 MeV; complex	Procedure	CPT-4
77413	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV	Procedure	CPT-4
77414	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV	Procedure	CPT-4
77416	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater	Procedure	CPT-4
77422	Radiation treatment delivery, high energy, single treatment area	Procedure	CPT-4
77423	Radiation treatment delivery, high energy	Procedure	CPT-4
77424	Intraoperative single X-ray radiation treatment session	Procedure	CPT-4
77425	Intraoperative electrons radiation treatment single session	Procedure	CPT-4
77427	Radiation treatment management, 5 treatments	Procedure	CPT-4
77431	Radiation treatment management, 1 or 2 treatments	Procedure	CPT-4
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)	Procedure	CPT-4
77435	Stereotactic radiation treatment management of 1 or more lesions using imaging guidance, per treatment course	Procedure	CPT-4
77469	Intraoperative radiation treatment management	Procedure	CPT-4
77470	Special treatment procedure (eg, total body irradiation, hemibody radiation, per oral or endocavitary irradiation)	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
77499	Unlisted procedure, therapeutic radiology treatment management	Procedure	CPT-4
77520	Proton treatment delivery, simple	Procedure	CPT-4
77522	Proton treatment delivery, simple with compensation	Procedure	CPT-4
77523	Proton treatment delivery, intermediate	Procedure	CPT-4
77525	Proton treatment delivery, complex	Procedure	CPT-4
77750	Infusion or instillation of radioelement solution (includes 3-month follow-up care)	Procedure	CPT-4
77761	Intracavitary radiation source application; simple	Procedure	CPT-4
77762	Intracavitary radiation source application; intermediate	Procedure	CPT-4
77763	Intracavitary radiation source application; complex	Procedure	CPT-4
77767	High dose brachytherapy through skin surface, 1 channel or up to 2.0 cm	Procedure	CPT-4
77768	High dose brachytherapy through skin surface, 2 channels or more than 2.0 cm	Procedure	CPT-4
77770	High dose brachytherapy , 1 channel	Procedure	CPT-4
77771	High dose brachytherapy , 2- 12 channels	Procedure	CPT-4
77772	High dose brachytherapy , more than 12 channels	Procedure	CPT-4
77776	Interstitial radiation source application; simple	Procedure	CPT-4
77777	Interstitial radiation source application; intermediate	Procedure	CPT-4
77778	Interstitial radiation source application; complex	Procedure	CPT-4
77781	Remote afterloading high intensity brachytherapy; 1-4 source positions or catheters	Procedure	CPT-4
77782	Remote afterloading high intensity brachytherapy; 5-8 source positions or catheters	Procedure	CPT-4
77783	Remote afterloading high intensity brachytherapy; 9-12 source positions or catheters	Procedure	CPT-4
77784	Remote afterloading high intensity brachytherapy; over 12 source positions or	Procedure	CPT-4
77785	Remote afterloading high dose rate radionuclide brachytherapy; 1 channel	Procedure	CPT-4
77786	Remote afterloading high dose rate radionuclide brachytherapy; 2-12 channels	Procedure	CPT-4
77787	Remote afterloading high dose rate radionuclide brachytherapy; over 12 channels	Procedure	CPT-4
77789	Surface application of low dose rate radionuclide source	Procedure	CPT-4
77799	Unlisted procedure, clinical brachytherapy	Procedure	CPT-4
90378	Palivizumab	Procedure	CPT-4
96401	Chemotherapy administration, subcutaneous or intramuscular; non-hormonal anti-	Procedure	CPT-4
96402	Chemotherapy administration, subcutaneous or intramuscular; hormonal anti-	Procedure	CPT-4
96409	Chemotherapy administration; intravenous, push technique, single or initial	Procedure	CPT-4
96411	Chemotherapy administration; intravenous, push technique, each additional	Procedure	CPT-4
96413	Chemotherapy administration, intravenous infusion technique; up to 1 hour, single or initial substance/drug	Procedure	CPT-4

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
96415	Chemotherapy administration, intravenous infusion technique; each additional hour (List separately in addition to code for primary procedure)	Procedure	CPT-4
96416	Chemotherapy administration, intravenous infusion technique; initiation of prolonged chemotherapy infusion (more than 8 hours), requiring use of a portable or implantable	Procedure	CPT-4
96417	Chemotherapy administration, intravenous infusion technique; each additional sequential infusion (different substance/drug), up to 1 hour (List separately in addition to code for primary procedure)	Procedure	CPT-4
96420	Chemotherapy administration, intra-arterial; push technique	Procedure	CPT-4
96422	Chemotherapy administration, intra-arterial; infusion technique, up to 1 hour	Procedure	CPT-4
96423	Chemotherapy administration, intra-arterial; infusion technique, each additional hour (List separately in addition to code for primary procedure)	Procedure	CPT-4
96425	Chemotherapy administration, intra-arterial; infusion technique, initiation of prolonged infusion (more than 8 hours), requiring the use of a portable or implantable	Procedure	CPT-4
96440	Chemotherapy administration into pleural cavity, requiring and including	Procedure	CPT-4
96446	Chemotherapy administration into the peritoneal cavity via indwelling port or catheter	Procedure	CPT-4
96450	Chemotherapy administration, into CNS (eg, intrathecal), requiring and including spinal puncture	Procedure	CPT-4
96542	Chemotherapy injection, subarachnoid or intraventricular via subcutaneous reservoir, single or multiple agents	Procedure	CPT-4
96549	Unlisted chemotherapy procedure	Procedure	CPT-4
A9545	Iodine I-131 tositumomab, therapeutic, per treatment dose	Procedure	HCPCS
C1084	Denileukin diftitox, 300 mcg, ontak iv	Procedure	HCPCS
C1086	Temozolomide, 5 mg, temodar	Procedure	HCPCS
C1166	Injection, cytarabine liposome, per 10 mg	Procedure	HCPCS
C1167	Injection, epirubicin HCl, 2 mg	Procedure	HCPCS
C1178	Injection, busulfan, per 6 mg	Procedure	HCPCS
C1716	Brachytherapy source, non-stranded, gold-198, per source	Procedure	HCPCS
C1717	Brachytherapy source, non-stranded, high dose rate iridium-192, per source	Procedure	HCPCS
C1719	Brachytherapy source, non-stranded, non-high dose rate iridium-192, per source	Procedure	HCPCS
C2616	Brachytherapy source, non-stranded, yttrium-90, per source	Procedure	HCPCS
C2634	Brachytherapy source, non-stranded, high activity, iodine-125, greater than 1.01 mci (nist), per source	Procedure	HCPCS
C2635	Brachytherapy source, non-stranded, high activity, palladium-103, greater than 2.2 mci (nist), per source	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
C2636	Brachytherapy linear source, non-stranded, palladium-103, per 1 mm	Procedure	HCPCS
C2637	Brachytherapy source, non-stranded, ytterbium-169, per source	Procedure	HCPCS
C2638	Brachytherapy source, stranded, iodine-125, per source	Procedure	HCPCS
C2639	Brachytherapy source, non-stranded, iodine-125, per source	Procedure	HCPCS
C2640	Brachytherapy source, stranded, palladium-103, per source	Procedure	HCPCS
C2641	Brachytherapy source, non-stranded, palladium-103, per source	Procedure	HCPCS
C2642	Brachytherapy source, stranded, cesium-131, per source	Procedure	HCPCS
C2643	Brachytherapy source, non-stranded, cesium-131, per source	Procedure	HCPCS
C2644	Brachytherapy source, cesium-131 chloride solution, per millicurie	Procedure	HCPCS
C2698	Brachytherapy source, stranded, not otherwise specified, per source	Procedure	HCPCS
C2699	Brachytherapy source, non-stranded, not otherwise specified, per source	Procedure	HCPCS
C9004	Injection, gemtuzumab ozogamicin, per 5 mg	Procedure	HCPCS
C9006	Injection, tacrolimus, per 5 mg (1 amp)	Procedure	HCPCS
C9012	Injection, arsenic trioxide, per 1 mg/kg	Procedure	HCPCS
C9017	Lomustine, 10 mg	Procedure	HCPCS
C9020	Sirolimus tablet, 1 mg	Procedure	HCPCS
C9021	Injection, obinutuzumab, 10 mg	Procedure	HCPCS
C9024	Injection, liposomal, 1 mg daunorubicin and 2.27 mg cytarabine	Procedure	HCPCS
C9029	guselkumab	Procedure	HCPCS
C9042	ravulizumab	Procedure	HCPCS
C9044	Injection, bendamustine hcl (belrapzo), 1 mg	Procedure	HCPCS
C9045	Mogamulizumab	Procedure	HCPCS
C9049	Injection, tagraxofusp-erzs, 10 mcg	Procedure	HCPCS
C9050	Injection, emapalumab-lzsg, 1 mg	Procedure	HCPCS
C9106	Sirolimus, per 1 mg/ml	Procedure	HCPCS
C9110	Injection, alemtuzumab, per 10 mg/ ml	Procedure	HCPCS
C9126	Injection natalizumab per 5 mg	Procedure	HCPCS
C9127	Injection, paclitaxel protein-bound particles, per 1 mg	Procedure	HCPCS
C9129	Injection, clofarabine, per 1 mg	Procedure	HCPCS
C9205	Injection, oxaliplatin, per 5 mg	Procedure	HCPCS
C9207	Injection, bortezomib, per 3.5 mg	Procedure	HCPCS
C9211	Injection, alefacept, for intravenous use, per 7.5 mg	Procedure	HCPCS
C9212	Injection, alefacept, for intramuscular use, per 7.5 mg	Procedure	HCPCS
C9213	Injection, pemetrexed, per 10 mg	Procedure	HCPCS

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Code	Description	Code Category	Code Type
C9214	Injection, bevacizumab, per 10 mg	Procedure	HCPCS
C9215	Injection, cetuximab, per 10 mg	Procedure	HCPCS
C9218	Injection, azacitidine, per 1 mg	Procedure	HCPCS
C9230	Injection, abatacept, per 10 mg	Procedure	HCPCS
C9231	Injection, decitabine, per 1 mg	Procedure	HCPCS
C9235	Injection, panitumumab, 10 mg	Procedure	HCPCS
C9236	Injection, eculizumab, 10 mg	Procedure	HCPCS
C9239	Injection, temsirolimus, 1 mg	Procedure	HCPCS
C9240	Injection, ixabepilone, 1 mg	Procedure	HCPCS
C9243	Injection, bendamustine hcl, 1 mg	Procedure	HCPCS
C9249	Injection, certolizumab pegol, 1 mg	Procedure	HCPCS
C9253	Injection, temozolomide, 1mg	Procedure	HCPCS
C9259	Injection, pralatrexate, 1 mg	Procedure	HCPCS
C9260	Injection, ofatumumab, 10 mg	Procedure	HCPCS
C9261	Injection, ustekinumab, 1 mg	Procedure	HCPCS
C9262	Fludarabine phosphate, oral, 1 mg	Procedure	HCPCS
C9264	Injection, tocilizumab, 1 mg	Procedure	HCPCS
C9265	Injection, romidepsin, 1 mg	Procedure	HCPCS
C9273	Sipuleucel-T, minimum of 50 million autologous CD54+ cells activated with PAP-GM-CSF, including leukapheresis and all other preparatory procedures, per infusion	Procedure	HCPCS
C9276	Injection, cabazitaxel, 1 mg	Procedure	HCPCS
C9280	Injection, eribulin mesylate, 1 mg	Procedure	HCPCS
C9284	Injection, ipilimumab, 1 mg	Procedure	HCPCS
C9286	Injection, belatacept, 1 mg	Procedure	HCPCS
C9287	Injection, brentuximab vedotin, 1 mg	Procedure	HCPCS
C9289	Injection, asparaginase Erwinia chrysanthemi, 1,000 IU	Procedure	HCPCS
C9292	Injection, pertuzumab, 10 mg	Procedure	HCPCS
C9295	Injection, carfilzomib, 1 mg	Procedure	HCPCS
C9297	Injection, omacetaxine mepesuccinate, 0.01 mg	Procedure	HCPCS
C9414	Etoposide; oral, 50 mg, brand name	Procedure	HCPCS
C9415	Doxorubicin HCl, 10 mg, brand name	Procedure	HCPCS
C9417	Bleomycin sulfate, 15 units, brand name	Procedure	HCPCS
C9418	Cisplatin, powder or solution, per 10 mg, brand name	Procedure	HCPCS
C9419	Injection, cladribine, per 1 mg, brand name	Procedure	HCPCS

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Code	Description	Code Category	Code Type
C9420	Cyclophosphamide, 100 mg, brand name	Procedure	HCPCS
C9421	Cyclophosphamide, lyophilized, 100 mg, brand name	Procedure	HCPCS
C9422	Cytarabine, 100 mg, brand name	Procedure	HCPCS
C9423	Dacarbazine, 100 mg, brand name	Procedure	HCPCS
C9424	Daunorubicin, 10 mg	Procedure	HCPCS
C9425	Etoposide, 10 mg, brand name	Procedure	HCPCS
C9426	Floxuridine, 500 mg, brand name	Procedure	HCPCS
C9427	Ifosfamide, 1 gm, brand name	Procedure	HCPCS
C9429	Idarubicin HCl, 5 mg, brand name	Procedure	HCPCS
C9431	Paclitaxel, 30 mg, brand name	Procedure	HCPCS
C9432	Mitomycin, 5 mg, brand name	Procedure	HCPCS
C9433	Thiotepa, 15 mg, brand name	Procedure	HCPCS
C9436	Azathioprine, parenteral, brand name, per 100 mg	Procedure	HCPCS
C9437	Carmustine, brand name, 100 mg	Procedure	HCPCS
C9438	Cyclosporine, oral, 100 mg, brand name	Procedure	HCPCS
C9440	Vinorelbine tartrate, brand name, per 10 mg	Procedure	HCPCS
C9474	Injection, irinotecan liposome, 1 mg	Procedure	HCPCS
C9487	Ustekinumab, for intravenous injection, 1 mg	Procedure	HCPCS
D0000ZZ	Beam Radiation of Brain using Photons <1 MeV	Procedure	ICD-10-PCS
D0001ZZ	Beam Radiation of Brain using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D0002ZZ	Beam Radiation of Brain using Photons >10 MeV	Procedure	ICD-10-PCS
D0003ZZ	Beam Radiation of Brain using Electrons	Procedure	ICD-10-PCS
D0004ZZ	Beam Radiation of Brain using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D0005ZZ	Beam Radiation of Brain using Neutrons	Procedure	ICD-10-PCS
D0006ZZ	Beam Radiation of Brain using Neutron Capture	Procedure	ICD-10-PCS
D0010ZZ	Beam Radiation of Brain Stem using Photons <1 MeV	Procedure	ICD-10-PCS
D0011ZZ	Beam Radiation of Brain Stem using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D0012ZZ	Beam Radiation of Brain Stem using Photons >10 MeV	Procedure	ICD-10-PCS
D0013ZZ	Beam Radiation of Brain Stem using Electrons	Procedure	ICD-10-PCS
D0014ZZ	Beam Radiation of Brain Stem using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D0015ZZ	Beam Radiation of Brain Stem using Neutrons	Procedure	ICD-10-PCS
D0016ZZ	Beam Radiation of Brain Stem using Neutron Capture	Procedure	ICD-10-PCS
D0060ZZ	Beam Radiation of Spinal Cord using Photons <1 MeV	Procedure	ICD-10-PCS
D0061ZZ	Beam Radiation of Spinal Cord using Photons 1 - 10 MeV	Procedure	ICD-10-PCS

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Code	Description	Code Category	Code Type
D0062ZZ	Beam Radiation of Spinal Cord using Photons >10 MeV	Procedure	ICD-10-PCS
D0063ZZ	Beam Radiation of Spinal Cord using Electrons	Procedure	ICD-10-PCS
D0064ZZ	Beam Radiation of Spinal Cord using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D0065ZZ	Beam Radiation of Spinal Cord using Neutrons	Procedure	ICD-10-PCS
D0066ZZ	Beam Radiation of Spinal Cord using Neutron Capture	Procedure	ICD-10-PCS
D0070ZZ	Beam Radiation of Peripheral Nerve using Photons <1 MeV	Procedure	ICD-10-PCS
D0073ZZ	Beam Radiation of Peripheral Nerve using Electrons	Procedure	ICD-10-PCS
D0074ZZ	Beam Radiation of Peripheral Nerve using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D0075ZZ	Beam Radiation of Peripheral Nerve using Neutrons	Procedure	ICD-10-PCS
D0076ZZ	Beam Radiation of Peripheral Nerve using Neutron Capture	Procedure	ICD-10-PCS
D01097Z	High Dose Rate (HDR) Brachytherapy of Brain using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D01098Z	High Dose Rate (HDR) Brachytherapy of Brain using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D01099Z	High Dose Rate (HDR) Brachytherapy of Brain using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D0109BZ	High Dose Rate (HDR) Brachytherapy of Brain using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D0109CZ	High Dose Rate (HDR) Brachytherapy of Brain using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D0109YZ	High Dose Rate (HDR) Brachytherapy of Brain using Other Isotope	Procedure	ICD-10-PCS
D010B7Z	Low Dose Rate (LDR) Brachytherapy of Brain using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D010B8Z	Low Dose Rate (LDR) Brachytherapy of Brain using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D010B9Z	Low Dose Rate (LDR) Brachytherapy of Brain using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D010BBZ	Low Dose Rate (LDR) Brachytherapy of Brain using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D010BCZ	Low Dose Rate (LDR) Brachytherapy of Brain using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D010BYZ	Low Dose Rate (LDR) Brachytherapy of Brain using Other Isotope	Procedure	ICD-10-PCS
D01197Z	High Dose Rate (HDR) Brachytherapy of Brain Stem using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D01198Z	High Dose Rate (HDR) Brachytherapy of Brain Stem using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D01199Z	High Dose Rate (HDR) Brachytherapy of Brain Stem using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D0119BZ	High Dose Rate (HDR) Brachytherapy of Brain Stem using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D0119CZ	High Dose Rate (HDR) Brachytherapy of Brain Stem using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D0119YZ	High Dose Rate (HDR) Brachytherapy of Brain Stem using Other Isotope	Procedure	ICD-10-PCS
D011B7Z	Low Dose Rate (LDR) Brachytherapy of Brain Stem using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D011B8Z	Low Dose Rate (LDR) Brachytherapy of Brain Stem using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D011B9Z	Low Dose Rate (LDR) Brachytherapy of Brain Stem using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D011BBZ	Low Dose Rate (LDR) Brachytherapy of Brain Stem using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D011BCZ	Low Dose Rate (LDR) Brachytherapy of Brain Stem using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D011BYZ	Low Dose Rate (LDR) Brachytherapy of Brain Stem using Other Isotope	Procedure	ICD-10-PCS

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Code	Description	Code Category	Code Type
D01697Z	High Dose Rate (HDR) Brachytherapy of Spinal Cord using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D01698Z	High Dose Rate (HDR) Brachytherapy of Spinal Cord using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D01699Z	High Dose Rate (HDR) Brachytherapy of Spinal Cord using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D0169BZ	High Dose Rate (HDR) Brachytherapy of Spinal Cord using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D0169CZ	High Dose Rate (HDR) Brachytherapy of Spinal Cord using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D0169YZ	High Dose Rate (HDR) Brachytherapy of Spinal Cord using Other Isotope	Procedure	ICD-10-PCS
D016B7Z	Low Dose Rate (LDR) Brachytherapy of Spinal Cord using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D016B8Z	Low Dose Rate (LDR) Brachytherapy of Spinal Cord using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D016B9Z	Low Dose Rate (LDR) Brachytherapy of Spinal Cord using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D016BBZ	Low Dose Rate (LDR) Brachytherapy of Spinal Cord using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D016BCZ	Low Dose Rate (LDR) Brachytherapy of Spinal Cord using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D016BYZ	Low Dose Rate (LDR) Brachytherapy of Spinal Cord using Other Isotope	Procedure	ICD-10-PCS
D01797Z	High Dose Rate (HDR) Brachytherapy of Peripheral Nerve using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D01798Z	High Dose Rate (HDR) Brachytherapy of Peripheral Nerve using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D01799Z	High Dose Rate (HDR) Brachytherapy of Peripheral Nerve using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D0179BZ	High Dose Rate (HDR) Brachytherapy of Peripheral Nerve using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D0179CZ	High Dose Rate (HDR) Brachytherapy of Peripheral Nerve using Californium 252 (Cf-	Procedure	ICD-10-PCS
D0179YZ	High Dose Rate (HDR) Brachytherapy of Peripheral Nerve using Other Isotope	Procedure	ICD-10-PCS
D017B7Z	Low Dose Rate (LDR) Brachytherapy of Peripheral Nerve using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D017B8Z	Low Dose Rate (LDR) Brachytherapy of Peripheral Nerve using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D017B9Z	Low Dose Rate (LDR) Brachytherapy of Peripheral Nerve using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D017BBZ	Low Dose Rate (LDR) Brachytherapy of Peripheral Nerve using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D017BCZ	Low Dose Rate (LDR) Brachytherapy of Peripheral Nerve using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D017BYZ	Low Dose Rate (LDR) Brachytherapy of Peripheral Nerve using Other Isotope	Procedure	ICD-10-PCS
D0Y07ZZ	Contact Radiation of Brain	Procedure	ICD-10-PCS
D0Y0FZZ	Plaque Radiation of Brain	Procedure	ICD-10-PCS
D0Y17ZZ	Contact Radiation of Brain Stem	Procedure	ICD-10-PCS
D0Y1FZZ	Plaque Radiation of Brain Stem	Procedure	ICD-10-PCS
D0Y67ZZ	Contact Radiation of Spinal Cord	Procedure	ICD-10-PCS
D0Y6FZZ	Plaque Radiation of Spinal Cord	Procedure	ICD-10-PCS
D0Y77ZZ	Contact Radiation of Peripheral Nerve	Procedure	ICD-10-PCS
D0Y7FZZ	Plaque Radiation of Peripheral Nerve	Procedure	ICD-10-PCS
D7000ZZ	Beam Radiation of Bone Marrow using Photons <1 MeV	Procedure	ICD-10-PCS
D7001ZZ	Beam Radiation of Bone Marrow using Photons 1 - 10 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D7002ZZ	Beam Radiation of Bone Marrow using Photons >10 MeV	Procedure	ICD-10-PCS
D7003ZZ	Beam Radiation of Bone Marrow using Electrons	Procedure	ICD-10-PCS
D7004ZZ	Beam Radiation of Bone Marrow using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7005ZZ	Beam Radiation of Bone Marrow using Neutrons	Procedure	ICD-10-PCS
D7006ZZ	Beam Radiation of Bone Marrow using Neutron Capture	Procedure	ICD-10-PCS
D7010ZZ	Beam Radiation of Thymus using Photons <1 MeV	Procedure	ICD-10-PCS
D7011ZZ	Beam Radiation of Thymus using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7012ZZ	Beam Radiation of Thymus using Photons >10 MeV	Procedure	ICD-10-PCS
D7013ZZ	Beam Radiation of Thymus using Electrons	Procedure	ICD-10-PCS
D7014ZZ	Beam Radiation of Thymus using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7015ZZ	Beam Radiation of Thymus using Neutrons	Procedure	ICD-10-PCS
D7016ZZ	Beam Radiation of Thymus using Neutron Capture	Procedure	ICD-10-PCS
D7020ZZ	Beam Radiation of Spleen using Photons <1 MeV	Procedure	ICD-10-PCS
D7021ZZ	Beam Radiation of Spleen using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7022ZZ	Beam Radiation of Spleen using Photons >10 MeV	Procedure	ICD-10-PCS
D7023ZZ	Beam Radiation of Spleen using Electrons	Procedure	ICD-10-PCS
D7024ZZ	Beam Radiation of Spleen using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7025ZZ	Beam Radiation of Spleen using Neutrons	Procedure	ICD-10-PCS
D7026ZZ	Beam Radiation of Spleen using Neutron Capture	Procedure	ICD-10-PCS
D7030ZZ	Beam Radiation of Neck Lymphatics using Photons <1 MeV	Procedure	ICD-10-PCS
D7031ZZ	Beam Radiation of Neck Lymphatics using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7032ZZ	Beam Radiation of Neck Lymphatics using Photons >10 MeV	Procedure	ICD-10-PCS
D7033ZZ	Beam Radiation of Neck Lymphatics using Electrons	Procedure	ICD-10-PCS
D7034ZZ	Beam Radiation of Neck Lymphatics using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7035ZZ	Beam Radiation of Neck Lymphatics using Neutrons	Procedure	ICD-10-PCS
D7036ZZ	Beam Radiation of Neck Lymphatics using Neutron Capture	Procedure	ICD-10-PCS
D7040ZZ	Beam Radiation of Axillary Lymphatics using Photons <1 MeV	Procedure	ICD-10-PCS
D7041ZZ	Beam Radiation of Axillary Lymphatics using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7042ZZ	Beam Radiation of Axillary Lymphatics using Photons >10 MeV	Procedure	ICD-10-PCS
D7043ZZ	Beam Radiation of Axillary Lymphatics using Electrons	Procedure	ICD-10-PCS
D7044ZZ	Beam Radiation of Axillary Lymphatics using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7045ZZ	Beam Radiation of Axillary Lymphatics using Neutrons	Procedure	ICD-10-PCS
D7046ZZ	Beam Radiation of Axillary Lymphatics using Neutron Capture	Procedure	ICD-10-PCS
D7050ZZ	Beam Radiation of Thorax Lymphatics using Photons <1 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D7051ZZ	Beam Radiation of Thorax Lymphatics using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7052ZZ	Beam Radiation of Thorax Lymphatics using Photons >10 MeV	Procedure	ICD-10-PCS
D7053ZZ	Beam Radiation of Thorax Lymphatics using Electrons	Procedure	ICD-10-PCS
D7054ZZ	Beam Radiation of Thorax Lymphatics using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7055ZZ	Beam Radiation of Thorax Lymphatics using Neutrons	Procedure	ICD-10-PCS
D7056ZZ	Beam Radiation of Thorax Lymphatics using Neutron Capture	Procedure	ICD-10-PCS
D7060ZZ	Beam Radiation of Abdomen Lymphatics using Photons <1 MeV	Procedure	ICD-10-PCS
D7061ZZ	Beam Radiation of Abdomen Lymphatics using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7062ZZ	Beam Radiation of Abdomen Lymphatics using Photons >10 MeV	Procedure	ICD-10-PCS
D7063ZZ	Beam Radiation of Abdomen Lymphatics using Electrons	Procedure	ICD-10-PCS
D7064ZZ	Beam Radiation of Abdomen Lymphatics using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7065ZZ	Beam Radiation of Abdomen Lymphatics using Neutrons	Procedure	ICD-10-PCS
D7066ZZ	Beam Radiation of Abdomen Lymphatics using Neutron Capture	Procedure	ICD-10-PCS
D7070ZZ	Beam Radiation of Pelvis Lymphatics using Photons <1 MeV	Procedure	ICD-10-PCS
D7071ZZ	Beam Radiation of Pelvis Lymphatics using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7072ZZ	Beam Radiation of Pelvis Lymphatics using Photons >10 MeV	Procedure	ICD-10-PCS
D7073ZZ	Beam Radiation of Pelvis Lymphatics using Electrons	Procedure	ICD-10-PCS
D7074ZZ	Beam Radiation of Pelvis Lymphatics using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7075ZZ	Beam Radiation of Pelvis Lymphatics using Neutrons	Procedure	ICD-10-PCS
D7076ZZ	Beam Radiation of Pelvis Lymphatics using Neutron Capture	Procedure	ICD-10-PCS
D7080ZZ	Beam Radiation of Inguinal Lymphatics using Photons <1 MeV	Procedure	ICD-10-PCS
D7081ZZ	Beam Radiation of Inguinal Lymphatics using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D7082ZZ	Beam Radiation of Inguinal Lymphatics using Photons >10 MeV	Procedure	ICD-10-PCS
D7083ZZ	Beam Radiation of Inguinal Lymphatics using Electrons	Procedure	ICD-10-PCS
D7084ZZ	Beam Radiation of Inguinal Lymphatics using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D7085ZZ	Beam Radiation of Inguinal Lymphatics using Neutrons	Procedure	ICD-10-PCS
D7086ZZ	Beam Radiation of Inguinal Lymphatics using Neutron Capture	Procedure	ICD-10-PCS
D71097Z	High Dose Rate (HDR) Brachytherapy of Bone Marrow using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71098Z	High Dose Rate (HDR) Brachytherapy of Bone Marrow using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71099Z	High Dose Rate (HDR) Brachytherapy of Bone Marrow using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7109BZ	High Dose Rate (HDR) Brachytherapy of Bone Marrow using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D7109CZ	High Dose Rate (HDR) Brachytherapy of Bone Marrow using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D7109YZ	High Dose Rate (HDR) Brachytherapy of Bone Marrow using Other Isotope	Procedure	ICD-10-PCS
D710B7Z	Low Dose Rate (LDR) Brachytherapy of Bone Marrow using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D710B8Z	Low Dose Rate (LDR) Brachytherapy of Bone Marrow using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D710B9Z	Low Dose Rate (LDR) Brachytherapy of Bone Marrow using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D710BBZ	Low Dose Rate (LDR) Brachytherapy of Bone Marrow using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D710BCZ	Low Dose Rate (LDR) Brachytherapy of Bone Marrow using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D710BYZ	Low Dose Rate (LDR) Brachytherapy of Bone Marrow using Other Isotope	Procedure	ICD-10-PCS
D71197Z	High Dose Rate (HDR) Brachytherapy of Thymus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71198Z	High Dose Rate (HDR) Brachytherapy of Thymus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71199Z	High Dose Rate (HDR) Brachytherapy of Thymus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7119BZ	High Dose Rate (HDR) Brachytherapy of Thymus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D7119CZ	High Dose Rate (HDR) Brachytherapy of Thymus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D7119YZ	High Dose Rate (HDR) Brachytherapy of Thymus using Other Isotope	Procedure	ICD-10-PCS
D711B7Z	Low Dose Rate (LDR) Brachytherapy of Thymus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D711B8Z	Low Dose Rate (LDR) Brachytherapy of Thymus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D711B9Z	Low Dose Rate (LDR) Brachytherapy of Thymus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D711BBZ	Low Dose Rate (LDR) Brachytherapy of Thymus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D711BCZ	Low Dose Rate (LDR) Brachytherapy of Thymus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D711BYZ	Low Dose Rate (LDR) Brachytherapy of Thymus using Other Isotope	Procedure	ICD-10-PCS
D71297Z	High Dose Rate (HDR) Brachytherapy of Spleen using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71298Z	High Dose Rate (HDR) Brachytherapy of Spleen using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71299Z	High Dose Rate (HDR) Brachytherapy of Spleen using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7129BZ	High Dose Rate (HDR) Brachytherapy of Spleen using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D7129CZ	High Dose Rate (HDR) Brachytherapy of Spleen using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D7129YZ	High Dose Rate (HDR) Brachytherapy of Spleen using Other Isotope	Procedure	ICD-10-PCS
D712B7Z	Low Dose Rate (LDR) Brachytherapy of Spleen using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D712B8Z	Low Dose Rate (LDR) Brachytherapy of Spleen using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D712B9Z	Low Dose Rate (LDR) Brachytherapy of Spleen using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D712BBZ	Low Dose Rate (LDR) Brachytherapy of Spleen using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D712BCZ	Low Dose Rate (LDR) Brachytherapy of Spleen using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D712BYZ	Low Dose Rate (LDR) Brachytherapy of Spleen using Other Isotope	Procedure	ICD-10-PCS
D71397Z	High Dose Rate (HDR) Brachytherapy of Neck Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71398Z	High Dose Rate (HDR) Brachytherapy of Neck Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71399Z	High Dose Rate (HDR) Brachytherapy of Neck Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7139BZ	High Dose Rate (HDR) Brachytherapy of Neck Lymphatics using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D7139CZ	High Dose Rate (HDR) Brachytherapy of Neck Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D7139YZ	High Dose Rate (HDR) Brachytherapy of Neck Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D713B7Z	Low Dose Rate (LDR) Brachytherapy of Neck Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D713B8Z	Low Dose Rate (LDR) Brachytherapy of Neck Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D713B9Z	Low Dose Rate (LDR) Brachytherapy of Neck Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D713BBZ	Low Dose Rate (LDR) Brachytherapy of Neck Lymphatics using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D713BCZ	Low Dose Rate (LDR) Brachytherapy of Neck Lymphatics using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D713BYZ	Low Dose Rate (LDR) Brachytherapy of Neck Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D71497Z	High Dose Rate (HDR) Brachytherapy of Axillary Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71498Z	High Dose Rate (HDR) Brachytherapy of Axillary Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71499Z	High Dose Rate (HDR) Brachytherapy of Axillary Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7149BZ	High Dose Rate (HDR) Brachytherapy of Axillary Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D7149CZ	High Dose Rate (HDR) Brachytherapy of Axillary Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D7149YZ	High Dose Rate (HDR) Brachytherapy of Axillary Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D714B7Z	Low Dose Rate (LDR) Brachytherapy of Axillary Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D714B8Z	Low Dose Rate (LDR) Brachytherapy of Axillary Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D714B9Z	Low Dose Rate (LDR) Brachytherapy of Axillary Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D714BBZ	Low Dose Rate (LDR) Brachytherapy of Axillary Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D714BCZ	Low Dose Rate (LDR) Brachytherapy of Axillary Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D714BYZ	Low Dose Rate (LDR) Brachytherapy of Axillary Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D71597Z	High Dose Rate (HDR) Brachytherapy of Thorax Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71598Z	High Dose Rate (HDR) Brachytherapy of Thorax Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71599Z	High Dose Rate (HDR) Brachytherapy of Thorax Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7159BZ	High Dose Rate (HDR) Brachytherapy of Thorax Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D7159CZ	High Dose Rate (HDR) Brachytherapy of Thorax Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D7159YZ	High Dose Rate (HDR) Brachytherapy of Thorax Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D715B7Z	Low Dose Rate (LDR) Brachytherapy of Thorax Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D715B8Z	Low Dose Rate (LDR) Brachytherapy of Thorax Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D715B9Z	Low Dose Rate (LDR) Brachytherapy of Thorax Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D715BBZ	Low Dose Rate (LDR) Brachytherapy of Thorax Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D715BCZ	Low Dose Rate (LDR) Brachytherapy of Thorax Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D715BYZ	Low Dose Rate (LDR) Brachytherapy of Thorax Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D71697Z	High Dose Rate (HDR) Brachytherapy of Abdomen Lymphatics using Cesium 137 (Cs-	Procedure	ICD-10-PCS
D71698Z	High Dose Rate (HDR) Brachytherapy of Abdomen Lymphatics using Iridium 192 (Ir-	Procedure	ICD-10-PCS
D71699Z	High Dose Rate (HDR) Brachytherapy of Abdomen Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D7169BZ	High Dose Rate (HDR) Brachytherapy of Abdomen Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D7169CZ	High Dose Rate (HDR) Brachytherapy of Abdomen Lymphatics using Californium 252	Procedure	ICD-10-PCS
D7169YZ	High Dose Rate (HDR) Brachytherapy of Abdomen Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D716B7Z	Low Dose Rate (LDR) Brachytherapy of Abdomen Lymphatics using Cesium 137 (Cs-	Procedure	ICD-10-PCS
D716B8Z	Low Dose Rate (LDR) Brachytherapy of Abdomen Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D716B9Z	Low Dose Rate (LDR) Brachytherapy of Abdomen Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D716BBZ	Low Dose Rate (LDR) Brachytherapy of Abdomen Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D716BCZ	Low Dose Rate (LDR) Brachytherapy of Abdomen Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D716BYZ	Low Dose Rate (LDR) Brachytherapy of Abdomen Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D71797Z	High Dose Rate (HDR) Brachytherapy of Pelvis Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71798Z	High Dose Rate (HDR) Brachytherapy of Pelvis Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71799Z	High Dose Rate (HDR) Brachytherapy of Pelvis Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7179BZ	High Dose Rate (HDR) Brachytherapy of Pelvis Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D7179CZ	High Dose Rate (HDR) Brachytherapy of Pelvis Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D7179YZ	High Dose Rate (HDR) Brachytherapy of Pelvis Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D717B7Z	Low Dose Rate (LDR) Brachytherapy of Pelvis Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D717B8Z	Low Dose Rate (LDR) Brachytherapy of Pelvis Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D717B9Z	Low Dose Rate (LDR) Brachytherapy of Pelvis Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D717BBZ	Low Dose Rate (LDR) Brachytherapy of Pelvis Lymphatics using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D717BCZ	Low Dose Rate (LDR) Brachytherapy of Pelvis Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D717BYZ	Low Dose Rate (LDR) Brachytherapy of Pelvis Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D71897Z	High Dose Rate (HDR) Brachytherapy of Inguinal Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D71898Z	High Dose Rate (HDR) Brachytherapy of Inguinal Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D71899Z	High Dose Rate (HDR) Brachytherapy of Inguinal Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D7189BZ	High Dose Rate (HDR) Brachytherapy of Inguinal Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D7189CZ	High Dose Rate (HDR) Brachytherapy of Inguinal Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D7189YZ	High Dose Rate (HDR) Brachytherapy of Inguinal Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D718B7Z	Low Dose Rate (LDR) Brachytherapy of Inguinal Lymphatics using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D718B8Z	Low Dose Rate (LDR) Brachytherapy of Inguinal Lymphatics using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D718B9Z	Low Dose Rate (LDR) Brachytherapy of Inguinal Lymphatics using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D718BBZ	Low Dose Rate (LDR) Brachytherapy of Inguinal Lymphatics using Palladium 103 (Pd-	Procedure	ICD-10-PCS
D718BCZ	Low Dose Rate (LDR) Brachytherapy of Inguinal Lymphatics using Californium 252 (Cf-	Procedure	ICD-10-PCS
D718BYZ	Low Dose Rate (LDR) Brachytherapy of Inguinal Lymphatics using Other Isotope	Procedure	ICD-10-PCS
D7Y0FZZ	Plaque Radiation of Bone Marrow	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D7Y1FZZ	Plaque Radiation of Thymus	Procedure	ICD-10-PCS
D7Y2FZZ	Plaque Radiation of Spleen	Procedure	ICD-10-PCS
D7Y3FZZ	Plaque Radiation of Neck Lymphatics	Procedure	ICD-10-PCS
D7Y4FZZ	Plaque Radiation of Axillary Lymphatics	Procedure	ICD-10-PCS
D7Y5FZZ	Plaque Radiation of Thorax Lymphatics	Procedure	ICD-10-PCS
D7Y6FZZ	Plaque Radiation of Abdomen Lymphatics	Procedure	ICD-10-PCS
D7Y7FZZ	Plaque Radiation of Pelvis Lymphatics	Procedure	ICD-10-PCS
D7Y8FZZ	Plaque Radiation of Inguinal Lymphatics	Procedure	ICD-10-PCS
D8000ZZ	Beam Radiation of Eye using Photons <1 MeV	Procedure	ICD-10-PCS
D8003ZZ	Beam Radiation of Eye using Electrons	Procedure	ICD-10-PCS
D8004ZZ	Beam Radiation of Eye using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D8005ZZ	Beam Radiation of Eye using Neutrons	Procedure	ICD-10-PCS
D81097Z	High Dose Rate (HDR) Brachytherapy of Eye using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D81098Z	High Dose Rate (HDR) Brachytherapy of Eye using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D81099Z	High Dose Rate (HDR) Brachytherapy of Eye using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D8109BZ	High Dose Rate (HDR) Brachytherapy of Eye using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D8109CZ	High Dose Rate (HDR) Brachytherapy of Eye using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D8109YZ	High Dose Rate (HDR) Brachytherapy of Eye using Other Isotope	Procedure	ICD-10-PCS
D810B7Z	Low Dose Rate (LDR) Brachytherapy of Eye using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D810B8Z	Low Dose Rate (LDR) Brachytherapy of Eye using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D810B9Z	Low Dose Rate (LDR) Brachytherapy of Eye using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D810BBZ	Low Dose Rate (LDR) Brachytherapy of Eye using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D810BCZ	Low Dose Rate (LDR) Brachytherapy of Eye using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D810BYZ	Low Dose Rate (LDR) Brachytherapy of Eye using Other Isotope	Procedure	ICD-10-PCS
D8Y07ZZ	Contact Radiation of Eye	Procedure	ICD-10-PCS
D8Y0FZZ	Plaque Radiation of Eye	Procedure	ICD-10-PCS
D9000ZZ	Beam Radiation of Ear using Photons <1 MeV	Procedure	ICD-10-PCS
D9003ZZ	Beam Radiation of Ear using Electrons	Procedure	ICD-10-PCS
D9004ZZ	Beam Radiation of Ear using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9005ZZ	Beam Radiation of Ear using Neutrons	Procedure	ICD-10-PCS
D9010ZZ	Beam Radiation of Nose using Photons <1 MeV	Procedure	ICD-10-PCS
D9011ZZ	Beam Radiation of Nose using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9012ZZ	Beam Radiation of Nose using Photons >10 MeV	Procedure	ICD-10-PCS
D9013ZZ	Beam Radiation of Nose using Electrons	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D9014ZZ	Beam Radiation of Nose using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9015ZZ	Beam Radiation of Nose using Neutrons	Procedure	ICD-10-PCS
D9016ZZ	Beam Radiation of Nose using Neutron Capture	Procedure	ICD-10-PCS
D9030ZZ	Beam Radiation of Hypopharynx using Photons <1 MeV	Procedure	ICD-10-PCS
D9031ZZ	Beam Radiation of Hypopharynx using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9032ZZ	Beam Radiation of Hypopharynx using Photons >10 MeV	Procedure	ICD-10-PCS
D9033ZZ	Beam Radiation of Hypopharynx using Electrons	Procedure	ICD-10-PCS
D9034ZZ	Beam Radiation of Hypopharynx using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9035ZZ	Beam Radiation of Hypopharynx using Neutrons	Procedure	ICD-10-PCS
D9036ZZ	Beam Radiation of Hypopharynx using Neutron Capture	Procedure	ICD-10-PCS
D9040ZZ	Beam Radiation of Mouth using Photons <1 MeV	Procedure	ICD-10-PCS
D9041ZZ	Beam Radiation of Mouth using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9042ZZ	Beam Radiation of Mouth using Photons >10 MeV	Procedure	ICD-10-PCS
D9043ZZ	Beam Radiation of Mouth using Electrons	Procedure	ICD-10-PCS
D9044ZZ	Beam Radiation of Mouth using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9045ZZ	Beam Radiation of Mouth using Neutrons	Procedure	ICD-10-PCS
D9046ZZ	Beam Radiation of Mouth using Neutron Capture	Procedure	ICD-10-PCS
D9050ZZ	Beam Radiation of Tongue using Photons <1 MeV	Procedure	ICD-10-PCS
D9051ZZ	Beam Radiation of Tongue using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9052ZZ	Beam Radiation of Tongue using Photons >10 MeV	Procedure	ICD-10-PCS
D9053ZZ	Beam Radiation of Tongue using Electrons	Procedure	ICD-10-PCS
D9054ZZ	Beam Radiation of Tongue using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9055ZZ	Beam Radiation of Tongue using Neutrons	Procedure	ICD-10-PCS
D9056ZZ	Beam Radiation of Tongue using Neutron Capture	Procedure	ICD-10-PCS
D9060ZZ	Beam Radiation of Salivary Glands using Photons <1 MeV	Procedure	ICD-10-PCS
D9061ZZ	Beam Radiation of Salivary Glands using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9062ZZ	Beam Radiation of Salivary Glands using Photons >10 MeV	Procedure	ICD-10-PCS
D9063ZZ	Beam Radiation of Salivary Glands using Electrons	Procedure	ICD-10-PCS
D9064ZZ	Beam Radiation of Salivary Glands using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9065ZZ	Beam Radiation of Salivary Glands using Neutrons	Procedure	ICD-10-PCS
D9066ZZ	Beam Radiation of Salivary Glands using Neutron Capture	Procedure	ICD-10-PCS
D9070ZZ	Beam Radiation of Sinuses using Photons <1 MeV	Procedure	ICD-10-PCS
D9071ZZ	Beam Radiation of Sinuses using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9072ZZ	Beam Radiation of Sinuses using Photons >10 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D9073ZZ	Beam Radiation of Sinuses using Electrons	Procedure	ICD-10-PCS
D9074ZZ	Beam Radiation of Sinuses using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9075ZZ	Beam Radiation of Sinuses using Neutrons	Procedure	ICD-10-PCS
D9076ZZ	Beam Radiation of Sinuses using Neutron Capture	Procedure	ICD-10-PCS
D9080ZZ	Beam Radiation of Hard Palate using Photons <1 MeV	Procedure	ICD-10-PCS
D9081ZZ	Beam Radiation of Hard Palate using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9082ZZ	Beam Radiation of Hard Palate using Photons >10 MeV	Procedure	ICD-10-PCS
D9083ZZ	Beam Radiation of Hard Palate using Electrons	Procedure	ICD-10-PCS
D9084ZZ	Beam Radiation of Hard Palate using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9085ZZ	Beam Radiation of Hard Palate using Neutrons	Procedure	ICD-10-PCS
D9086ZZ	Beam Radiation of Hard Palate using Neutron Capture	Procedure	ICD-10-PCS
D9090ZZ	Beam Radiation of Soft Palate using Photons <1 MeV	Procedure	ICD-10-PCS
D9091ZZ	Beam Radiation of Soft Palate using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D9092ZZ	Beam Radiation of Soft Palate using Photons >10 MeV	Procedure	ICD-10-PCS
D9093ZZ	Beam Radiation of Soft Palate using Electrons	Procedure	ICD-10-PCS
D9094ZZ	Beam Radiation of Soft Palate using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D9095ZZ	Beam Radiation of Soft Palate using Neutrons	Procedure	ICD-10-PCS
D9096ZZ	Beam Radiation of Soft Palate using Neutron Capture	Procedure	ICD-10-PCS
D90B0ZZ	Beam Radiation of Larynx using Photons <1 MeV	Procedure	ICD-10-PCS
D90B1ZZ	Beam Radiation of Larynx using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D90B2ZZ	Beam Radiation of Larynx using Photons >10 MeV	Procedure	ICD-10-PCS
D90B3ZZ	Beam Radiation of Larynx using Electrons	Procedure	ICD-10-PCS
D90B4ZZ	Beam Radiation of Larynx using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D90B5ZZ	Beam Radiation of Larynx using Neutrons	Procedure	ICD-10-PCS
D90B6ZZ	Beam Radiation of Larynx using Neutron Capture	Procedure	ICD-10-PCS
D90D0ZZ	Beam Radiation of Nasopharynx using Photons <1 MeV	Procedure	ICD-10-PCS
D90D1ZZ	Beam Radiation of Nasopharynx using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
D90D2ZZ	Beam Radiation of Nasopharynx using Photons >10 MeV	Procedure	ICD-10-PCS
D90D3ZZ	Beam Radiation of Nasopharynx using Electrons	Procedure	ICD-10-PCS
D90D4ZZ	Beam Radiation of Nasopharynx using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D90D5ZZ	Beam Radiation of Nasopharynx using Neutrons	Procedure	ICD-10-PCS
D90D6ZZ	Beam Radiation of Nasopharynx using Neutron Capture	Procedure	ICD-10-PCS
D90F0ZZ	Beam Radiation of Oropharynx using Photons <1 MeV	Procedure	ICD-10-PCS
D90F1ZZ	Beam Radiation of Oropharynx using Photons 1 - 10 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D90F2ZZ	Beam Radiation of Oropharynx using Photons >10 MeV	Procedure	ICD-10-PCS
D90F3ZZ	Beam Radiation of Oropharynx using Electrons	Procedure	ICD-10-PCS
D90F4ZZ	Beam Radiation of Oropharynx using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
D90F5ZZ	Beam Radiation of Oropharynx using Neutrons	Procedure	ICD-10-PCS
D90F6ZZ	Beam Radiation of Oropharynx using Neutron Capture	Procedure	ICD-10-PCS
D91097Z	High Dose Rate (HDR) Brachytherapy of Ear using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91098Z	High Dose Rate (HDR) Brachytherapy of Ear using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91099Z	High Dose Rate (HDR) Brachytherapy of Ear using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9109BZ	High Dose Rate (HDR) Brachytherapy of Ear using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9109CZ	High Dose Rate (HDR) Brachytherapy of Ear using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9109YZ	High Dose Rate (HDR) Brachytherapy of Ear using Other Isotope	Procedure	ICD-10-PCS
D910B7Z	Low Dose Rate (LDR) Brachytherapy of Ear using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D910B8Z	Low Dose Rate (LDR) Brachytherapy of Ear using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D910B9Z	Low Dose Rate (LDR) Brachytherapy of Ear using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D910BBZ	Low Dose Rate (LDR) Brachytherapy of Ear using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D910BCZ	Low Dose Rate (LDR) Brachytherapy of Ear using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D910BYZ	Low Dose Rate (LDR) Brachytherapy of Ear using Other Isotope	Procedure	ICD-10-PCS
D91197Z	High Dose Rate (HDR) Brachytherapy of Nose using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91198Z	High Dose Rate (HDR) Brachytherapy of Nose using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91199Z	High Dose Rate (HDR) Brachytherapy of Nose using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9119BZ	High Dose Rate (HDR) Brachytherapy of Nose using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9119CZ	High Dose Rate (HDR) Brachytherapy of Nose using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9119YZ	High Dose Rate (HDR) Brachytherapy of Nose using Other Isotope	Procedure	ICD-10-PCS
D911B7Z	Low Dose Rate (LDR) Brachytherapy of Nose using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D911B8Z	Low Dose Rate (LDR) Brachytherapy of Nose using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D911B9Z	Low Dose Rate (LDR) Brachytherapy of Nose using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D911BBZ	Low Dose Rate (LDR) Brachytherapy of Nose using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D911BCZ	Low Dose Rate (LDR) Brachytherapy of Nose using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D911BYZ	Low Dose Rate (LDR) Brachytherapy of Nose using Other Isotope	Procedure	ICD-10-PCS
D91397Z	High Dose Rate (HDR) Brachytherapy of Hypopharynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91398Z	High Dose Rate (HDR) Brachytherapy of Hypopharynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91399Z	High Dose Rate (HDR) Brachytherapy of Hypopharynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9139BZ	High Dose Rate (HDR) Brachytherapy of Hypopharynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9139CZ	High Dose Rate (HDR) Brachytherapy of Hypopharynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D9139YZ	High Dose Rate (HDR) Brachytherapy of Hypopharynx using Other Isotope	Procedure	ICD-10-PCS
D913B7Z	Low Dose Rate (LDR) Brachytherapy of Hypopharynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D913B8Z	Low Dose Rate (LDR) Brachytherapy of Hypopharynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D913B9Z	Low Dose Rate (LDR) Brachytherapy of Hypopharynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D913BBZ	Low Dose Rate (LDR) Brachytherapy of Hypopharynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D913BCZ	Low Dose Rate (LDR) Brachytherapy of Hypopharynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D913BYZ	Low Dose Rate (LDR) Brachytherapy of Hypopharynx using Other Isotope	Procedure	ICD-10-PCS
D91497Z	High Dose Rate (HDR) Brachytherapy of Mouth using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91498Z	High Dose Rate (HDR) Brachytherapy of Mouth using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91499Z	High Dose Rate (HDR) Brachytherapy of Mouth using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9149BZ	High Dose Rate (HDR) Brachytherapy of Mouth using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9149CZ	High Dose Rate (HDR) Brachytherapy of Mouth using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9149YZ	High Dose Rate (HDR) Brachytherapy of Mouth using Other Isotope	Procedure	ICD-10-PCS
D914B7Z	Low Dose Rate (LDR) Brachytherapy of Mouth using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D914B8Z	Low Dose Rate (LDR) Brachytherapy of Mouth using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D914B9Z	Low Dose Rate (LDR) Brachytherapy of Mouth using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D914BBZ	Low Dose Rate (LDR) Brachytherapy of Mouth using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D914BCZ	Low Dose Rate (LDR) Brachytherapy of Mouth using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D914BYZ	Low Dose Rate (LDR) Brachytherapy of Mouth using Other Isotope	Procedure	ICD-10-PCS
D91597Z	High Dose Rate (HDR) Brachytherapy of Tongue using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91598Z	High Dose Rate (HDR) Brachytherapy of Tongue using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91599Z	High Dose Rate (HDR) Brachytherapy of Tongue using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9159BZ	High Dose Rate (HDR) Brachytherapy of Tongue using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9159CZ	High Dose Rate (HDR) Brachytherapy of Tongue using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9159YZ	High Dose Rate (HDR) Brachytherapy of Tongue using Other Isotope	Procedure	ICD-10-PCS
D915B7Z	Low Dose Rate (LDR) Brachytherapy of Tongue using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D915B8Z	Low Dose Rate (LDR) Brachytherapy of Tongue using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D915B9Z	Low Dose Rate (LDR) Brachytherapy of Tongue using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D915BBZ	Low Dose Rate (LDR) Brachytherapy of Tongue using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D915BCZ	Low Dose Rate (LDR) Brachytherapy of Tongue using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D915BYZ	Low Dose Rate (LDR) Brachytherapy of Tongue using Other Isotope	Procedure	ICD-10-PCS
D91697Z	High Dose Rate (HDR) Brachytherapy of Salivary Glands using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91698Z	High Dose Rate (HDR) Brachytherapy of Salivary Glands using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91699Z	High Dose Rate (HDR) Brachytherapy of Salivary Glands using Iodine 125 (I-125)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D9169BZ	High Dose Rate (HDR) Brachytherapy of Salivary Glands using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9169CZ	High Dose Rate (HDR) Brachytherapy of Salivary Glands using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9169YZ	High Dose Rate (HDR) Brachytherapy of Salivary Glands using Other Isotope	Procedure	ICD-10-PCS
D916B7Z	Low Dose Rate (LDR) Brachytherapy of Salivary Glands using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D916B8Z	Low Dose Rate (LDR) Brachytherapy of Salivary Glands using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D916B9Z	Low Dose Rate (LDR) Brachytherapy of Salivary Glands using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D916BBZ	Low Dose Rate (LDR) Brachytherapy of Salivary Glands using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D916BCZ	Low Dose Rate (LDR) Brachytherapy of Salivary Glands using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D916BYZ	Low Dose Rate (LDR) Brachytherapy of Salivary Glands using Other Isotope	Procedure	ICD-10-PCS
D91797Z	High Dose Rate (HDR) Brachytherapy of Sinuses using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91798Z	High Dose Rate (HDR) Brachytherapy of Sinuses using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91799Z	High Dose Rate (HDR) Brachytherapy of Sinuses using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9179BZ	High Dose Rate (HDR) Brachytherapy of Sinuses using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9179CZ	High Dose Rate (HDR) Brachytherapy of Sinuses using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9179YZ	High Dose Rate (HDR) Brachytherapy of Sinuses using Other Isotope	Procedure	ICD-10-PCS
D917B7Z	Low Dose Rate (LDR) Brachytherapy of Sinuses using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D917B8Z	Low Dose Rate (LDR) Brachytherapy of Sinuses using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D917B9Z	Low Dose Rate (LDR) Brachytherapy of Sinuses using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D917BBZ	Low Dose Rate (LDR) Brachytherapy of Sinuses using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D917BCZ	Low Dose Rate (LDR) Brachytherapy of Sinuses using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D917BYZ	Low Dose Rate (LDR) Brachytherapy of Sinuses using Other Isotope	Procedure	ICD-10-PCS
D91897Z	High Dose Rate (HDR) Brachytherapy of Hard Palate using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91898Z	High Dose Rate (HDR) Brachytherapy of Hard Palate using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91899Z	High Dose Rate (HDR) Brachytherapy of Hard Palate using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9189BZ	High Dose Rate (HDR) Brachytherapy of Hard Palate using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9189CZ	High Dose Rate (HDR) Brachytherapy of Hard Palate using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9189YZ	High Dose Rate (HDR) Brachytherapy of Hard Palate using Other Isotope	Procedure	ICD-10-PCS
D918B7Z	Low Dose Rate (LDR) Brachytherapy of Hard Palate using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D918B8Z	Low Dose Rate (LDR) Brachytherapy of Hard Palate using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D918B9Z	Low Dose Rate (LDR) Brachytherapy of Hard Palate using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D918BBZ	Low Dose Rate (LDR) Brachytherapy of Hard Palate using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D918BCZ	Low Dose Rate (LDR) Brachytherapy of Hard Palate using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D918BYZ	Low Dose Rate (LDR) Brachytherapy of Hard Palate using Other Isotope	Procedure	ICD-10-PCS
D91997Z	High Dose Rate (HDR) Brachytherapy of Soft Palate using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS

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Code	Description	Code Category	Code Type
D91998Z	High Dose Rate (HDR) Brachytherapy of Soft Palate using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91999Z	High Dose Rate (HDR) Brachytherapy of Soft Palate using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D9199BZ	High Dose Rate (HDR) Brachytherapy of Soft Palate using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D9199CZ	High Dose Rate (HDR) Brachytherapy of Soft Palate using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D9199YZ	High Dose Rate (HDR) Brachytherapy of Soft Palate using Other Isotope	Procedure	ICD-10-PCS
D919B7Z	Low Dose Rate (LDR) Brachytherapy of Soft Palate using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D919B8Z	Low Dose Rate (LDR) Brachytherapy of Soft Palate using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D919B9Z	Low Dose Rate (LDR) Brachytherapy of Soft Palate using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D919BBZ	Low Dose Rate (LDR) Brachytherapy of Soft Palate using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D919BCZ	Low Dose Rate (LDR) Brachytherapy of Soft Palate using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D919BYZ	Low Dose Rate (LDR) Brachytherapy of Soft Palate using Other Isotope	Procedure	ICD-10-PCS
D91B97Z	High Dose Rate (HDR) Brachytherapy of Larynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91B98Z	High Dose Rate (HDR) Brachytherapy of Larynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91B99Z	High Dose Rate (HDR) Brachytherapy of Larynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D91B9BZ	High Dose Rate (HDR) Brachytherapy of Larynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D91B9CZ	High Dose Rate (HDR) Brachytherapy of Larynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D91B9YZ	High Dose Rate (HDR) Brachytherapy of Larynx using Other Isotope	Procedure	ICD-10-PCS
D91BB7Z	Low Dose Rate (LDR) Brachytherapy of Larynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91BB8Z	Low Dose Rate (LDR) Brachytherapy of Larynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91BB9Z	Low Dose Rate (LDR) Brachytherapy of Larynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D91BBBZ	Low Dose Rate (LDR) Brachytherapy of Larynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D91BBCZ	Low Dose Rate (LDR) Brachytherapy of Larynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D91BBYZ	Low Dose Rate (LDR) Brachytherapy of Larynx using Other Isotope	Procedure	ICD-10-PCS
D91D97Z	High Dose Rate (HDR) Brachytherapy of Nasopharynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91D98Z	High Dose Rate (HDR) Brachytherapy of Nasopharynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91D99Z	High Dose Rate (HDR) Brachytherapy of Nasopharynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D91D9BZ	High Dose Rate (HDR) Brachytherapy of Nasopharynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D91D9CZ	High Dose Rate (HDR) Brachytherapy of Nasopharynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D91D9YZ	High Dose Rate (HDR) Brachytherapy of Nasopharynx using Other Isotope	Procedure	ICD-10-PCS
D91DB7Z	Low Dose Rate (LDR) Brachytherapy of Nasopharynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91DB8Z	Low Dose Rate (LDR) Brachytherapy of Nasopharynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91DB9Z	Low Dose Rate (LDR) Brachytherapy of Nasopharynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D91DBBZ	Low Dose Rate (LDR) Brachytherapy of Nasopharynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D91DBCZ	Low Dose Rate (LDR) Brachytherapy of Nasopharynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D91DBYZ	Low Dose Rate (LDR) Brachytherapy of Nasopharynx using Other Isotope	Procedure	ICD-10-PCS
D91F97Z	High Dose Rate (HDR) Brachytherapy of Oropharynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91F98Z	High Dose Rate (HDR) Brachytherapy of Oropharynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91F99Z	High Dose Rate (HDR) Brachytherapy of Oropharynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D91F9BZ	High Dose Rate (HDR) Brachytherapy of Oropharynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D91F9CZ	High Dose Rate (HDR) Brachytherapy of Oropharynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D91F9YZ	High Dose Rate (HDR) Brachytherapy of Oropharynx using Other Isotope	Procedure	ICD-10-PCS
D91FB7Z	Low Dose Rate (LDR) Brachytherapy of Oropharynx using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
D91FB8Z	Low Dose Rate (LDR) Brachytherapy of Oropharynx using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
D91FB9Z	Low Dose Rate (LDR) Brachytherapy of Oropharynx using Iodine 125 (I-125)	Procedure	ICD-10-PCS
D91FBBZ	Low Dose Rate (LDR) Brachytherapy of Oropharynx using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
D91FBCZ	Low Dose Rate (LDR) Brachytherapy of Oropharynx using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
D91FBYZ	Low Dose Rate (LDR) Brachytherapy of Oropharynx using Other Isotope	Procedure	ICD-10-PCS
D9Y07ZZ	Contact Radiation of Ear	Procedure	ICD-10-PCS
D9Y0FZZ	Plaque Radiation of Ear	Procedure	ICD-10-PCS
D9Y17ZZ	Contact Radiation of Nose	Procedure	ICD-10-PCS
D9Y1FZZ	Plaque Radiation of Nose	Procedure	ICD-10-PCS
D9Y37ZZ	Contact Radiation of Hypopharynx	Procedure	ICD-10-PCS
D9Y47ZZ	Contact Radiation of Mouth	Procedure	ICD-10-PCS
D9Y4CZZ	Intraoperative Radiation Therapy (IORT) of Mouth	Procedure	ICD-10-PCS
D9Y4FZZ	Plaque Radiation of Mouth	Procedure	ICD-10-PCS
D9Y57ZZ	Contact Radiation of Tongue	Procedure	ICD-10-PCS
D9Y5FZZ	Plaque Radiation of Tongue	Procedure	ICD-10-PCS
D9Y67ZZ	Contact Radiation of Salivary Glands	Procedure	ICD-10-PCS
D9Y6FZZ	Plaque Radiation of Salivary Glands	Procedure	ICD-10-PCS
D9Y77ZZ	Contact Radiation of Sinuses	Procedure	ICD-10-PCS
D9Y7FZZ	Plaque Radiation of Sinuses	Procedure	ICD-10-PCS
D9Y87ZZ	Contact Radiation of Hard Palate	Procedure	ICD-10-PCS
D9Y8FZZ	Plaque Radiation of Hard Palate	Procedure	ICD-10-PCS
D9Y97ZZ	Contact Radiation of Soft Palate	Procedure	ICD-10-PCS
D9Y9FZZ	Plaque Radiation of Soft Palate	Procedure	ICD-10-PCS
D9YB7ZZ	Contact Radiation of Larynx	Procedure	ICD-10-PCS
D9YBCZZ	Intraoperative Radiation Therapy (IORT) of Larynx	Procedure	ICD-10-PCS
D9YBFZZ	Plaque Radiation of Larynx	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
D9YCCZZ	Intraoperative Radiation Therapy (IORT) of Pharynx	Procedure	ICD-10-PCS
D9YCFZZ	Plaque Radiation of Pharynx	Procedure	ICD-10-PCS
D9YD7ZZ	Contact Radiation of Nasopharynx	Procedure	ICD-10-PCS
D9YDCZZ	Intraoperative Radiation Therapy (IORT) of Nasopharynx	Procedure	ICD-10-PCS
D9YDFZZ	Plaque Radiation of Nasopharynx	Procedure	ICD-10-PCS
D9YF7ZZ	Contact Radiation of Oropharynx	Procedure	ICD-10-PCS
DB000ZZ	Beam Radiation of Trachea using Photons <1 MeV	Procedure	ICD-10-PCS
DB001ZZ	Beam Radiation of Trachea using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB002ZZ	Beam Radiation of Trachea using Photons >10 MeV	Procedure	ICD-10-PCS
DB003ZZ	Beam Radiation of Trachea using Electrons	Procedure	ICD-10-PCS
DB004ZZ	Beam Radiation of Trachea using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB005ZZ	Beam Radiation of Trachea using Neutrons	Procedure	ICD-10-PCS
DB006ZZ	Beam Radiation of Trachea using Neutron Capture	Procedure	ICD-10-PCS
DB010ZZ	Beam Radiation of Bronchus using Photons <1 MeV	Procedure	ICD-10-PCS
DB011ZZ	Beam Radiation of Bronchus using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB012ZZ	Beam Radiation of Bronchus using Photons >10 MeV	Procedure	ICD-10-PCS
DB013ZZ	Beam Radiation of Bronchus using Electrons	Procedure	ICD-10-PCS
DB014ZZ	Beam Radiation of Bronchus using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB015ZZ	Beam Radiation of Bronchus using Neutrons	Procedure	ICD-10-PCS
DB016ZZ	Beam Radiation of Bronchus using Neutron Capture	Procedure	ICD-10-PCS
DB020ZZ	Beam Radiation of Lung using Photons <1 MeV	Procedure	ICD-10-PCS
DB021ZZ	Beam Radiation of Lung using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB022ZZ	Beam Radiation of Lung using Photons >10 MeV	Procedure	ICD-10-PCS
DB023ZZ	Beam Radiation of Lung using Electrons	Procedure	ICD-10-PCS
DB024ZZ	Beam Radiation of Lung using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB025ZZ	Beam Radiation of Lung using Neutrons	Procedure	ICD-10-PCS
DB026ZZ	Beam Radiation of Lung using Neutron Capture	Procedure	ICD-10-PCS
DB050ZZ	Beam Radiation of Pleura using Photons <1 MeV	Procedure	ICD-10-PCS
DB051ZZ	Beam Radiation of Pleura using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB052ZZ	Beam Radiation of Pleura using Photons >10 MeV	Procedure	ICD-10-PCS
DB053ZZ	Beam Radiation of Pleura using Electrons	Procedure	ICD-10-PCS
DB054ZZ	Beam Radiation of Pleura using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB055ZZ	Beam Radiation of Pleura using Neutrons	Procedure	ICD-10-PCS
DB056ZZ	Beam Radiation of Pleura using Neutron Capture	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DB060ZZ	Beam Radiation of Mediastinum using Photons <1 MeV	Procedure	ICD-10-PCS
DB061ZZ	Beam Radiation of Mediastinum using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB062ZZ	Beam Radiation of Mediastinum using Photons >10 MeV	Procedure	ICD-10-PCS
DB063ZZ	Beam Radiation of Mediastinum using Electrons	Procedure	ICD-10-PCS
DB064ZZ	Beam Radiation of Mediastinum using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB065ZZ	Beam Radiation of Mediastinum using Neutrons	Procedure	ICD-10-PCS
DB066ZZ	Beam Radiation of Mediastinum using Neutron Capture	Procedure	ICD-10-PCS
DB070ZZ	Beam Radiation of Chest Wall using Photons <1 MeV	Procedure	ICD-10-PCS
DB071ZZ	Beam Radiation of Chest Wall using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB072ZZ	Beam Radiation of Chest Wall using Photons >10 MeV	Procedure	ICD-10-PCS
DB073ZZ	Beam Radiation of Chest Wall using Electrons	Procedure	ICD-10-PCS
DB074ZZ	Beam Radiation of Chest Wall using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB075ZZ	Beam Radiation of Chest Wall using Neutrons	Procedure	ICD-10-PCS
DB076ZZ	Beam Radiation of Chest Wall using Neutron Capture	Procedure	ICD-10-PCS
DB080ZZ	Beam Radiation of Diaphragm using Photons <1 MeV	Procedure	ICD-10-PCS
DB081ZZ	Beam Radiation of Diaphragm using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DB082ZZ	Beam Radiation of Diaphragm using Photons >10 MeV	Procedure	ICD-10-PCS
DB083ZZ	Beam Radiation of Diaphragm using Electrons	Procedure	ICD-10-PCS
DB084ZZ	Beam Radiation of Diaphragm using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DB085ZZ	Beam Radiation of Diaphragm using Neutrons	Procedure	ICD-10-PCS
DB086ZZ	Beam Radiation of Diaphragm using Neutron Capture	Procedure	ICD-10-PCS
DB1097Z	High Dose Rate (HDR) Brachytherapy of Trachea using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB1098Z	High Dose Rate (HDR) Brachytherapy of Trachea using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1099Z	High Dose Rate (HDR) Brachytherapy of Trachea using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB109BZ	High Dose Rate (HDR) Brachytherapy of Trachea using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB109CZ	High Dose Rate (HDR) Brachytherapy of Trachea using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB109YZ	High Dose Rate (HDR) Brachytherapy of Trachea using Other Isotope	Procedure	ICD-10-PCS
DB10B7Z	Low Dose Rate (LDR) Brachytherapy of Trachea using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB10B8Z	Low Dose Rate (LDR) Brachytherapy of Trachea using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB10B9Z	Low Dose Rate (LDR) Brachytherapy of Trachea using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB10BBZ	Low Dose Rate (LDR) Brachytherapy of Trachea using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB10BCZ	Low Dose Rate (LDR) Brachytherapy of Trachea using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB10BYZ	Low Dose Rate (LDR) Brachytherapy of Trachea using Other Isotope	Procedure	ICD-10-PCS
DB1197Z	High Dose Rate (HDR) Brachytherapy of Bronchus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DB1198Z	High Dose Rate (HDR) Brachytherapy of Bronchus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1199Z	High Dose Rate (HDR) Brachytherapy of Bronchus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB119BZ	High Dose Rate (HDR) Brachytherapy of Bronchus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB119CZ	High Dose Rate (HDR) Brachytherapy of Bronchus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB119YZ	High Dose Rate (HDR) Brachytherapy of Bronchus using Other Isotope	Procedure	ICD-10-PCS
DB11B7Z	Low Dose Rate (LDR) Brachytherapy of Bronchus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB11B8Z	Low Dose Rate (LDR) Brachytherapy of Bronchus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB11B9Z	Low Dose Rate (LDR) Brachytherapy of Bronchus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB11BBZ	Low Dose Rate (LDR) Brachytherapy of Bronchus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB11BCZ	Low Dose Rate (LDR) Brachytherapy of Bronchus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB11BYZ	Low Dose Rate (LDR) Brachytherapy of Bronchus using Other Isotope	Procedure	ICD-10-PCS
DB1297Z	High Dose Rate (HDR) Brachytherapy of Lung using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB1298Z	High Dose Rate (HDR) Brachytherapy of Lung using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1299Z	High Dose Rate (HDR) Brachytherapy of Lung using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB129BZ	High Dose Rate (HDR) Brachytherapy of Lung using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB129CZ	High Dose Rate (HDR) Brachytherapy of Lung using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB129YZ	High Dose Rate (HDR) Brachytherapy of Lung using Other Isotope	Procedure	ICD-10-PCS
DB12B7Z	Low Dose Rate (LDR) Brachytherapy of Lung using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB12B8Z	Low Dose Rate (LDR) Brachytherapy of Lung using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB12B9Z	Low Dose Rate (LDR) Brachytherapy of Lung using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB12BBZ	Low Dose Rate (LDR) Brachytherapy of Lung using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB12BCZ	Low Dose Rate (LDR) Brachytherapy of Lung using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB12BYZ	Low Dose Rate (LDR) Brachytherapy of Lung using Other Isotope	Procedure	ICD-10-PCS
DB1597Z	High Dose Rate (HDR) Brachytherapy of Pleura using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB1598Z	High Dose Rate (HDR) Brachytherapy of Pleura using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1599Z	High Dose Rate (HDR) Brachytherapy of Pleura using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB159BZ	High Dose Rate (HDR) Brachytherapy of Pleura using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB159CZ	High Dose Rate (HDR) Brachytherapy of Pleura using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB159YZ	High Dose Rate (HDR) Brachytherapy of Pleura using Other Isotope	Procedure	ICD-10-PCS
DB15B7Z	Low Dose Rate (LDR) Brachytherapy of Pleura using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB15B8Z	Low Dose Rate (LDR) Brachytherapy of Pleura using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB15B9Z	Low Dose Rate (LDR) Brachytherapy of Pleura using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB15BBZ	Low Dose Rate (LDR) Brachytherapy of Pleura using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB15BCZ	Low Dose Rate (LDR) Brachytherapy of Pleura using Californium 252 (Cf-252)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DB15BYZ	Low Dose Rate (LDR) Brachytherapy of Pleura using Other Isotope	Procedure	ICD-10-PCS
DB1697Z	High Dose Rate (HDR) Brachytherapy of Mediastinum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB1698Z	High Dose Rate (HDR) Brachytherapy of Mediastinum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1699Z	High Dose Rate (HDR) Brachytherapy of Mediastinum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB169BZ	High Dose Rate (HDR) Brachytherapy of Mediastinum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB169CZ	High Dose Rate (HDR) Brachytherapy of Mediastinum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB169YZ	High Dose Rate (HDR) Brachytherapy of Mediastinum using Other Isotope	Procedure	ICD-10-PCS
DB16B7Z	Low Dose Rate (LDR) Brachytherapy of Mediastinum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB16B8Z	Low Dose Rate (LDR) Brachytherapy of Mediastinum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB16B9Z	Low Dose Rate (LDR) Brachytherapy of Mediastinum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB16BBZ	Low Dose Rate (LDR) Brachytherapy of Mediastinum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB16BCZ	Low Dose Rate (LDR) Brachytherapy of Mediastinum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB16BYZ	Low Dose Rate (LDR) Brachytherapy of Mediastinum using Other Isotope	Procedure	ICD-10-PCS
DB1797Z	High Dose Rate (HDR) Brachytherapy of Chest Wall using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB1798Z	High Dose Rate (HDR) Brachytherapy of Chest Wall using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1799Z	High Dose Rate (HDR) Brachytherapy of Chest Wall using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB179BZ	High Dose Rate (HDR) Brachytherapy of Chest Wall using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB179CZ	High Dose Rate (HDR) Brachytherapy of Chest Wall using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB179YZ	High Dose Rate (HDR) Brachytherapy of Chest Wall using Other Isotope	Procedure	ICD-10-PCS
DB17B7Z	Low Dose Rate (LDR) Brachytherapy of Chest Wall using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB17B8Z	Low Dose Rate (LDR) Brachytherapy of Chest Wall using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB17B9Z	Low Dose Rate (LDR) Brachytherapy of Chest Wall using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB17BBZ	Low Dose Rate (LDR) Brachytherapy of Chest Wall using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB17BCZ	Low Dose Rate (LDR) Brachytherapy of Chest Wall using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB17BYZ	Low Dose Rate (LDR) Brachytherapy of Chest Wall using Other Isotope	Procedure	ICD-10-PCS
DB1897Z	High Dose Rate (HDR) Brachytherapy of Diaphragm using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB1898Z	High Dose Rate (HDR) Brachytherapy of Diaphragm using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB1899Z	High Dose Rate (HDR) Brachytherapy of Diaphragm using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DB189BZ	High Dose Rate (HDR) Brachytherapy of Diaphragm using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB189CZ	High Dose Rate (HDR) Brachytherapy of Diaphragm using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB189YZ	High Dose Rate (HDR) Brachytherapy of Diaphragm using Other Isotope	Procedure	ICD-10-PCS
DB18B7Z	Low Dose Rate (LDR) Brachytherapy of Diaphragm using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DB18B8Z	Low Dose Rate (LDR) Brachytherapy of Diaphragm using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DB18B9Z	Low Dose Rate (LDR) Brachytherapy of Diaphragm using Iodine 125 (I-125)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DB18BBZ	Low Dose Rate (LDR) Brachytherapy of Diaphragm using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DB18BCZ	Low Dose Rate (LDR) Brachytherapy of Diaphragm using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DB18BYZ	Low Dose Rate (LDR) Brachytherapy of Diaphragm using Other Isotope	Procedure	ICD-10-PCS
DBY07ZZ	Contact Radiation of Trachea	Procedure	ICD-10-PCS
DBY0FZZ	Plaque Radiation of Trachea	Procedure	ICD-10-PCS
DBY17ZZ	Contact Radiation of Bronchus	Procedure	ICD-10-PCS
DBY1FZZ	Plaque Radiation of Bronchus	Procedure	ICD-10-PCS
DBY27ZZ	Contact Radiation of Lung	Procedure	ICD-10-PCS
DBY2FZZ	Plaque Radiation of Lung	Procedure	ICD-10-PCS
DBY57ZZ	Contact Radiation of Pleura	Procedure	ICD-10-PCS
DBY5FZZ	Plaque Radiation of Pleura	Procedure	ICD-10-PCS
DBY67ZZ	Contact Radiation of Mediastinum	Procedure	ICD-10-PCS
DBY6FZZ	Plaque Radiation of Mediastinum	Procedure	ICD-10-PCS
DBY77ZZ	Contact Radiation of Chest Wall	Procedure	ICD-10-PCS
DBY7FZZ	Plaque Radiation of Chest Wall	Procedure	ICD-10-PCS
DBY87ZZ	Contact Radiation of Diaphragm	Procedure	ICD-10-PCS
DBY8FZZ	Plaque Radiation of Diaphragm	Procedure	ICD-10-PCS
DD000ZZ	Beam Radiation of Esophagus using Photons <1 MeV	Procedure	ICD-10-PCS
DD001ZZ	Beam Radiation of Esophagus using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD002ZZ	Beam Radiation of Esophagus using Photons >10 MeV	Procedure	ICD-10-PCS
DD003ZZ	Beam Radiation of Esophagus using Electrons	Procedure	ICD-10-PCS
DD004ZZ	Beam Radiation of Esophagus using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD005ZZ	Beam Radiation of Esophagus using Neutrons	Procedure	ICD-10-PCS
DD006ZZ	Beam Radiation of Esophagus using Neutron Capture	Procedure	ICD-10-PCS
DD010ZZ	Beam Radiation of Stomach using Photons <1 MeV	Procedure	ICD-10-PCS
DD011ZZ	Beam Radiation of Stomach using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD012ZZ	Beam Radiation of Stomach using Photons >10 MeV	Procedure	ICD-10-PCS
DD013ZZ	Beam Radiation of Stomach using Electrons	Procedure	ICD-10-PCS
DD014ZZ	Beam Radiation of Stomach using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD015ZZ	Beam Radiation of Stomach using Neutrons	Procedure	ICD-10-PCS
DD016ZZ	Beam Radiation of Stomach using Neutron Capture	Procedure	ICD-10-PCS
DD020ZZ	Beam Radiation of Duodenum using Photons <1 MeV	Procedure	ICD-10-PCS
DD021ZZ	Beam Radiation of Duodenum using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD022ZZ	Beam Radiation of Duodenum using Photons >10 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DD023ZZ	Beam Radiation of Duodenum using Electrons	Procedure	ICD-10-PCS
DD024ZZ	Beam Radiation of Duodenum using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD025ZZ	Beam Radiation of Duodenum using Neutrons	Procedure	ICD-10-PCS
DD026ZZ	Beam Radiation of Duodenum using Neutron Capture	Procedure	ICD-10-PCS
DD030ZZ	Beam Radiation of Jejunum using Photons <1 MeV	Procedure	ICD-10-PCS
DD031ZZ	Beam Radiation of Jejunum using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD032ZZ	Beam Radiation of Jejunum using Photons >10 MeV	Procedure	ICD-10-PCS
DD033ZZ	Beam Radiation of Jejunum using Electrons	Procedure	ICD-10-PCS
DD034ZZ	Beam Radiation of Jejunum using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD035ZZ	Beam Radiation of Jejunum using Neutrons	Procedure	ICD-10-PCS
DD036ZZ	Beam Radiation of Jejunum using Neutron Capture	Procedure	ICD-10-PCS
DD040ZZ	Beam Radiation of Ileum using Photons <1 MeV	Procedure	ICD-10-PCS
DD041ZZ	Beam Radiation of Ileum using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD042ZZ	Beam Radiation of Ileum using Photons >10 MeV	Procedure	ICD-10-PCS
DD043ZZ	Beam Radiation of Ileum using Electrons	Procedure	ICD-10-PCS
DD044ZZ	Beam Radiation of Ileum using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD045ZZ	Beam Radiation of Ileum using Neutrons	Procedure	ICD-10-PCS
DD046ZZ	Beam Radiation of Ileum using Neutron Capture	Procedure	ICD-10-PCS
DD050ZZ	Beam Radiation of Colon using Photons <1 MeV	Procedure	ICD-10-PCS
DD051ZZ	Beam Radiation of Colon using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD052ZZ	Beam Radiation of Colon using Photons >10 MeV	Procedure	ICD-10-PCS
DD053ZZ	Beam Radiation of Colon using Electrons	Procedure	ICD-10-PCS
DD054ZZ	Beam Radiation of Colon using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD055ZZ	Beam Radiation of Colon using Neutrons	Procedure	ICD-10-PCS
DD056ZZ	Beam Radiation of Colon using Neutron Capture	Procedure	ICD-10-PCS
DD070ZZ	Beam Radiation of Rectum using Photons <1 MeV	Procedure	ICD-10-PCS
DD071ZZ	Beam Radiation of Rectum using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DD072ZZ	Beam Radiation of Rectum using Photons >10 MeV	Procedure	ICD-10-PCS
DD073ZZ	Beam Radiation of Rectum using Electrons	Procedure	ICD-10-PCS
DD074ZZ	Beam Radiation of Rectum using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DD075ZZ	Beam Radiation of Rectum using Neutrons	Procedure	ICD-10-PCS
DD076ZZ	Beam Radiation of Rectum using Neutron Capture	Procedure	ICD-10-PCS
DD1097Z	High Dose Rate (HDR) Brachytherapy of Esophagus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1098Z	High Dose Rate (HDR) Brachytherapy of Esophagus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DD1099Z	High Dose Rate (HDR) Brachytherapy of Esophagus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD109BZ	High Dose Rate (HDR) Brachytherapy of Esophagus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD109CZ	High Dose Rate (HDR) Brachytherapy of Esophagus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD109YZ	High Dose Rate (HDR) Brachytherapy of Esophagus using Other Isotope	Procedure	ICD-10-PCS
DD10B7Z	Low Dose Rate (LDR) Brachytherapy of Esophagus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD10B8Z	Low Dose Rate (LDR) Brachytherapy of Esophagus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD10B9Z	Low Dose Rate (LDR) Brachytherapy of Esophagus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD10BBZ	Low Dose Rate (LDR) Brachytherapy of Esophagus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD10BCZ	Low Dose Rate (LDR) Brachytherapy of Esophagus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD10BYZ	Low Dose Rate (LDR) Brachytherapy of Esophagus using Other Isotope	Procedure	ICD-10-PCS
DD1197Z	High Dose Rate (HDR) Brachytherapy of Stomach using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1198Z	High Dose Rate (HDR) Brachytherapy of Stomach using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD1199Z	High Dose Rate (HDR) Brachytherapy of Stomach using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD119BZ	High Dose Rate (HDR) Brachytherapy of Stomach using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD119CZ	High Dose Rate (HDR) Brachytherapy of Stomach using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD119YZ	High Dose Rate (HDR) Brachytherapy of Stomach using Other Isotope	Procedure	ICD-10-PCS
DD11B7Z	Low Dose Rate (LDR) Brachytherapy of Stomach using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD11B8Z	Low Dose Rate (LDR) Brachytherapy of Stomach using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD11B9Z	Low Dose Rate (LDR) Brachytherapy of Stomach using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD11BBZ	Low Dose Rate (LDR) Brachytherapy of Stomach using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD11BCZ	Low Dose Rate (LDR) Brachytherapy of Stomach using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD11BYZ	Low Dose Rate (LDR) Brachytherapy of Stomach using Other Isotope	Procedure	ICD-10-PCS
DD1297Z	High Dose Rate (HDR) Brachytherapy of Duodenum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1298Z	High Dose Rate (HDR) Brachytherapy of Duodenum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD1299Z	High Dose Rate (HDR) Brachytherapy of Duodenum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD129BZ	High Dose Rate (HDR) Brachytherapy of Duodenum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD129CZ	High Dose Rate (HDR) Brachytherapy of Duodenum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD129YZ	High Dose Rate (HDR) Brachytherapy of Duodenum using Other Isotope	Procedure	ICD-10-PCS
DD12B7Z	Low Dose Rate (LDR) Brachytherapy of Duodenum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD12B8Z	Low Dose Rate (LDR) Brachytherapy of Duodenum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD12B9Z	Low Dose Rate (LDR) Brachytherapy of Duodenum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD12BBZ	Low Dose Rate (LDR) Brachytherapy of Duodenum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD12BCZ	Low Dose Rate (LDR) Brachytherapy of Duodenum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD12BYZ	Low Dose Rate (LDR) Brachytherapy of Duodenum using Other Isotope	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DD1397Z	High Dose Rate (HDR) Brachytherapy of Jejunum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1398Z	High Dose Rate (HDR) Brachytherapy of Jejunum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD1399Z	High Dose Rate (HDR) Brachytherapy of Jejunum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD139BZ	High Dose Rate (HDR) Brachytherapy of Jejunum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD139CZ	High Dose Rate (HDR) Brachytherapy of Jejunum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD139YZ	High Dose Rate (HDR) Brachytherapy of Jejunum using Other Isotope	Procedure	ICD-10-PCS
DD13B7Z	Low Dose Rate (LDR) Brachytherapy of Jejunum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD13B8Z	Low Dose Rate (LDR) Brachytherapy of Jejunum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD13B9Z	Low Dose Rate (LDR) Brachytherapy of Jejunum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD13BBZ	Low Dose Rate (LDR) Brachytherapy of Jejunum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD13BCZ	Low Dose Rate (LDR) Brachytherapy of Jejunum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD13BYZ	Low Dose Rate (LDR) Brachytherapy of Jejunum using Other Isotope	Procedure	ICD-10-PCS
DD1497Z	High Dose Rate (HDR) Brachytherapy of Ileum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1498Z	High Dose Rate (HDR) Brachytherapy of Ileum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD1499Z	High Dose Rate (HDR) Brachytherapy of Ileum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD149BZ	High Dose Rate (HDR) Brachytherapy of Ileum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD149CZ	High Dose Rate (HDR) Brachytherapy of Ileum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD149YZ	High Dose Rate (HDR) Brachytherapy of Ileum using Other Isotope	Procedure	ICD-10-PCS
DD14B7Z	Low Dose Rate (LDR) Brachytherapy of Ileum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD14B8Z	Low Dose Rate (LDR) Brachytherapy of Ileum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD14B9Z	Low Dose Rate (LDR) Brachytherapy of Ileum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD14BBZ	Low Dose Rate (LDR) Brachytherapy of Ileum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD14BCZ	Low Dose Rate (LDR) Brachytherapy of Ileum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD14BYZ	Low Dose Rate (LDR) Brachytherapy of Ileum using Other Isotope	Procedure	ICD-10-PCS
DD1597Z	High Dose Rate (HDR) Brachytherapy of Colon using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1598Z	High Dose Rate (HDR) Brachytherapy of Colon using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD1599Z	High Dose Rate (HDR) Brachytherapy of Colon using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD159BZ	High Dose Rate (HDR) Brachytherapy of Colon using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD159CZ	High Dose Rate (HDR) Brachytherapy of Colon using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD159YZ	High Dose Rate (HDR) Brachytherapy of Colon using Other Isotope	Procedure	ICD-10-PCS
DD15B7Z	Low Dose Rate (LDR) Brachytherapy of Colon using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD15B8Z	Low Dose Rate (LDR) Brachytherapy of Colon using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD15B9Z	Low Dose Rate (LDR) Brachytherapy of Colon using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD15BBZ	Low Dose Rate (LDR) Brachytherapy of Colon using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DD15BCZ	Low Dose Rate (LDR) Brachytherapy of Colon using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD15BYZ	Low Dose Rate (LDR) Brachytherapy of Colon using Other Isotope	Procedure	ICD-10-PCS
DD1797Z	High Dose Rate (HDR) Brachytherapy of Rectum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD1798Z	High Dose Rate (HDR) Brachytherapy of Rectum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD1799Z	High Dose Rate (HDR) Brachytherapy of Rectum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD179BZ	High Dose Rate (HDR) Brachytherapy of Rectum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD179CZ	High Dose Rate (HDR) Brachytherapy of Rectum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD179YZ	High Dose Rate (HDR) Brachytherapy of Rectum using Other Isotope	Procedure	ICD-10-PCS
DD17B7Z	Low Dose Rate (LDR) Brachytherapy of Rectum using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DD17B8Z	Low Dose Rate (LDR) Brachytherapy of Rectum using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DD17B9Z	Low Dose Rate (LDR) Brachytherapy of Rectum using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DD17BBZ	Low Dose Rate (LDR) Brachytherapy of Rectum using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DD17BCZ	Low Dose Rate (LDR) Brachytherapy of Rectum using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DD17BYZ	Low Dose Rate (LDR) Brachytherapy of Rectum using Other Isotope	Procedure	ICD-10-PCS
DDY07ZZ	Contact Radiation of Esophagus	Procedure	ICD-10-PCS
DDY0FZZ	Plaque Radiation of Esophagus	Procedure	ICD-10-PCS
DDY17ZZ	Contact Radiation of Stomach	Procedure	ICD-10-PCS
DDY1CZZ	Intraoperative Radiation Therapy (IORT) of Stomach	Procedure	ICD-10-PCS
DDY1FZZ	Plaque Radiation of Stomach	Procedure	ICD-10-PCS
DDY27ZZ	Contact Radiation of Duodenum	Procedure	ICD-10-PCS
DDY2CZZ	Intraoperative Radiation Therapy (IORT) of Duodenum	Procedure	ICD-10-PCS
DDY2FZZ	Plaque Radiation of Duodenum	Procedure	ICD-10-PCS
DDY37ZZ	Contact Radiation of Jejunum	Procedure	ICD-10-PCS
DDY3CZZ	Intraoperative Radiation Therapy (IORT) of Jejunum	Procedure	ICD-10-PCS
DDY3FZZ	Plaque Radiation of Jejunum	Procedure	ICD-10-PCS
DDY47ZZ	Contact Radiation of Ileum	Procedure	ICD-10-PCS
DDY4CZZ	Intraoperative Radiation Therapy (IORT) of Ileum	Procedure	ICD-10-PCS
DDY4FZZ	Plaque Radiation of Ileum	Procedure	ICD-10-PCS
DDY57ZZ	Contact Radiation of Colon	Procedure	ICD-10-PCS
DDY5CZZ	Intraoperative Radiation Therapy (IORT) of Colon	Procedure	ICD-10-PCS
DDY5FZZ	Plaque Radiation of Colon	Procedure	ICD-10-PCS
DDY77ZZ	Contact Radiation of Rectum	Procedure	ICD-10-PCS
DDY7CZZ	Intraoperative Radiation Therapy (IORT) of Rectum	Procedure	ICD-10-PCS
DDY7FZZ	Plaque Radiation of Rectum	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DDY8CZZ	Intraoperative Radiation Therapy (IORT) of Anus	Procedure	ICD-10-PCS
DDY8FZZ	Plaque Radiation of Anus	Procedure	ICD-10-PCS
DF000ZZ	Beam Radiation of Liver using Photons <1 MeV	Procedure	ICD-10-PCS
DF001ZZ	Beam Radiation of Liver using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DF002ZZ	Beam Radiation of Liver using Photons >10 MeV	Procedure	ICD-10-PCS
DF003ZZ	Beam Radiation of Liver using Electrons	Procedure	ICD-10-PCS
DF004ZZ	Beam Radiation of Liver using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DF005ZZ	Beam Radiation of Liver using Neutrons	Procedure	ICD-10-PCS
DF006ZZ	Beam Radiation of Liver using Neutron Capture	Procedure	ICD-10-PCS
DF010ZZ	Beam Radiation of Gallbladder using Photons <1 MeV	Procedure	ICD-10-PCS
DF011ZZ	Beam Radiation of Gallbladder using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DF012ZZ	Beam Radiation of Gallbladder using Photons >10 MeV	Procedure	ICD-10-PCS
DF013ZZ	Beam Radiation of Gallbladder using Electrons	Procedure	ICD-10-PCS
DF014ZZ	Beam Radiation of Gallbladder using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DF015ZZ	Beam Radiation of Gallbladder using Neutrons	Procedure	ICD-10-PCS
DF016ZZ	Beam Radiation of Gallbladder using Neutron Capture	Procedure	ICD-10-PCS
DF020ZZ	Beam Radiation of Bile Ducts using Photons <1 MeV	Procedure	ICD-10-PCS
DF021ZZ	Beam Radiation of Bile Ducts using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DF022ZZ	Beam Radiation of Bile Ducts using Photons >10 MeV	Procedure	ICD-10-PCS
DF023ZZ	Beam Radiation of Bile Ducts using Electrons	Procedure	ICD-10-PCS
DF024ZZ	Beam Radiation of Bile Ducts using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DF025ZZ	Beam Radiation of Bile Ducts using Neutrons	Procedure	ICD-10-PCS
DF026ZZ	Beam Radiation of Bile Ducts using Neutron Capture	Procedure	ICD-10-PCS
DF030ZZ	Beam Radiation of Pancreas using Photons <1 MeV	Procedure	ICD-10-PCS
DF031ZZ	Beam Radiation of Pancreas using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DF032ZZ	Beam Radiation of Pancreas using Photons >10 MeV	Procedure	ICD-10-PCS
DF033ZZ	Beam Radiation of Pancreas using Electrons	Procedure	ICD-10-PCS
DF034ZZ	Beam Radiation of Pancreas using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DF035ZZ	Beam Radiation of Pancreas using Neutrons	Procedure	ICD-10-PCS
DF036ZZ	Beam Radiation of Pancreas using Neutron Capture	Procedure	ICD-10-PCS
DF1097Z	High Dose Rate (HDR) Brachytherapy of Liver using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF1098Z	High Dose Rate (HDR) Brachytherapy of Liver using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF1099Z	High Dose Rate (HDR) Brachytherapy of Liver using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF109BZ	High Dose Rate (HDR) Brachytherapy of Liver using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DF109CZ	High Dose Rate (HDR) Brachytherapy of Liver using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF109YZ	High Dose Rate (HDR) Brachytherapy of Liver using Other Isotope	Procedure	ICD-10-PCS
DF10B7Z	Low Dose Rate (LDR) Brachytherapy of Liver using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF10B8Z	Low Dose Rate (LDR) Brachytherapy of Liver using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF10B9Z	Low Dose Rate (LDR) Brachytherapy of Liver using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF10BBZ	Low Dose Rate (LDR) Brachytherapy of Liver using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF10BCZ	Low Dose Rate (LDR) Brachytherapy of Liver using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF10BYZ	Low Dose Rate (LDR) Brachytherapy of Liver using Other Isotope	Procedure	ICD-10-PCS
DF1197Z	High Dose Rate (HDR) Brachytherapy of Gallbladder using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF1198Z	High Dose Rate (HDR) Brachytherapy of Gallbladder using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF1199Z	High Dose Rate (HDR) Brachytherapy of Gallbladder using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF119BZ	High Dose Rate (HDR) Brachytherapy of Gallbladder using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF119CZ	High Dose Rate (HDR) Brachytherapy of Gallbladder using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF119YZ	High Dose Rate (HDR) Brachytherapy of Gallbladder using Other Isotope	Procedure	ICD-10-PCS
DF11B7Z	Low Dose Rate (LDR) Brachytherapy of Gallbladder using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF11B8Z	Low Dose Rate (LDR) Brachytherapy of Gallbladder using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF11B9Z	Low Dose Rate (LDR) Brachytherapy of Gallbladder using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF11BBZ	Low Dose Rate (LDR) Brachytherapy of Gallbladder using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF11BCZ	Low Dose Rate (LDR) Brachytherapy of Gallbladder using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF11BYZ	Low Dose Rate (LDR) Brachytherapy of Gallbladder using Other Isotope	Procedure	ICD-10-PCS
DF1297Z	High Dose Rate (HDR) Brachytherapy of Bile Ducts using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF1298Z	High Dose Rate (HDR) Brachytherapy of Bile Ducts using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF1299Z	High Dose Rate (HDR) Brachytherapy of Bile Ducts using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF129BZ	High Dose Rate (HDR) Brachytherapy of Bile Ducts using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF129CZ	High Dose Rate (HDR) Brachytherapy of Bile Ducts using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF129YZ	High Dose Rate (HDR) Brachytherapy of Bile Ducts using Other Isotope	Procedure	ICD-10-PCS
DF12B7Z	Low Dose Rate (LDR) Brachytherapy of Bile Ducts using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF12B8Z	Low Dose Rate (LDR) Brachytherapy of Bile Ducts using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF12B9Z	Low Dose Rate (LDR) Brachytherapy of Bile Ducts using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF12BBZ	Low Dose Rate (LDR) Brachytherapy of Bile Ducts using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF12BCZ	Low Dose Rate (LDR) Brachytherapy of Bile Ducts using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF12BYZ	Low Dose Rate (LDR) Brachytherapy of Bile Ducts using Other Isotope	Procedure	ICD-10-PCS
DF1397Z	High Dose Rate (HDR) Brachytherapy of Pancreas using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF1398Z	High Dose Rate (HDR) Brachytherapy of Pancreas using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DF1399Z	High Dose Rate (HDR) Brachytherapy of Pancreas using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF139BZ	High Dose Rate (HDR) Brachytherapy of Pancreas using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF139CZ	High Dose Rate (HDR) Brachytherapy of Pancreas using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF139YZ	High Dose Rate (HDR) Brachytherapy of Pancreas using Other Isotope	Procedure	ICD-10-PCS
DF13B7Z	Low Dose Rate (LDR) Brachytherapy of Pancreas using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DF13B8Z	Low Dose Rate (LDR) Brachytherapy of Pancreas using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DF13B9Z	Low Dose Rate (LDR) Brachytherapy of Pancreas using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DF13BBZ	Low Dose Rate (LDR) Brachytherapy of Pancreas using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DF13BCZ	Low Dose Rate (LDR) Brachytherapy of Pancreas using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DF13BYZ	Low Dose Rate (LDR) Brachytherapy of Pancreas using Other Isotope	Procedure	ICD-10-PCS
DFY07ZZ	Contact Radiation of Liver	Procedure	ICD-10-PCS
DFY0CZZ	Intraoperative Radiation Therapy (IORT) of Liver	Procedure	ICD-10-PCS
DFY0FZZ	Plaque Radiation of Liver	Procedure	ICD-10-PCS
DFY17ZZ	Contact Radiation of Gallbladder	Procedure	ICD-10-PCS
DFY1CZZ	Intraoperative Radiation Therapy (IORT) of Gallbladder	Procedure	ICD-10-PCS
DFY1FZZ	Plaque Radiation of Gallbladder	Procedure	ICD-10-PCS
DFY27ZZ	Contact Radiation of Bile Ducts	Procedure	ICD-10-PCS
DFY2CZZ	Intraoperative Radiation Therapy (IORT) of Bile Ducts	Procedure	ICD-10-PCS
DFY2FZZ	Plaque Radiation of Bile Ducts	Procedure	ICD-10-PCS
DFY37ZZ	Contact Radiation of Pancreas	Procedure	ICD-10-PCS
DFY3CZZ	Intraoperative Radiation Therapy (IORT) of Pancreas	Procedure	ICD-10-PCS
DFY3FZZ	Plaque Radiation of Pancreas	Procedure	ICD-10-PCS
DG000ZZ	Beam Radiation of Pituitary Gland using Photons <1 MeV	Procedure	ICD-10-PCS
DG001ZZ	Beam Radiation of Pituitary Gland using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DG002ZZ	Beam Radiation of Pituitary Gland using Photons >10 MeV	Procedure	ICD-10-PCS
DG003ZZ	Beam Radiation of Pituitary Gland using Electrons	Procedure	ICD-10-PCS
DG005ZZ	Beam Radiation of Pituitary Gland using Neutrons	Procedure	ICD-10-PCS
DG006ZZ	Beam Radiation of Pituitary Gland using Neutron Capture	Procedure	ICD-10-PCS
DG010ZZ	Beam Radiation of Pineal Body using Photons <1 MeV	Procedure	ICD-10-PCS
DG011ZZ	Beam Radiation of Pineal Body using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DG012ZZ	Beam Radiation of Pineal Body using Photons >10 MeV	Procedure	ICD-10-PCS
DG013ZZ	Beam Radiation of Pineal Body using Electrons	Procedure	ICD-10-PCS
DG015ZZ	Beam Radiation of Pineal Body using Neutrons	Procedure	ICD-10-PCS
DG016ZZ	Beam Radiation of Pineal Body using Neutron Capture	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DG020ZZ	Beam Radiation of Adrenal Glands using Photons <1 MeV	Procedure	ICD-10-PCS
DG021ZZ	Beam Radiation of Adrenal Glands using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DG022ZZ	Beam Radiation of Adrenal Glands using Photons >10 MeV	Procedure	ICD-10-PCS
DG023ZZ	Beam Radiation of Adrenal Glands using Electrons	Procedure	ICD-10-PCS
DG025ZZ	Beam Radiation of Adrenal Glands using Neutrons	Procedure	ICD-10-PCS
DG026ZZ	Beam Radiation of Adrenal Glands using Neutron Capture	Procedure	ICD-10-PCS
DG040ZZ	Beam Radiation of Parathyroid Glands using Photons <1 MeV	Procedure	ICD-10-PCS
DG041ZZ	Beam Radiation of Parathyroid Glands using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DG042ZZ	Beam Radiation of Parathyroid Glands using Photons >10 MeV	Procedure	ICD-10-PCS
DG043ZZ	Beam Radiation of Parathyroid Glands using Electrons	Procedure	ICD-10-PCS
DG045ZZ	Beam Radiation of Parathyroid Glands using Neutrons	Procedure	ICD-10-PCS
DG046ZZ	Beam Radiation of Parathyroid Glands using Neutron Capture	Procedure	ICD-10-PCS
DG050ZZ	Beam Radiation of Thyroid using Photons <1 MeV	Procedure	ICD-10-PCS
DG051ZZ	Beam Radiation of Thyroid using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DG052ZZ	Beam Radiation of Thyroid using Photons >10 MeV	Procedure	ICD-10-PCS
DG053ZZ	Beam Radiation of Thyroid using Electrons	Procedure	ICD-10-PCS
DG055ZZ	Beam Radiation of Thyroid using Neutrons	Procedure	ICD-10-PCS
DG056ZZ	Beam Radiation of Thyroid using Neutron Capture	Procedure	ICD-10-PCS
DG1097Z	High Dose Rate (HDR) Brachytherapy of Pituitary Gland using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG1098Z	High Dose Rate (HDR) Brachytherapy of Pituitary Gland using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG1099Z	High Dose Rate (HDR) Brachytherapy of Pituitary Gland using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG109BZ	High Dose Rate (HDR) Brachytherapy of Pituitary Gland using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG109CZ	High Dose Rate (HDR) Brachytherapy of Pituitary Gland using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG109YZ	High Dose Rate (HDR) Brachytherapy of Pituitary Gland using Other Isotope	Procedure	ICD-10-PCS
DG10B7Z	Low Dose Rate (LDR) Brachytherapy of Pituitary Gland using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG10B8Z	Low Dose Rate (LDR) Brachytherapy of Pituitary Gland using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG10B9Z	Low Dose Rate (LDR) Brachytherapy of Pituitary Gland using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG10BBZ	Low Dose Rate (LDR) Brachytherapy of Pituitary Gland using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG10BCZ	Low Dose Rate (LDR) Brachytherapy of Pituitary Gland using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG10BYZ	Low Dose Rate (LDR) Brachytherapy of Pituitary Gland using Other Isotope	Procedure	ICD-10-PCS
DG1197Z	High Dose Rate (HDR) Brachytherapy of Pineal Body using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG1198Z	High Dose Rate (HDR) Brachytherapy of Pineal Body using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG1199Z	High Dose Rate (HDR) Brachytherapy of Pineal Body using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG119BZ	High Dose Rate (HDR) Brachytherapy of Pineal Body using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DG119CZ	High Dose Rate (HDR) Brachytherapy of Pineal Body using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG119YZ	High Dose Rate (HDR) Brachytherapy of Pineal Body using Other Isotope	Procedure	ICD-10-PCS
DG11B7Z	Low Dose Rate (LDR) Brachytherapy of Pineal Body using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG11B8Z	Low Dose Rate (LDR) Brachytherapy of Pineal Body using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG11B9Z	Low Dose Rate (LDR) Brachytherapy of Pineal Body using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG11BBZ	Low Dose Rate (LDR) Brachytherapy of Pineal Body using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG11BCZ	Low Dose Rate (LDR) Brachytherapy of Pineal Body using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG11BYZ	Low Dose Rate (LDR) Brachytherapy of Pineal Body using Other Isotope	Procedure	ICD-10-PCS
DG1297Z	High Dose Rate (HDR) Brachytherapy of Adrenal Glands using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG1298Z	High Dose Rate (HDR) Brachytherapy of Adrenal Glands using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG1299Z	High Dose Rate (HDR) Brachytherapy of Adrenal Glands using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG129BZ	High Dose Rate (HDR) Brachytherapy of Adrenal Glands using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG129CZ	High Dose Rate (HDR) Brachytherapy of Adrenal Glands using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG129YZ	High Dose Rate (HDR) Brachytherapy of Adrenal Glands using Other Isotope	Procedure	ICD-10-PCS
DG12B7Z	Low Dose Rate (LDR) Brachytherapy of Adrenal Glands using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG12B8Z	Low Dose Rate (LDR) Brachytherapy of Adrenal Glands using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG12B9Z	Low Dose Rate (LDR) Brachytherapy of Adrenal Glands using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG12BBZ	Low Dose Rate (LDR) Brachytherapy of Adrenal Glands using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG12BCZ	Low Dose Rate (LDR) Brachytherapy of Adrenal Glands using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG12BYZ	Low Dose Rate (LDR) Brachytherapy of Adrenal Glands using Other Isotope	Procedure	ICD-10-PCS
DG1497Z	High Dose Rate (HDR) Brachytherapy of Parathyroid Glands using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG1498Z	High Dose Rate (HDR) Brachytherapy of Parathyroid Glands using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG1499Z	High Dose Rate (HDR) Brachytherapy of Parathyroid Glands using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG149BZ	High Dose Rate (HDR) Brachytherapy of Parathyroid Glands using Palladium 103 (Pd-	Procedure	ICD-10-PCS
DG149CZ	High Dose Rate (HDR) Brachytherapy of Parathyroid Glands using Californium 252 (Cf-	Procedure	ICD-10-PCS
DG149YZ	High Dose Rate (HDR) Brachytherapy of Parathyroid Glands using Other Isotope	Procedure	ICD-10-PCS
DG14B7Z	Low Dose Rate (LDR) Brachytherapy of Parathyroid Glands using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG14B8Z	Low Dose Rate (LDR) Brachytherapy of Parathyroid Glands using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG14B9Z	Low Dose Rate (LDR) Brachytherapy of Parathyroid Glands using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG14BBZ	Low Dose Rate (LDR) Brachytherapy of Parathyroid Glands using Palladium 103 (Pd-	Procedure	ICD-10-PCS
DG14BCZ	Low Dose Rate (LDR) Brachytherapy of Parathyroid Glands using Californium 252 (Cf-	Procedure	ICD-10-PCS
DG14BYZ	Low Dose Rate (LDR) Brachytherapy of Parathyroid Glands using Other Isotope	Procedure	ICD-10-PCS
DG1597Z	High Dose Rate (HDR) Brachytherapy of Thyroid using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG1598Z	High Dose Rate (HDR) Brachytherapy of Thyroid using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DG1599Z	High Dose Rate (HDR) Brachytherapy of Thyroid using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG159BZ	High Dose Rate (HDR) Brachytherapy of Thyroid using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG159CZ	High Dose Rate (HDR) Brachytherapy of Thyroid using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG159YZ	High Dose Rate (HDR) Brachytherapy of Thyroid using Other Isotope	Procedure	ICD-10-PCS
DG15B7Z	Low Dose Rate (LDR) Brachytherapy of Thyroid using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DG15B8Z	Low Dose Rate (LDR) Brachytherapy of Thyroid using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DG15B9Z	Low Dose Rate (LDR) Brachytherapy of Thyroid using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DG15BBZ	Low Dose Rate (LDR) Brachytherapy of Thyroid using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DG15BCZ	Low Dose Rate (LDR) Brachytherapy of Thyroid using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DG15BYZ	Low Dose Rate (LDR) Brachytherapy of Thyroid using Other Isotope	Procedure	ICD-10-PCS
DGY07ZZ	Contact Radiation of Pituitary Gland	Procedure	ICD-10-PCS
DGY0FZZ	Plaque Radiation of Pituitary Gland	Procedure	ICD-10-PCS
DGY17ZZ	Contact Radiation of Pineal Body	Procedure	ICD-10-PCS
DGY1FZZ	Plaque Radiation of Pineal Body	Procedure	ICD-10-PCS
DGY27ZZ	Contact Radiation of Adrenal Glands	Procedure	ICD-10-PCS
DGY2FZZ	Plaque Radiation of Adrenal Glands	Procedure	ICD-10-PCS
DGY47ZZ	Contact Radiation of Parathyroid Glands	Procedure	ICD-10-PCS
DGY4FZZ	Plaque Radiation of Parathyroid Glands	Procedure	ICD-10-PCS
DGY57ZZ	Contact Radiation of Thyroid	Procedure	ICD-10-PCS
DGY5FZZ	Plaque Radiation of Thyroid	Procedure	ICD-10-PCS
DM000ZZ	Beam Radiation of Left Breast using Photons <1 MeV	Procedure	ICD-10-PCS
DM001ZZ	Beam Radiation of Left Breast using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DM002ZZ	Beam Radiation of Left Breast using Photons >10 MeV	Procedure	ICD-10-PCS
DM003ZZ	Beam Radiation of Left Breast using Electrons	Procedure	ICD-10-PCS
DM004ZZ	Beam Radiation of Left Breast using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DM005ZZ	Beam Radiation of Left Breast using Neutrons	Procedure	ICD-10-PCS
DM006ZZ	Beam Radiation of Left Breast using Neutron Capture	Procedure	ICD-10-PCS
DM010ZZ	Beam Radiation of Right Breast using Photons <1 MeV	Procedure	ICD-10-PCS
DM011ZZ	Beam Radiation of Right Breast using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DM012ZZ	Beam Radiation of Right Breast using Photons >10 MeV	Procedure	ICD-10-PCS
DM013ZZ	Beam Radiation of Right Breast using Electrons	Procedure	ICD-10-PCS
DM014ZZ	Beam Radiation of Right Breast using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DM015ZZ	Beam Radiation of Right Breast using Neutrons	Procedure	ICD-10-PCS
DM016ZZ	Beam Radiation of Right Breast using Neutron Capture	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DM1097Z	High Dose Rate (HDR) Brachytherapy of Left Breast using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DM1098Z	High Dose Rate (HDR) Brachytherapy of Left Breast using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DM1099Z	High Dose Rate (HDR) Brachytherapy of Left Breast using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DM109BZ	High Dose Rate (HDR) Brachytherapy of Left Breast using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DM109CZ	High Dose Rate (HDR) Brachytherapy of Left Breast using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DM109YZ	High Dose Rate (HDR) Brachytherapy of Left Breast using Other Isotope	Procedure	ICD-10-PCS
DM10B7Z	Low Dose Rate (LDR) Brachytherapy of Left Breast using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DM10B8Z	Low Dose Rate (LDR) Brachytherapy of Left Breast using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DM10B9Z	Low Dose Rate (LDR) Brachytherapy of Left Breast using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DM10BBZ	Low Dose Rate (LDR) Brachytherapy of Left Breast using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DM10BCZ	Low Dose Rate (LDR) Brachytherapy of Left Breast using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DM10BYZ	Low Dose Rate (LDR) Brachytherapy of Left Breast using Other Isotope	Procedure	ICD-10-PCS
DM1197Z	High Dose Rate (HDR) Brachytherapy of Right Breast using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DM1198Z	High Dose Rate (HDR) Brachytherapy of Right Breast using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DM1199Z	High Dose Rate (HDR) Brachytherapy of Right Breast using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DM119BZ	High Dose Rate (HDR) Brachytherapy of Right Breast using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DM119CZ	High Dose Rate (HDR) Brachytherapy of Right Breast using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DM119YZ	High Dose Rate (HDR) Brachytherapy of Right Breast using Other Isotope	Procedure	ICD-10-PCS
DM11B7Z	Low Dose Rate (LDR) Brachytherapy of Right Breast using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DM11B8Z	Low Dose Rate (LDR) Brachytherapy of Right Breast using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DM11B9Z	Low Dose Rate (LDR) Brachytherapy of Right Breast using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DM11BBZ	Low Dose Rate (LDR) Brachytherapy of Right Breast using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DM11BCZ	Low Dose Rate (LDR) Brachytherapy of Right Breast using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DM11BYZ	Low Dose Rate (LDR) Brachytherapy of Right Breast using Other Isotope	Procedure	ICD-10-PCS
DMY07ZZ	Contact Radiation of Left Breast	Procedure	ICD-10-PCS
DMY0FZZ	Plaque Radiation of Left Breast	Procedure	ICD-10-PCS
DMY17ZZ	Contact Radiation of Right Breast	Procedure	ICD-10-PCS
DMY1FZZ	Plaque Radiation of Right Breast	Procedure	ICD-10-PCS
DP000ZZ	Beam Radiation of Skull using Photons <1 MeV	Procedure	ICD-10-PCS
DP001ZZ	Beam Radiation of Skull using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP002ZZ	Beam Radiation of Skull using Photons >10 MeV	Procedure	ICD-10-PCS
DP003ZZ	Beam Radiation of Skull using Electrons	Procedure	ICD-10-PCS
DP004ZZ	Beam Radiation of Skull using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP005ZZ	Beam Radiation of Skull using Neutrons	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DP006ZZ	Beam Radiation of Skull using Neutron Capture	Procedure	ICD-10-PCS
DP020ZZ	Beam Radiation of Maxilla using Photons <1 MeV	Procedure	ICD-10-PCS
DP021ZZ	Beam Radiation of Maxilla using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP022ZZ	Beam Radiation of Maxilla using Photons >10 MeV	Procedure	ICD-10-PCS
DP023ZZ	Beam Radiation of Maxilla using Electrons	Procedure	ICD-10-PCS
DP024ZZ	Beam Radiation of Maxilla using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP025ZZ	Beam Radiation of Maxilla using Neutrons	Procedure	ICD-10-PCS
DP026ZZ	Beam Radiation of Maxilla using Neutron Capture	Procedure	ICD-10-PCS
DP030ZZ	Beam Radiation of Mandible using Photons <1 MeV	Procedure	ICD-10-PCS
DP031ZZ	Beam Radiation of Mandible using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP032ZZ	Beam Radiation of Mandible using Photons >10 MeV	Procedure	ICD-10-PCS
DP033ZZ	Beam Radiation of Mandible using Electrons	Procedure	ICD-10-PCS
DP034ZZ	Beam Radiation of Mandible using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP035ZZ	Beam Radiation of Mandible using Neutrons	Procedure	ICD-10-PCS
DP036ZZ	Beam Radiation of Mandible using Neutron Capture	Procedure	ICD-10-PCS
DP040ZZ	Beam Radiation of Sternum using Photons <1 MeV	Procedure	ICD-10-PCS
DP041ZZ	Beam Radiation of Sternum using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP042ZZ	Beam Radiation of Sternum using Photons >10 MeV	Procedure	ICD-10-PCS
DP043ZZ	Beam Radiation of Sternum using Electrons	Procedure	ICD-10-PCS
DP044ZZ	Beam Radiation of Sternum using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP045ZZ	Beam Radiation of Sternum using Neutrons	Procedure	ICD-10-PCS
DP046ZZ	Beam Radiation of Sternum using Neutron Capture	Procedure	ICD-10-PCS
DP050ZZ	Beam Radiation of Rib(s) using Photons <1 MeV	Procedure	ICD-10-PCS
DP051ZZ	Beam Radiation of Rib(s) using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP052ZZ	Beam Radiation of Rib(s) using Photons >10 MeV	Procedure	ICD-10-PCS
DP053ZZ	Beam Radiation of Rib(s) using Electrons	Procedure	ICD-10-PCS
DP054ZZ	Beam Radiation of Rib(s) using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP055ZZ	Beam Radiation of Rib(s) using Neutrons	Procedure	ICD-10-PCS
DP056ZZ	Beam Radiation of Rib(s) using Neutron Capture	Procedure	ICD-10-PCS
DP060ZZ	Beam Radiation of Humerus using Photons <1 MeV	Procedure	ICD-10-PCS
DP061ZZ	Beam Radiation of Humerus using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP062ZZ	Beam Radiation of Humerus using Photons >10 MeV	Procedure	ICD-10-PCS
DP063ZZ	Beam Radiation of Humerus using Electrons	Procedure	ICD-10-PCS
DP064ZZ	Beam Radiation of Humerus using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DP065ZZ	Beam Radiation of Humerus using Neutrons	Procedure	ICD-10-PCS
DP066ZZ	Beam Radiation of Humerus using Neutron Capture	Procedure	ICD-10-PCS
DP070ZZ	Beam Radiation of Radius/Ulna using Photons <1 MeV	Procedure	ICD-10-PCS
DP071ZZ	Beam Radiation of Radius/Ulna using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP072ZZ	Beam Radiation of Radius/Ulna using Photons >10 MeV	Procedure	ICD-10-PCS
DP073ZZ	Beam Radiation of Radius/Ulna using Electrons	Procedure	ICD-10-PCS
DP074ZZ	Beam Radiation of Radius/Ulna using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP075ZZ	Beam Radiation of Radius/Ulna using Neutrons	Procedure	ICD-10-PCS
DP076ZZ	Beam Radiation of Radius/Ulna using Neutron Capture	Procedure	ICD-10-PCS
DP080ZZ	Beam Radiation of Pelvic Bones using Photons <1 MeV	Procedure	ICD-10-PCS
DP081ZZ	Beam Radiation of Pelvic Bones using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP082ZZ	Beam Radiation of Pelvic Bones using Photons >10 MeV	Procedure	ICD-10-PCS
DP083ZZ	Beam Radiation of Pelvic Bones using Electrons	Procedure	ICD-10-PCS
DP084ZZ	Beam Radiation of Pelvic Bones using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP085ZZ	Beam Radiation of Pelvic Bones using Neutrons	Procedure	ICD-10-PCS
DP086ZZ	Beam Radiation of Pelvic Bones using Neutron Capture	Procedure	ICD-10-PCS
DP090ZZ	Beam Radiation of Femur using Photons <1 MeV	Procedure	ICD-10-PCS
DP091ZZ	Beam Radiation of Femur using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP092ZZ	Beam Radiation of Femur using Photons >10 MeV	Procedure	ICD-10-PCS
DP093ZZ	Beam Radiation of Femur using Electrons	Procedure	ICD-10-PCS
DP094ZZ	Beam Radiation of Femur using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP095ZZ	Beam Radiation of Femur using Neutrons	Procedure	ICD-10-PCS
DP096ZZ	Beam Radiation of Femur using Neutron Capture	Procedure	ICD-10-PCS
DP0B0ZZ	Beam Radiation of Tibia/Fibula using Photons <1 MeV	Procedure	ICD-10-PCS
DP0B1ZZ	Beam Radiation of Tibia/Fibula using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP0B2ZZ	Beam Radiation of Tibia/Fibula using Photons >10 MeV	Procedure	ICD-10-PCS
DP0B3ZZ	Beam Radiation of Tibia/Fibula using Electrons	Procedure	ICD-10-PCS
DP0B4ZZ	Beam Radiation of Tibia/Fibula using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP0B5ZZ	Beam Radiation of Tibia/Fibula using Neutrons	Procedure	ICD-10-PCS
DP0B6ZZ	Beam Radiation of Tibia/Fibula using Neutron Capture	Procedure	ICD-10-PCS
DP0C0ZZ	Beam Radiation of Other Bone using Photons <1 MeV	Procedure	ICD-10-PCS
DP0C1ZZ	Beam Radiation of Other Bone using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DP0C2ZZ	Beam Radiation of Other Bone using Photons >10 MeV	Procedure	ICD-10-PCS
DP0C3ZZ	Beam Radiation of Other Bone using Electrons	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DP0C4ZZ	Beam Radiation of Other Bone using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DP0C5ZZ	Beam Radiation of Other Bone using Neutrons	Procedure	ICD-10-PCS
DP0C6ZZ	Beam Radiation of Other Bone using Neutron Capture	Procedure	ICD-10-PCS
DPY07ZZ	Contact Radiation of Skull	Procedure	ICD-10-PCS
DPY0FZZ	Plaque Radiation of Skull	Procedure	ICD-10-PCS
DPY27ZZ	Contact Radiation of Maxilla	Procedure	ICD-10-PCS
DPY2FZZ	Plaque Radiation of Maxilla	Procedure	ICD-10-PCS
DPY37ZZ	Contact Radiation of Mandible	Procedure	ICD-10-PCS
DPY3FZZ	Plaque Radiation of Mandible	Procedure	ICD-10-PCS
DPY47ZZ	Contact Radiation of Sternum	Procedure	ICD-10-PCS
DPY4FZZ	Plaque Radiation of Sternum	Procedure	ICD-10-PCS
DPY57ZZ	Contact Radiation of Rib(s)	Procedure	ICD-10-PCS
DPY5FZZ	Plaque Radiation of Rib(s)	Procedure	ICD-10-PCS
DPY67ZZ	Contact Radiation of Humerus	Procedure	ICD-10-PCS
DPY6FZZ	Plaque Radiation of Humerus	Procedure	ICD-10-PCS
DPY77ZZ	Contact Radiation of Radius/Ulna	Procedure	ICD-10-PCS
DPY7FZZ	Plaque Radiation of Radius/Ulna	Procedure	ICD-10-PCS
DPY87ZZ	Contact Radiation of Pelvic Bones	Procedure	ICD-10-PCS
DPY8FZZ	Plaque Radiation of Pelvic Bones	Procedure	ICD-10-PCS
DPY97ZZ	Contact Radiation of Femur	Procedure	ICD-10-PCS
DPY9FZZ	Plaque Radiation of Femur	Procedure	ICD-10-PCS
DPYB7ZZ	Contact Radiation of Tibia/Fibula	Procedure	ICD-10-PCS
DPYBFZZ	Plaque Radiation of Tibia/Fibula	Procedure	ICD-10-PCS
DPYC7ZZ	Contact Radiation of Other Bone	Procedure	ICD-10-PCS
DPYCFZZ	Plaque Radiation of Other Bone	Procedure	ICD-10-PCS
DT000ZZ	Beam Radiation of Kidney using Photons <1 MeV	Procedure	ICD-10-PCS
DT001ZZ	Beam Radiation of Kidney using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DT002ZZ	Beam Radiation of Kidney using Photons >10 MeV	Procedure	ICD-10-PCS
DT003ZZ	Beam Radiation of Kidney using Electrons	Procedure	ICD-10-PCS
DT004ZZ	Beam Radiation of Kidney using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DT005ZZ	Beam Radiation of Kidney using Neutrons	Procedure	ICD-10-PCS
DT006ZZ	Beam Radiation of Kidney using Neutron Capture	Procedure	ICD-10-PCS
DT010ZZ	Beam Radiation of Ureter using Photons <1 MeV	Procedure	ICD-10-PCS
DT011ZZ	Beam Radiation of Ureter using Photons 1 - 10 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DT012ZZ	Beam Radiation of Ureter using Photons >10 MeV	Procedure	ICD-10-PCS
DT013ZZ	Beam Radiation of Ureter using Electrons	Procedure	ICD-10-PCS
DT014ZZ	Beam Radiation of Ureter using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DT015ZZ	Beam Radiation of Ureter using Neutrons	Procedure	ICD-10-PCS
DT016ZZ	Beam Radiation of Ureter using Neutron Capture	Procedure	ICD-10-PCS
DT020ZZ	Beam Radiation of Bladder using Photons <1 MeV	Procedure	ICD-10-PCS
DT021ZZ	Beam Radiation of Bladder using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DT022ZZ	Beam Radiation of Bladder using Photons >10 MeV	Procedure	ICD-10-PCS
DT023ZZ	Beam Radiation of Bladder using Electrons	Procedure	ICD-10-PCS
DT024ZZ	Beam Radiation of Bladder using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DT025ZZ	Beam Radiation of Bladder using Neutrons	Procedure	ICD-10-PCS
DT026ZZ	Beam Radiation of Bladder using Neutron Capture	Procedure	ICD-10-PCS
DT030ZZ	Beam Radiation of Urethra using Photons <1 MeV	Procedure	ICD-10-PCS
DT031ZZ	Beam Radiation of Urethra using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DT032ZZ	Beam Radiation of Urethra using Photons >10 MeV	Procedure	ICD-10-PCS
DT033ZZ	Beam Radiation of Urethra using Electrons	Procedure	ICD-10-PCS
DT034ZZ	Beam Radiation of Urethra using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DT035ZZ	Beam Radiation of Urethra using Neutrons	Procedure	ICD-10-PCS
DT036ZZ	Beam Radiation of Urethra using Neutron Capture	Procedure	ICD-10-PCS
DT1097Z	High Dose Rate (HDR) Brachytherapy of Kidney using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT1098Z	High Dose Rate (HDR) Brachytherapy of Kidney using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT1099Z	High Dose Rate (HDR) Brachytherapy of Kidney using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT109BZ	High Dose Rate (HDR) Brachytherapy of Kidney using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT109CZ	High Dose Rate (HDR) Brachytherapy of Kidney using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT109YZ	High Dose Rate (HDR) Brachytherapy of Kidney using Other Isotope	Procedure	ICD-10-PCS
DT10B7Z	Low Dose Rate (LDR) Brachytherapy of Kidney using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT10B8Z	Low Dose Rate (LDR) Brachytherapy of Kidney using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT10B9Z	Low Dose Rate (LDR) Brachytherapy of Kidney using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT10BBZ	Low Dose Rate (LDR) Brachytherapy of Kidney using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT10BCZ	Low Dose Rate (LDR) Brachytherapy of Kidney using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT10BYZ	Low Dose Rate (LDR) Brachytherapy of Kidney using Other Isotope	Procedure	ICD-10-PCS
DT1197Z	High Dose Rate (HDR) Brachytherapy of Ureter using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT1198Z	High Dose Rate (HDR) Brachytherapy of Ureter using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT1199Z	High Dose Rate (HDR) Brachytherapy of Ureter using Iodine 125 (I-125)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DT119BZ	High Dose Rate (HDR) Brachytherapy of Ureter using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT119CZ	High Dose Rate (HDR) Brachytherapy of Ureter using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT119YZ	High Dose Rate (HDR) Brachytherapy of Ureter using Other Isotope	Procedure	ICD-10-PCS
DT11B7Z	Low Dose Rate (LDR) Brachytherapy of Ureter using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT11B8Z	Low Dose Rate (LDR) Brachytherapy of Ureter using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT11B9Z	Low Dose Rate (LDR) Brachytherapy of Ureter using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT11BBZ	Low Dose Rate (LDR) Brachytherapy of Ureter using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT11BCZ	Low Dose Rate (LDR) Brachytherapy of Ureter using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT11BYZ	Low Dose Rate (LDR) Brachytherapy of Ureter using Other Isotope	Procedure	ICD-10-PCS
DT1297Z	High Dose Rate (HDR) Brachytherapy of Bladder using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT1298Z	High Dose Rate (HDR) Brachytherapy of Bladder using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT1299Z	High Dose Rate (HDR) Brachytherapy of Bladder using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT129BZ	High Dose Rate (HDR) Brachytherapy of Bladder using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT129CZ	High Dose Rate (HDR) Brachytherapy of Bladder using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT129YZ	High Dose Rate (HDR) Brachytherapy of Bladder using Other Isotope	Procedure	ICD-10-PCS
DT12B7Z	Low Dose Rate (LDR) Brachytherapy of Bladder using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT12B8Z	Low Dose Rate (LDR) Brachytherapy of Bladder using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT12B9Z	Low Dose Rate (LDR) Brachytherapy of Bladder using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT12BBZ	Low Dose Rate (LDR) Brachytherapy of Bladder using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT12BCZ	Low Dose Rate (LDR) Brachytherapy of Bladder using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT12BYZ	Low Dose Rate (LDR) Brachytherapy of Bladder using Other Isotope	Procedure	ICD-10-PCS
DT1397Z	High Dose Rate (HDR) Brachytherapy of Urethra using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT1398Z	High Dose Rate (HDR) Brachytherapy of Urethra using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT1399Z	High Dose Rate (HDR) Brachytherapy of Urethra using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT139BZ	High Dose Rate (HDR) Brachytherapy of Urethra using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT139CZ	High Dose Rate (HDR) Brachytherapy of Urethra using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT139YZ	High Dose Rate (HDR) Brachytherapy of Urethra using Other Isotope	Procedure	ICD-10-PCS
DT13B7Z	Low Dose Rate (LDR) Brachytherapy of Urethra using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DT13B8Z	Low Dose Rate (LDR) Brachytherapy of Urethra using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DT13B9Z	Low Dose Rate (LDR) Brachytherapy of Urethra using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DT13BBZ	Low Dose Rate (LDR) Brachytherapy of Urethra using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DT13BCZ	Low Dose Rate (LDR) Brachytherapy of Urethra using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DT13BYZ	Low Dose Rate (LDR) Brachytherapy of Urethra using Other Isotope	Procedure	ICD-10-PCS
DTY07ZZ	Contact Radiation of Kidney	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DTY0CZZ	Intraoperative Radiation Therapy (IORT) of Kidney	Procedure	ICD-10-PCS
DTY0FZZ	Plaque Radiation of Kidney	Procedure	ICD-10-PCS
DTY17ZZ	Contact Radiation of Ureter	Procedure	ICD-10-PCS
DTY1CZZ	Intraoperative Radiation Therapy (IORT) of Ureter	Procedure	ICD-10-PCS
DTY1FZZ	Plaque Radiation of Ureter	Procedure	ICD-10-PCS
DTY27ZZ	Contact Radiation of Bladder	Procedure	ICD-10-PCS
DTY2CZZ	Intraoperative Radiation Therapy (IORT) of Bladder	Procedure	ICD-10-PCS
DTY2FZZ	Plaque Radiation of Bladder	Procedure	ICD-10-PCS
DTY37ZZ	Contact Radiation of Urethra	Procedure	ICD-10-PCS
DTY3CZZ	Intraoperative Radiation Therapy (IORT) of Urethra	Procedure	ICD-10-PCS
DTY3FZZ	Plaque Radiation of Urethra	Procedure	ICD-10-PCS
DU000ZZ	Beam Radiation of Ovary using Photons <1 MeV	Procedure	ICD-10-PCS
DU001ZZ	Beam Radiation of Ovary using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DU002ZZ	Beam Radiation of Ovary using Photons >10 MeV	Procedure	ICD-10-PCS
DU003ZZ	Beam Radiation of Ovary using Electrons	Procedure	ICD-10-PCS
DU004ZZ	Beam Radiation of Ovary using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DU005ZZ	Beam Radiation of Ovary using Neutrons	Procedure	ICD-10-PCS
DU006ZZ	Beam Radiation of Ovary using Neutron Capture	Procedure	ICD-10-PCS
DU010ZZ	Beam Radiation of Cervix using Photons <1 MeV	Procedure	ICD-10-PCS
DU011ZZ	Beam Radiation of Cervix using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DU012ZZ	Beam Radiation of Cervix using Photons >10 MeV	Procedure	ICD-10-PCS
DU013ZZ	Beam Radiation of Cervix using Electrons	Procedure	ICD-10-PCS
DU014ZZ	Beam Radiation of Cervix using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DU015ZZ	Beam Radiation of Cervix using Neutrons	Procedure	ICD-10-PCS
DU016ZZ	Beam Radiation of Cervix using Neutron Capture	Procedure	ICD-10-PCS
DU020ZZ	Beam Radiation of Uterus using Photons <1 MeV	Procedure	ICD-10-PCS
DU021ZZ	Beam Radiation of Uterus using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DU022ZZ	Beam Radiation of Uterus using Photons >10 MeV	Procedure	ICD-10-PCS
DU023ZZ	Beam Radiation of Uterus using Electrons	Procedure	ICD-10-PCS
DU024ZZ	Beam Radiation of Uterus using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DU025ZZ	Beam Radiation of Uterus using Neutrons	Procedure	ICD-10-PCS
DU026ZZ	Beam Radiation of Uterus using Neutron Capture	Procedure	ICD-10-PCS
DU1097Z	High Dose Rate (HDR) Brachytherapy of Ovary using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DU1098Z	High Dose Rate (HDR) Brachytherapy of Ovary using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DU1099Z	High Dose Rate (HDR) Brachytherapy of Ovary using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DU109BZ	High Dose Rate (HDR) Brachytherapy of Ovary using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DU109CZ	High Dose Rate (HDR) Brachytherapy of Ovary using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DU109YZ	High Dose Rate (HDR) Brachytherapy of Ovary using Other Isotope	Procedure	ICD-10-PCS
DU10B7Z	Low Dose Rate (LDR) Brachytherapy of Ovary using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DU10B8Z	Low Dose Rate (LDR) Brachytherapy of Ovary using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DU10B9Z	Low Dose Rate (LDR) Brachytherapy of Ovary using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DU10BBZ	Low Dose Rate (LDR) Brachytherapy of Ovary using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DU10BCZ	Low Dose Rate (LDR) Brachytherapy of Ovary using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DU10BYZ	Low Dose Rate (LDR) Brachytherapy of Ovary using Other Isotope	Procedure	ICD-10-PCS
DU1197Z	High Dose Rate (HDR) Brachytherapy of Cervix using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DU1198Z	High Dose Rate (HDR) Brachytherapy of Cervix using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DU1199Z	High Dose Rate (HDR) Brachytherapy of Cervix using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DU119BZ	High Dose Rate (HDR) Brachytherapy of Cervix using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DU119CZ	High Dose Rate (HDR) Brachytherapy of Cervix using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DU119YZ	High Dose Rate (HDR) Brachytherapy of Cervix using Other Isotope	Procedure	ICD-10-PCS
DU11B7Z	Low Dose Rate (LDR) Brachytherapy of Cervix using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DU11B8Z	Low Dose Rate (LDR) Brachytherapy of Cervix using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DU11B9Z	Low Dose Rate (LDR) Brachytherapy of Cervix using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DU11BBZ	Low Dose Rate (LDR) Brachytherapy of Cervix using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DU11BCZ	Low Dose Rate (LDR) Brachytherapy of Cervix using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DU11BYZ	Low Dose Rate (LDR) Brachytherapy of Cervix using Other Isotope	Procedure	ICD-10-PCS
DU1297Z	High Dose Rate (HDR) Brachytherapy of Uterus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DU1298Z	High Dose Rate (HDR) Brachytherapy of Uterus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DU1299Z	High Dose Rate (HDR) Brachytherapy of Uterus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DU129BZ	High Dose Rate (HDR) Brachytherapy of Uterus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DU129CZ	High Dose Rate (HDR) Brachytherapy of Uterus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DU129YZ	High Dose Rate (HDR) Brachytherapy of Uterus using Other Isotope	Procedure	ICD-10-PCS
DU12B7Z	Low Dose Rate (LDR) Brachytherapy of Uterus using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DU12B8Z	Low Dose Rate (LDR) Brachytherapy of Uterus using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DU12B9Z	Low Dose Rate (LDR) Brachytherapy of Uterus using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DU12BBZ	Low Dose Rate (LDR) Brachytherapy of Uterus using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DU12BCZ	Low Dose Rate (LDR) Brachytherapy of Uterus using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DU12BYZ	Low Dose Rate (LDR) Brachytherapy of Uterus using Other Isotope	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DUY07ZZ	Contact Radiation of Ovary	Procedure	ICD-10-PCS
DUY0CZZ	Intraoperative Radiation Therapy (IORT) of Ovary	Procedure	ICD-10-PCS
DUY0FZZ	Plaque Radiation of Ovary	Procedure	ICD-10-PCS
DUY17ZZ	Contact Radiation of Cervix	Procedure	ICD-10-PCS
DUY1CZZ	Intraoperative Radiation Therapy (IORT) of Cervix	Procedure	ICD-10-PCS
DUY1FZZ	Plaque Radiation of Cervix	Procedure	ICD-10-PCS
DUY27ZZ	Contact Radiation of Uterus	Procedure	ICD-10-PCS
DUY2CZZ	Intraoperative Radiation Therapy (IORT) of Uterus	Procedure	ICD-10-PCS
DUY2FZZ	Plaque Radiation of Uterus	Procedure	ICD-10-PCS
DV000ZZ	Beam Radiation of Prostate using Photons <1 MeV	Procedure	ICD-10-PCS
DV001ZZ	Beam Radiation of Prostate using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DV002ZZ	Beam Radiation of Prostate using Photons >10 MeV	Procedure	ICD-10-PCS
DV003ZZ	Beam Radiation of Prostate using Electrons	Procedure	ICD-10-PCS
DV004ZZ	Beam Radiation of Prostate using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DV005ZZ	Beam Radiation of Prostate using Neutrons	Procedure	ICD-10-PCS
DV006ZZ	Beam Radiation of Prostate using Neutron Capture	Procedure	ICD-10-PCS
DV010ZZ	Beam Radiation of Testis using Photons <1 MeV	Procedure	ICD-10-PCS
DV011ZZ	Beam Radiation of Testis using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DV012ZZ	Beam Radiation of Testis using Photons >10 MeV	Procedure	ICD-10-PCS
DV013ZZ	Beam Radiation of Testis using Electrons	Procedure	ICD-10-PCS
DV014ZZ	Beam Radiation of Testis using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DV015ZZ	Beam Radiation of Testis using Neutrons	Procedure	ICD-10-PCS
DV016ZZ	Beam Radiation of Testis using Neutron Capture	Procedure	ICD-10-PCS
DV1097Z	High Dose Rate (HDR) Brachytherapy of Prostate using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DV1098Z	High Dose Rate (HDR) Brachytherapy of Prostate using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DV1099Z	High Dose Rate (HDR) Brachytherapy of Prostate using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DV109BZ	High Dose Rate (HDR) Brachytherapy of Prostate using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DV109CZ	High Dose Rate (HDR) Brachytherapy of Prostate using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DV109YZ	High Dose Rate (HDR) Brachytherapy of Prostate using Other Isotope	Procedure	ICD-10-PCS
DV10B7Z	Low Dose Rate (LDR) Brachytherapy of Prostate using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DV10B8Z	Low Dose Rate (LDR) Brachytherapy of Prostate using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DV10B9Z	Low Dose Rate (LDR) Brachytherapy of Prostate using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DV10BBZ	Low Dose Rate (LDR) Brachytherapy of Prostate using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DV10BCZ	Low Dose Rate (LDR) Brachytherapy of Prostate using Californium 252 (Cf-252)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DV10BYZ	Low Dose Rate (LDR) Brachytherapy of Prostate using Other Isotope	Procedure	ICD-10-PCS
DV1197Z	High Dose Rate (HDR) Brachytherapy of Testis using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DV1198Z	High Dose Rate (HDR) Brachytherapy of Testis using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DV1199Z	High Dose Rate (HDR) Brachytherapy of Testis using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DV119BZ	High Dose Rate (HDR) Brachytherapy of Testis using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DV119CZ	High Dose Rate (HDR) Brachytherapy of Testis using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DV119YZ	High Dose Rate (HDR) Brachytherapy of Testis using Other Isotope	Procedure	ICD-10-PCS
DV11B7Z	Low Dose Rate (LDR) Brachytherapy of Testis using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DV11B8Z	Low Dose Rate (LDR) Brachytherapy of Testis using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DV11B9Z	Low Dose Rate (LDR) Brachytherapy of Testis using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DV11BBZ	Low Dose Rate (LDR) Brachytherapy of Testis using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DV11BCZ	Low Dose Rate (LDR) Brachytherapy of Testis using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DV11BYZ	Low Dose Rate (LDR) Brachytherapy of Testis using Other Isotope	Procedure	ICD-10-PCS
DVY07ZZ	Contact Radiation of Prostate	Procedure	ICD-10-PCS
DVY0CZZ	Intraoperative Radiation Therapy (IORT) of Prostate	Procedure	ICD-10-PCS
DVY0FZZ	Plaque Radiation of Prostate	Procedure	ICD-10-PCS
DVY17ZZ	Contact Radiation of Testis	Procedure	ICD-10-PCS
DVY1FZZ	Plaque Radiation of Testis	Procedure	ICD-10-PCS
DW010ZZ	Beam Radiation of Head and Neck using Photons <1 MeV	Procedure	ICD-10-PCS
DW011ZZ	Beam Radiation of Head and Neck using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DW012ZZ	Beam Radiation of Head and Neck using Photons >10 MeV	Procedure	ICD-10-PCS
DW013ZZ	Beam Radiation of Head and Neck using Electrons	Procedure	ICD-10-PCS
DW014ZZ	Beam Radiation of Head and Neck using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DW015ZZ	Beam Radiation of Head and Neck using Neutrons	Procedure	ICD-10-PCS
DW016ZZ	Beam Radiation of Head and Neck using Neutron Capture	Procedure	ICD-10-PCS
DW020ZZ	Beam Radiation of Chest using Photons <1 MeV	Procedure	ICD-10-PCS
DW021ZZ	Beam Radiation of Chest using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DW022ZZ	Beam Radiation of Chest using Photons >10 MeV	Procedure	ICD-10-PCS
DW023ZZ	Beam Radiation of Chest using Electrons	Procedure	ICD-10-PCS
DW024ZZ	Beam Radiation of Chest using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DW025ZZ	Beam Radiation of Chest using Neutrons	Procedure	ICD-10-PCS
DW026ZZ	Beam Radiation of Chest using Neutron Capture	Procedure	ICD-10-PCS
DW030ZZ	Beam Radiation of Abdomen using Photons <1 MeV	Procedure	ICD-10-PCS
DW031ZZ	Beam Radiation of Abdomen using Photons 1 - 10 MeV	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DW032ZZ	Beam Radiation of Abdomen using Photons >10 MeV	Procedure	ICD-10-PCS
DW033ZZ	Beam Radiation of Abdomen using Electrons	Procedure	ICD-10-PCS
DW034ZZ	Beam Radiation of Abdomen using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DW035ZZ	Beam Radiation of Abdomen using Neutrons	Procedure	ICD-10-PCS
DW036ZZ	Beam Radiation of Abdomen using Neutron Capture	Procedure	ICD-10-PCS
DW040ZZ	Beam Radiation of Hemibody using Photons <1 MeV	Procedure	ICD-10-PCS
DW041ZZ	Beam Radiation of Hemibody using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DW042ZZ	Beam Radiation of Hemibody using Photons >10 MeV	Procedure	ICD-10-PCS
DW043ZZ	Beam Radiation of Hemibody using Electrons	Procedure	ICD-10-PCS
DW044ZZ	Beam Radiation of Hemibody using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DW045ZZ	Beam Radiation of Hemibody using Neutrons	Procedure	ICD-10-PCS
DW046ZZ	Beam Radiation of Hemibody using Neutron Capture	Procedure	ICD-10-PCS
DW050ZZ	Beam Radiation of Whole Body using Photons <1 MeV	Procedure	ICD-10-PCS
DW051ZZ	Beam Radiation of Whole Body using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DW052ZZ	Beam Radiation of Whole Body using Photons >10 MeV	Procedure	ICD-10-PCS
DW053ZZ	Beam Radiation of Whole Body using Electrons	Procedure	ICD-10-PCS
DW054ZZ	Beam Radiation of Whole Body using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DW055ZZ	Beam Radiation of Whole Body using Neutrons	Procedure	ICD-10-PCS
DW056ZZ	Beam Radiation of Whole Body using Neutron Capture	Procedure	ICD-10-PCS
DW060ZZ	Beam Radiation of Pelvic Region using Photons <1 MeV	Procedure	ICD-10-PCS
DW061ZZ	Beam Radiation of Pelvic Region using Photons 1 - 10 MeV	Procedure	ICD-10-PCS
DW062ZZ	Beam Radiation of Pelvic Region using Photons >10 MeV	Procedure	ICD-10-PCS
DW063ZZ	Beam Radiation of Pelvic Region using Electrons	Procedure	ICD-10-PCS
DW064ZZ	Beam Radiation of Pelvic Region using Heavy Particles (Protons,Ions)	Procedure	ICD-10-PCS
DW065ZZ	Beam Radiation of Pelvic Region using Neutrons	Procedure	ICD-10-PCS
DW066ZZ	Beam Radiation of Pelvic Region using Neutron Capture	Procedure	ICD-10-PCS
DW1197Z	High Dose Rate (HDR) Brachytherapy of Head and Neck using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW1198Z	High Dose Rate (HDR) Brachytherapy of Head and Neck using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW1199Z	High Dose Rate (HDR) Brachytherapy of Head and Neck using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW119BZ	High Dose Rate (HDR) Brachytherapy of Head and Neck using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW119CZ	High Dose Rate (HDR) Brachytherapy of Head and Neck using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW119YZ	High Dose Rate (HDR) Brachytherapy of Head and Neck using Other Isotope	Procedure	ICD-10-PCS
DW11B7Z	Low Dose Rate (LDR) Brachytherapy of Head and Neck using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW11B8Z	Low Dose Rate (LDR) Brachytherapy of Head and Neck using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DW11B9Z	Low Dose Rate (LDR) Brachytherapy of Head and Neck using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW11BBZ	Low Dose Rate (LDR) Brachytherapy of Head and Neck using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW11BCZ	Low Dose Rate (LDR) Brachytherapy of Head and Neck using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW11BYZ	Low Dose Rate (LDR) Brachytherapy of Head and Neck using Other Isotope	Procedure	ICD-10-PCS
DW1297Z	High Dose Rate (HDR) Brachytherapy of Chest using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW1298Z	High Dose Rate (HDR) Brachytherapy of Chest using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW1299Z	High Dose Rate (HDR) Brachytherapy of Chest using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW129BZ	High Dose Rate (HDR) Brachytherapy of Chest using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW129CZ	High Dose Rate (HDR) Brachytherapy of Chest using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW129YZ	High Dose Rate (HDR) Brachytherapy of Chest using Other Isotope	Procedure	ICD-10-PCS
DW12B7Z	Low Dose Rate (LDR) Brachytherapy of Chest using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW12B8Z	Low Dose Rate (LDR) Brachytherapy of Chest using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW12B9Z	Low Dose Rate (LDR) Brachytherapy of Chest using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW12BBZ	Low Dose Rate (LDR) Brachytherapy of Chest using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW12BCZ	Low Dose Rate (LDR) Brachytherapy of Chest using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW12BYZ	Low Dose Rate (LDR) Brachytherapy of Chest using Other Isotope	Procedure	ICD-10-PCS
DW1397Z	High Dose Rate (HDR) Brachytherapy of Abdomen using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW1398Z	High Dose Rate (HDR) Brachytherapy of Abdomen using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW1399Z	High Dose Rate (HDR) Brachytherapy of Abdomen using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW139BZ	High Dose Rate (HDR) Brachytherapy of Abdomen using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW139CZ	High Dose Rate (HDR) Brachytherapy of Abdomen using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW139YZ	High Dose Rate (HDR) Brachytherapy of Abdomen using Other Isotope	Procedure	ICD-10-PCS
DW13B7Z	Low Dose Rate (LDR) Brachytherapy of Abdomen using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW13B8Z	Low Dose Rate (LDR) Brachytherapy of Abdomen using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW13B9Z	Low Dose Rate (LDR) Brachytherapy of Abdomen using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW13BBZ	Low Dose Rate (LDR) Brachytherapy of Abdomen using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW13BCZ	Low Dose Rate (LDR) Brachytherapy of Abdomen using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW13BYZ	Low Dose Rate (LDR) Brachytherapy of Abdomen using Other Isotope	Procedure	ICD-10-PCS
DW1697Z	High Dose Rate (HDR) Brachytherapy of Pelvic Region using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW1698Z	High Dose Rate (HDR) Brachytherapy of Pelvic Region using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW1699Z	High Dose Rate (HDR) Brachytherapy of Pelvic Region using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW169BZ	High Dose Rate (HDR) Brachytherapy of Pelvic Region using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW169CZ	High Dose Rate (HDR) Brachytherapy of Pelvic Region using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW169YZ	High Dose Rate (HDR) Brachytherapy of Pelvic Region using Other Isotope	Procedure	ICD-10-PCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
DW16B7Z	Low Dose Rate (LDR) Brachytherapy of Pelvic Region using Cesium 137 (Cs-137)	Procedure	ICD-10-PCS
DW16B8Z	Low Dose Rate (LDR) Brachytherapy of Pelvic Region using Iridium 192 (Ir-192)	Procedure	ICD-10-PCS
DW16B9Z	Low Dose Rate (LDR) Brachytherapy of Pelvic Region using Iodine 125 (I-125)	Procedure	ICD-10-PCS
DW16BBZ	Low Dose Rate (LDR) Brachytherapy of Pelvic Region using Palladium 103 (Pd-103)	Procedure	ICD-10-PCS
DW16BCZ	Low Dose Rate (LDR) Brachytherapy of Pelvic Region using Californium 252 (Cf-252)	Procedure	ICD-10-PCS
DW16BYZ	Low Dose Rate (LDR) Brachytherapy of Pelvic Region using Other Isotope	Procedure	ICD-10-PCS
DWY17ZZ	Contact Radiation of Head and Neck	Procedure	ICD-10-PCS
DWY1FZZ	Plaque Radiation of Head and Neck	Procedure	ICD-10-PCS
DWY27ZZ	Contact Radiation of Chest	Procedure	ICD-10-PCS
DWY2FZZ	Plaque Radiation of Chest	Procedure	ICD-10-PCS
DWY37ZZ	Contact Radiation of Abdomen	Procedure	ICD-10-PCS
DWY3FZZ	Plaque Radiation of Abdomen	Procedure	ICD-10-PCS
DWY47ZZ	Contact Radiation of Hemibody	Procedure	ICD-10-PCS
DWY4FZZ	Plaque Radiation of Hemibody	Procedure	ICD-10-PCS
DWY57ZZ	Contact Radiation of Whole Body	Procedure	ICD-10-PCS
DWY5FZZ	Plaque Radiation of Whole Body	Procedure	ICD-10-PCS
DWY67ZZ	Contact Radiation of Pelvic Region	Procedure	ICD-10-PCS
DWY6FZZ	Plaque Radiation of Pelvic Region	Procedure	ICD-10-PCS
G0458	Low dose rate (ldr) prostate brachytherapy services, composite rate	Procedure	HCPCS
G0498	Chemotherapy administration, intravenous infusion technique; initiation of infusion in the office/clinic setting using office/clinic pump/supplies, with continuation of the infusion in the community setting (e.g., home, domiciliary, rest home or assisted living) using a portable pump provided by the office/clinic, includes follow up office/clinic visit at the conclusion of the infusion	Procedure	HCPCS
G3001	Administration and supply of tositumomab, 450 mg	Procedure	HCPCS
G6002	Stereoscopic x-ray guidance for localization of target volume for the delivery of radiation therapy	Procedure	HCPCS
G6003	Radiation treatment delivery, single treatment area,single port or parallel opposed ports, simple blocks or no blocks: up to 5 mev	Procedure	HCPCS
G6004	Radiation treatment delivery, single treatment area,single port or parallel opposed ports, simple blocks or no blocks: 6-10 mev	Procedure	HCPCS
G6005	Radiation treatment delivery, single treatment area,single port or parallel opposed ports, simple blocks or no blocks: 11-19 mev	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
G6006	Radiation treatment delivery, single treatment area,single port or parallel opposed ports, simple blocks or no blocks: 20 mev or greater	Procedure	HCPCS
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 mev	Procedure	HCPCS
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 mev	Procedure	HCPCS
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 mev	Procedure	HCPCS
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 mev or greater	Procedure	HCPCS
G6011	Radiation treatment delivery,3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 mev	Procedure	HCPCS
G6012	Radiation treatment delivery,3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 mev	Procedure	HCPCS
G6013	Radiation treatment delivery,3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 mev	Procedure	HCPCS
G6014	Radiation treatment delivery,3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 mev or greater	Procedure	HCPCS
G6015	Intensity modulated treatment delivery, single or multiple fields/arcs,via narrow spatially and temporally modulated beams, binary, dynamic mlc, per treatment session	Procedure	HCPCS
G6017	Intra-fraction localization and tracking of target or patient motion during delivery of radiation therapy (eg,3d positional tracking, gating, 3d surface tracking), each fraction of treatment	Procedure	HCPCS
G9835	Trastuzumab administered within 12 months of diagnosis	Procedure	HCPCS
G9837	Trastuzumab not administered within 12 months of diagnosis	Procedure	HCPCS
J0129	Injection, abatacept, 10 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self-administered)	Procedure	HCPCS
J0135	Injection, adalimumab, 20 mg	Procedure	HCPCS
J0202	Injection, alemtuzumab, 1 mg	Procedure	HCPCS
J0207	Injection, amifostine, 500 mg	Procedure	HCPCS
J0215	Injection, alefacept, 0.5 mg	Procedure	HCPCS
J0480	Injection, basiliximab, 20 mg	Procedure	HCPCS
J0485	Injection, belatacept, 1 mg	Procedure	HCPCS
J0490	belimumab	Procedure	HCPCS
J0593	Inj., lanadelumab-flyo, 1 mg	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J0594	Injection, busulfan, 1 mg	Procedure	HCPCS
J0638	canakinumab	Procedure	HCPCS
J0717	Injection, certolizumab pegol, 1 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self	Procedure	HCPCS
J0718	Injection, certolizumab pegol, 1 mg	Procedure	HCPCS
J0894	Injection, decitabine, 1 mg	Procedure	HCPCS
J0897	Denosumab	Procedure	HCPCS
J1300	Injection, eculizumab, 10 mg	Procedure	HCPCS
J1303	ravulizumab	Procedure	HCPCS
J1438	Injection, etanercept, 25 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self-administered)	Procedure	HCPCS
J1595	Injection, glatiramer acetate, 20 mg	Procedure	HCPCS
J1600	Injection, gold sodium thiomalate, up to 50 mg	Procedure	HCPCS
J1602	Injection, golimumab, 1 mg, for intravenous use	Procedure	HCPCS
J1628	guselkumab	Procedure	HCPCS
J1745	Injection, infliximab, excludes biosimilar, 10 mg	Procedure	HCPCS
J1825	Injection, interferon beta-1a, 33 mcg	Procedure	HCPCS
J1826	Injection, interferon beta-1a, 30 mcg	Procedure	HCPCS
J1830	Injection interferon beta-1b, 0.25 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self-	Procedure	HCPCS
J2323	Natalizumab	Procedure	HCPCS
J2350	ocrelizumab	Procedure	HCPCS
J2504	Injection, pegademase bovine, 25 IU	Procedure	HCPCS
J2793	rilonacept	Procedure	HCPCS
J2860	siltuximab	Procedure	HCPCS
J2910	Aurothioglucose	Procedure	HCPCS
J3031	fremanezumab	Procedure	HCPCS
J3111	Romosozumab	Procedure	HCPCS
J3245	tildrakizumab	Procedure	HCPCS
J3262	Injection, tocilizumab, 1 mg	Procedure	HCPCS
J3357	Ustekinumab, for subcutaneous injection, 1 mg	Procedure	HCPCS
J3358	Ustekinumab, for intravenous injection, 1 mg	Procedure	HCPCS
J3380	vedolizumab	Procedure	HCPCS
J7500	Azathioprine, oral, 50 mg	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J7501	Azathioprine, parenteral, 100 mg	Procedure	HCPCS
J7502	Cyclosporine, oral, 100 mg	Procedure	HCPCS
J7503	Tacrolimus, extended release, oral, 0.25 mg	Procedure	HCPCS
J7505	Muromonab-CD3, parenteral, 5 mg	Procedure	HCPCS
J7507	Tacrolimus, immediate release, oral, 1 mg	Procedure	HCPCS
J7508	Tacrolimus, extended release, (Astagraf XL), oral, 0.1 mg	Procedure	HCPCS
J7513	Daclizumab, parenteral, 25 mg	Procedure	HCPCS
J7515	Cyclosporine, oral, 25 mg	Procedure	HCPCS
J7516	Cyclosporine, parenteral, 250 mg	Procedure	HCPCS
J7517	Mycophenolate mofetil, oral, 250 mg	Procedure	HCPCS
J7520	Sirolimus, oral, 1 mg	Procedure	HCPCS
J7525	Tacrolimus, parenteral, 5 mg	Procedure	HCPCS
J7527	Everolimus, oral, 0.25 mg	Procedure	HCPCS
J7599	Immunosuppressive drug, not otherwise classified	Procedure	HCPCS
J8510	Busulfan, oral, 2 mg	Procedure	HCPCS
J8520	Capecitabine, oral, 150 mg	Procedure	HCPCS
J8521	Capecitabine, oral, 500 mg	Procedure	HCPCS
J8530	Cyclophosphamide, oral, 25 mg	Procedure	HCPCS
J8560	Etoposide, oral, 50 mg	Procedure	HCPCS
J8561	Everolimus, oral, 0.25 mg	Procedure	HCPCS
J8562	Fludarabine phosphate, oral, 10 mg	Procedure	HCPCS
J8565	Gefitinib, oral, 250 mg	Procedure	HCPCS
J8600	Melphalan, oral, 2 mg	Procedure	HCPCS
J8610	Methotrexate, oral, 2.5 mg	Procedure	HCPCS
J8700	Temozolomide, oral, 5 mg	Procedure	HCPCS
J8705	Topotecan, oral, 0.25 mg	Procedure	HCPCS
J8999	Prescription drug, oral, chemotherapeutic, NOS	Procedure	HCPCS
J9000	Injection, doxorubicin HCl, 10 mg	Procedure	HCPCS
J9001	Injection, doxorubicin HCl, all lipid formulations, 10 mg	Procedure	HCPCS
J9002	Injection, doxorubicin hydrochloride, liposomal, Doxil, 10 mg	Procedure	HCPCS
J9010	Injection, alemtuzumab, 10 mg	Procedure	HCPCS
J9015	Injection, aldesleukin, per single use vial	Procedure	HCPCS
J9017	Injection, arsenic trioxide, 1 mg	Procedure	HCPCS
J9019	Injection, asparaginase (Erwinaze), 1,000 IU	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J9020	Injection, asparaginase, not otherwise specified, 10,000 units	Procedure	HCPCS
J9025	Injection, azacitidine, 1 mg	Procedure	HCPCS
J9027	Injection, clofarabine, 1 mg	Procedure	HCPCS
J9033	Injection, bendamustine HCl (Treanda), 1 mg	Procedure	HCPCS
J9034	Injection, bendamustine HCl (Bendeka), 1 mg	Procedure	HCPCS
J9035	Injection, bevacizumab, 10 mg	Procedure	HCPCS
J9036	Injection, bendamustine hydrochloride, (Belrapzo), 1 mg	Procedure	HCPCS
J9040	Injection, bleomycin sulfate, 15 units	Procedure	HCPCS
J9041	Injection, bortezomib, 0.1 mg	Procedure	HCPCS
J9042	Injection, brentuximab vedotin, 1 mg	Procedure	HCPCS
J9043	Injection, cabazitaxel, 1 mg	Procedure	HCPCS
J9045	Injection, carboplatin, 50 mg	Procedure	HCPCS
J9047	Injection, carfilzomib, 1 mg	Procedure	HCPCS
J9050	Injection, carmustine, 100 mg	Procedure	HCPCS
J9055	Injection, cetuximab, 10 mg	Procedure	HCPCS
J9057	Injection, copanlisib, 1 mg	Procedure	HCPCS
J9060	Injection, cisplatin, powder or solution, 10 mg	Procedure	HCPCS
J9062	Cisplatin, 50 mg	Procedure	HCPCS
J9065	Injection, cladribine, per 1 mg	Procedure	HCPCS
J9070	Cyclophosphamide, 100 mg	Procedure	HCPCS
J9080	Cyclophosphamide, 200 mg	Procedure	HCPCS
J9090	Cyclophosphamide, 500 mg	Procedure	HCPCS
J9091	Cyclophosphamide, 1 g	Procedure	HCPCS
J9092	Cyclophosphamide, 2 g	Procedure	HCPCS
J9093	Cyclophosphamide, lyophilized, 100 mg	Procedure	HCPCS
J9094	Cyclophosphamide, lyophilized, 200 mg	Procedure	HCPCS
J9095	Cyclophosphamide, lyophilized, 500 mg	Procedure	HCPCS
J9096	Cyclophosphamide, lyophilized, 1 g	Procedure	HCPCS
J9097	Cyclophosphamide, lyophilized, 2 g	Procedure	HCPCS
J9098	Injection, cytarabine liposome, 10 mg	Procedure	HCPCS
J9100	Injection, cytarabine, 100 mg	Procedure	HCPCS
J9110	Injection, cytarabine, 500 mg	Procedure	HCPCS
J9118	Inj. Calaspargase pegol-mknl	Procedure	HCPCS
J9119	cemiplimab	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J9120	Injection, dactinomycin, 0.5 mg	Procedure	HCPCS
J9130	Dacarbazine, 100 mg	Procedure	HCPCS
J9140	Dacarbazine, 200 mg	Procedure	HCPCS
J9150	Injection, daunorubicin, 10 mg	Procedure	HCPCS
J9151	Injection, daunorubicin citrate, liposomal formulation, 10 mg	Procedure	HCPCS
J9153	Injection, liposomal, 1 mg daunorubicin and 2.27 mg cytarabine	Procedure	HCPCS
J9160	Injection, denileukin diftitox, 300 mcg	Procedure	HCPCS
J9170	Injection, docetaxel, 20 mg	Procedure	HCPCS
J9171	Injection, docetaxel, 1 mg	Procedure	HCPCS
J9173	Injection, durvalumab, 10 mg	Procedure	HCPCS
J9178	Injection, epirubicin HCl, 2 mg	Procedure	HCPCS
J9179	Injection, eribulin mesylate, 0.1 mg	Procedure	HCPCS
J9180	Epirubicin HCl, 50 mg	Procedure	HCPCS
J9181	Injection, etoposide, 10 mg	Procedure	HCPCS
J9182	Etoposide, 100 mg	Procedure	HCPCS
J9185	Injection, fludarabine phosphate, 50 mg	Procedure	HCPCS
J9190	Injection, fluorouracil, 500 mg	Procedure	HCPCS
J9200	Injection, floxuridine, 500 mg	Procedure	HCPCS
J9201	Injection, gemcitabine HCl, 200 mg	Procedure	HCPCS
J9203	Injection, gemtuzumab ozogamicin, 0.1 mg	Procedure	HCPCS
J9204	Mogamulizumab	Procedure	HCPCS
J9205	Injection, irinotecan liposome, 1 mg	Procedure	HCPCS
J9206	Injection, irinotecan, 20 mg	Procedure	HCPCS
J9207	Injection, ixabepilone, 1 mg	Procedure	HCPCS
J9208	Injection, ifosfamide, 1 g	Procedure	HCPCS
J9210	emapalumab	Procedure	HCPCS
J9211	Injection, idarubicin HCl, 5 mg	Procedure	HCPCS
J9212	Injection, interferon alfacon-1, recombinant, 1 mcg	Procedure	HCPCS
J9213	Injection, interferon, alfa-2a, recombinant, 3 million units	Procedure	HCPCS
J9214	Injection, interferon, alfa-2b, recombinant, 1 million units	Procedure	HCPCS
J9215	Injection, interferon, alfa-N3, (human leukocyte derived), 250,000 IU	Procedure	HCPCS
J9216	Injection, interferon, gamma 1-b, 3 million units	Procedure	HCPCS
J9228	Injection, ipilimumab, 1 mg	Procedure	HCPCS
J9229	Injection, inotuzumab ozogamicin, 0.1 mg	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J9230	Injection, mechlorethamine HCl, (nitrogen mustard), 10 mg	Procedure	HCPCS
J9245	Injection, melphalan HCl, 50 mg	Procedure	HCPCS
J9250	Methotrexate sodium, 5 mg	Procedure	HCPCS
J9260	Methotrexate sodium, 50 mg	Procedure	HCPCS
J9261	Injection, nelarabine, 50 mg	Procedure	HCPCS
J9262	Injection, omacetaxine mepesuccinate, 0.01 mg	Procedure	HCPCS
J9263	Injection, oxaliplatin, 0.5 mg	Procedure	HCPCS
J9264	Injection, paclitaxel protein-bound particles, 1 mg	Procedure	HCPCS
J9265	Injection, paclitaxel, 30 mg	Procedure	HCPCS
J9266	Injection, pegaspargase, per single dose vial	Procedure	HCPCS
J9267	Injection, paclitaxel, 1 mg	Procedure	HCPCS
J9268	Injection, pentostatin, 10 mg	Procedure	HCPCS
J9269	Injection, tagraxofusp-erzs, 10 micrograms	Procedure	HCPCS
J9270	Injection, plicamycin, 2.5 mg	Procedure	HCPCS
J9271	pembrolizumab	Procedure	HCPCS
J9280	Injection, mitomycin, 5 mg	Procedure	HCPCS
J9290	Mitomycin, 20 mg	Procedure	HCPCS
J9291	Mitomycin, 40 mg	Procedure	HCPCS
J9293	Injection, mitoxantrone HCl, per 5 mg	Procedure	HCPCS
J9300	Injection, gemtuzumab ozogamicin, 5 mg	Procedure	HCPCS
J9301	Injection, obinutuzumab, 10 mg	Procedure	HCPCS
J9302	Injection, ofatumumab, 10 mg	Procedure	HCPCS
J9303	Injection, panitumumab, 10 mg	Procedure	HCPCS
J9305	Injection, pemetrexed, 10 mg	Procedure	HCPCS
J9306	Injection, pertuzumab, 1 mg	Procedure	HCPCS
J9307	Injection, pralatrexate, 1 mg	Procedure	HCPCS
J9310	Injection, rituximab, 100 mg	Procedure	HCPCS
J9311	Injection, rituximab 10 mg and hyaluronidase	Procedure	HCPCS
J9312	Injection, rituximab, 10 mg	Procedure	HCPCS
J9315	Injection, romidepsin, 1 mg	Procedure	HCPCS
J9320	Injection, streptozocin, 1 g	Procedure	HCPCS
J9328	Injection, temozolomide, 1 mg	Procedure	HCPCS
J9330	Injection, temsirolimus, 1 mg	Procedure	HCPCS
J9340	Injection, thiotepa, 15 mg	Procedure	HCPCS

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Code	Description	Code Category	Code Type
J9350	Injection, topotecan, 4 mg	Procedure	HCPCS
J9351	Injection, topotecan, 0.1 mg	Procedure	HCPCS
J9355	Injection, trastuzumab, 10 mg	Procedure	HCPCS
J9356	Injection, trastuzumab, 10 mg and Hyaluronidase-oysk	Procedure	HCPCS
J9360	Injection, vinblastine sulfate, 1 mg	Procedure	HCPCS
J9370	Vincristine sulfate, 1 mg	Procedure	HCPCS
J9371	Injection, vincristine sulfate liposome, 1 mg	Procedure	HCPCS
J9375	Vincristine sulfate, 2 mg	Procedure	HCPCS
J9380	Vincristine sulfate, 5 mg	Procedure	HCPCS
J9390	Injection, vinorelbine tartrate, 10 mg	Procedure	HCPCS
J9999	Not otherwise classified, antineoplastic drugs	Procedure	HCPCS
K0119	Azathioprine, oral, tab, 50 mg	Procedure	HCPCS
K0120	Azathioprine, parenteral, 100 mg	Procedure	HCPCS
K0122	Cyclosporine, parenteral, 250 mg	Procedure	HCPCS
K0412	Mycophenolate mofetil, oral, 250 mg (CellCept)	Procedure	HCPCS
Q2010	Injection, glatiramer acetate, per dose	Procedure	HCPCS
Q2012	Injection, pegademase bovine, 25 IU	Procedure	HCPCS
Q2019	Injection, basiliximab, 20 mg	Procedure	HCPCS
Q2025	Fludarabine phosphate, oral, 1 mg	Procedure	HCPCS
Q2043	Sipuleucel-T, minimum of 50 million autologous cd54+ cells activated with PAP-GM-CSF, including leukapheresis and all other preparatory procedures, per infusion	Procedure	HCPCS
Q2044	Injection, belimumab, 10 mg	Procedure	HCPCS
Q2048	Injection, doxorubicin hydrochloride, liposomal, DOXIL, 10 mg	Procedure	HCPCS
Q2049	Injection, doxorubicin hydrochloride, liposomal, imported Lipodox, 10 mg	Procedure	HCPCS
Q2050	Injection, doxorubicin hydrochloride, liposomal, not otherwise specified, 10 mg	Procedure	HCPCS
Q3001	Radioelements for brachytherapy, any type, each	Procedure	HCPCS
Q3025	Injection, interferon beta-1a, 11 mcg for intramuscular use	Procedure	HCPCS
Q3026	Injection, interferon beta-1a, 11 mcg for subcutaneous use	Procedure	HCPCS
Q3027	Injection, interferon beta-1a, 1 mcg for intramuscular use	Procedure	HCPCS
Q3028	Injection, interferon beta-1a, 1 mcg for subcutaneous use	Procedure	HCPCS
Q4079	Injection, natalizumab, 1 mg	Procedure	HCPCS
Q5102	Injection, infliximab, biosimilar, 10 mg	Procedure	HCPCS
Q5103	Injection, infliximab-dyyb, biosimilar, (inflectra), 10 mg	Procedure	HCPCS
Q5104	Injection, infliximab-abda, biosimilar, (renflexis), 10 mg	Procedure	HCPCS

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Code	Description	Code Category	Code Type
Q5107	Injection, bevacizumab-awwb, biosimilar, (mvasi), 10 mg	Procedure	HCPCS
Q5109	Injection, infliximab-qbtx, biosimilar, (ixifi), 10 mg	Procedure	HCPCS
Q5112	Injection, trastuzumab-dttb, biosimilar, (ontruzant), 10 mg	Procedure	HCPCS
Q5113	Injection, trastuzumab-pkrb, biosimilar, (herzuma), 10 mg	Procedure	HCPCS
Q5114	Injection, trastuzumab-dkst, biosimilar, (ogivri), 10 mg	Procedure	HCPCS
Q5115	Injection, rituximab-abbs, biosimilar, (truxima), 10 mg	Procedure	HCPCS
Q5116	Injection, trastuzumab-qyyp, biosimilar, (trazimera), 10 mg	Procedure	HCPCS
Q5117	Injection, trastuzumab-anns, biosimilar, (kanjinti), 10 mg	Procedure	HCPCS
Q5118	Injection, bevacizumab-bvzr, biosimilar, (zirabev), 10 mg	Procedure	HCPCS
Q5119	Injection, rituximab-pvvr, biosimilar, (ruxience), 10 mg	Procedure	HCPCS
Q5121	Injection, infliximab-axxq, biosimilar, (AVSOLA), 10 mg	Procedure	HCPCS
Q9979	Injection, Alemtuzumab, 1 mg	Procedure	HCPCS
Q9989	Ustekinumab, for intravenous injection, 1 mg	Procedure	HCPCS
S0087	Injection, alemtuzumab, 30 mg	Procedure	HCPCS
S0088	Imatinib, 100 mg	Procedure	HCPCS
S0108	Mercaptopurine, oral, 50 mg	Procedure	HCPCS
S0115	Bortezomib, 3.5 mg	Procedure	HCPCS
S0116	Bevacizumab, 100 mg	Procedure	HCPCS
S0145	Injection, pegylated interferon alfa-2a, 180 mcg per ml	Procedure	HCPCS
S0146	Injection, pegylated interferon alfa-2b, 10 mcg per 0.5 ml	Procedure	HCPCS
S0148	Injection, pegylated interferon alfa-2B, 10 mcg	Procedure	HCPCS
S0162	Injection, efalizumab, 125 mg	Procedure	HCPCS
S0168	Injection, azacitidine, 100 mg	Procedure	HCPCS
S0172	Chlorambucil, oral, 2 mg	Procedure	HCPCS
S0176	Hydroxyurea, oral, 500 mg	Procedure	HCPCS
S0178	Lomustine, oral, 10 mg	Procedure	HCPCS
S0182	Procarbazine HCl, oral, 50 mg	Procedure	HCPCS
S0193	Injection alefacept, 7.5 mg (includes dose packaging)	Procedure	HCPCS
T451X1A	Poisoning by antineoplastic and immunosuppressive drugs, accidental (unintentional), initial encounter	Diagnosis	ICD-10-CM
T451X1D	Poisoning by antineoplastic and immunosuppressive drugs, accidental (unintentional), subsequent encounter	Diagnosis	ICD-10-CM
T451X1S	Poisoning by antineoplastic and immunosuppressive drugs, accidental (unintentional),	Diagnosis	ICD-10-CM

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Code	Description	Code Category	Code Type
T451X2A	Poisoning by antineoplastic and immunosuppressive drugs, intentional self-harm, initial encounter	Diagnosis	ICD-10-CM
T451X2D	Poisoning by antineoplastic and immunosuppressive drugs, intentional self-harm, subsequent encounter	Diagnosis	ICD-10-CM
T451X2S	Poisoning by antineoplastic and immunosuppressive drugs, intentional self-harm,	Diagnosis	ICD-10-CM
T451X3A	Poisoning by antineoplastic and immunosuppressive drugs, assault, initial encounter	Diagnosis	ICD-10-CM
T451X3D	Poisoning by antineoplastic and immunosuppressive drugs, assault, subsequent	Diagnosis	ICD-10-CM
T451X3S	Poisoning by antineoplastic and immunosuppressive drugs, assault, sequela	Diagnosis	ICD-10-CM
T451X4A	Poisoning by antineoplastic and immunosuppressive drugs, undetermined, initial	Diagnosis	ICD-10-CM
T451X4D	Poisoning by antineoplastic and immunosuppressive drugs, undetermined, subsequent encounter	Diagnosis	ICD-10-CM
T451X4S	Poisoning by antineoplastic and immunosuppressive drugs, undetermined, sequela	Diagnosis	ICD-10-CM
T451X5A	Adverse effect of antineoplastic and immunosuppressive drugs, initial encounter	Diagnosis	ICD-10-CM
T451X5D	Adverse effect of antineoplastic and immunosuppressive drugs, subsequent encounter	Diagnosis	ICD-10-CM
T451X5S	Adverse effect of antineoplastic and immunosuppressive drugs, sequela	Diagnosis	ICD-10-CM
T80810	Extravasation of vesicant antineoplastic chemotherapy	Diagnosis	ICD-10-CM
T80810A	Extravasation of vesicant antineoplastic chemotherapy, initial encounter	Diagnosis	ICD-10-CM
T80810D	Extravasation of vesicant antineoplastic chemotherapy, subsequent encounter	Diagnosis	ICD-10-CM
XW03351	Introduction of Blinatumomab Antineoplastic Immunotherapy into Peripheral Vein, Percutaneous Approach, New Technology Group 1	Procedure	ICD-10-PCS
XW033B3	Introduction of Cytarabine and Daunorubicin Liposome Antineoplastic into Peripheral Vein, Percutaneous Approach, New Technology Group 3	Procedure	ICD-10-PCS
XW033C3	Introduction of Engineered Autologous Chimeric Antigen Receptor T-cell Immunotherapy into Peripheral Vein, Percutaneous Approach, New Technology Group 3	Procedure	ICD-10-PCS
XW033Q5	Introduction of Tagraxofusp-erzs Antineoplastic into Peripheral Vein, Percutaneous Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW033S5	Introduction of Iobenguane I-131 Antineoplastic into Peripheral Vein, Percutaneous Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW04351	Introduction of Blinatumomab Antineoplastic Immunotherapy into Central Vein, Percutaneous Approach, New Technology Group 1	Procedure	ICD-10-PCS
XW043B3	Introduction of Cytarabine and Daunorubicin Liposome Antineoplastic into Central Vein, Percutaneous Approach, New Technology Group 3	Procedure	ICD-10-PCS
XW043C3	Introduction of Engineered Autologous Chimeric Antigen Receptor T-cell Immunotherapy into Central Vein, Percutaneous Approach, New Technology Group 3	Procedure	ICD-10-PCS

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Code	Description	Code Category	Code Type
XW043Q5	Introduction of Tagraxofusp-erzs Antineoplastic into Central Vein, Percutaneous Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW043S5	Introduction of Iobenguane I-131 Antineoplastic into Central Vein, Percutaneous Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW0DXL5	Introduction of Erdafitinib Antineoplastic into Mouth and Pharynx, External Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW0DXR5	Introduction of Venetoclax Antineoplastic into Mouth and Pharynx, External Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW0DXT5	Introduction of Ruxolitinib into Mouth and Pharynx, External Approach, New Technology Group 5	Procedure	ICD-10-PCS
XW0DXV5	Introduction of Gilteritinib Antineoplastic into Mouth and Pharynx, External Approach, New Technology Group 5	Procedure	ICD-10-PCS
Z510	Encounter for antineoplastic radiation therapy	Diagnosis	ICD-10-CM
Z511	Encounter for antineoplastic chemotherapy and immunotherapy	Diagnosis	ICD-10-CM
Z5111	Encounter for antineoplastic chemotherapy	Diagnosis	ICD-10-CM
Z5112	Encounter for antineoplastic immunotherapy	Diagnosis	ICD-10-CM
Inhaled Corticosteroids			
J7401	Mometasone furoate sinus implant, 10 micrograms	Procedure	HCPCS
J7622	Beclomethasone, inhalation solution, compounded product, administered through dme, unit dose form, per milligram	Procedure	HCPCS
J7624	BETAMETHASONE, INHALATION SOLUTION ADMINISTERED THROUGH DME, UNIT DOSE FORM, PER MILLIGRAM	Procedure	HCPCS
J7626	Budesonide, inhalation solution, fda-approved final product, non-compounded, administered through dme, unit dose form, up to 0.5 mg	Procedure	HCPCS
J7627	Budesonide, inhalation solution, compounded product, administered through dme, unit dose form, up to 0.5 mg	Procedure	HCPCS
J7633	Budesonide, inhalation solution, fda-approved final product, non-compounded, administered through dme, concentrated form, per 0.25 milligram	Procedure	HCPCS
J7634	Budesonide, inhalation solution, compounded product, administered through dme, concentrated form, per 0.25 milligram	Procedure	HCPCS
J7637	Dexamethasone, inhalation solution, compounded product, administered through dme, concentrated form, per milligram	Procedure	HCPCS
J7638	Dexamethasone, inhalation solution, compounded product, administered through dme, unit dose form, per milligram	Procedure	HCPCS

Appendix BA. List of Current Procedural Terminology, Fourth Edition (CPT-4), Current Procedural Terminology, Second Edition (CPT-2), Current Procedural Terminology, Third Edition (CPT-3), Healthcare Common Procedure Coding System, Level II (HCPCS), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedural Coding System (ICD-10-PCS), and Vaccine Administered (CVX) Codes Used to Define Covariates in this Request

Code	Description	Code Category	Code Type
J7641	Flunisolide, inhalation solution, compounded product, administered through dme, unit dose, per milligram	Procedure	HCPCS
J7683	Triamcinolone, inhalation solution, compounded product, administered through dme, concentrated form, per milligram	Procedure	HCPCS
J7684	Triamcinolone, inhalation solution, compounded product, administered through dme, unit dose form, per milligram	Procedure	HCPCS

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
Smoking or Nicotine Use	
bupropion HCl	Zyban
nicotine	Nicoderm CQ
nicotine	Nicotrol
nicotine	Nicotrol NS
nicotine	nicotine
nicotine polacrilex	Nicorelief
nicotine polacrilex	Nicorette
nicotine polacrilex	Quit 2
nicotine polacrilex	Quit 4
nicotine polacrilex	Stop Smoking Aid
nicotine polacrilex	nicotine (polacrilex)
varenicline tartrate	Chantix
varenicline tartrate	Chantix Continuing Month Box
varenicline tartrate	Chantix Starting Month Box
varenicline tartrate	varenicline
COVID-19 Vaccine	
COVID vac 2023-2024 (5-11 years) XBB.1.5 (raxtozinameran)/PF	Pfizer COVID 2023-24(5y-11y)PF
COVID vac 2023-24 (12 yr and up) XBB.1.5 (raxtozinameran)/PF	Comirnaty 2023-24 (12y up)(PF)
COVID vac 2023-24 (6 mos-4 yrs) XBB.1.5 (raxtozinameran)/PF	Pfizer COVID 2023-24(6mo-4y)PF
COVID vacc 2023-24 (12 yrs and up) XBB.1.5 (andusomeran)/PF	Spikevax 2023-2024(12y up)(PF)
COVID vacc 2023-24 XBB.1.5, recomb/adjuvant-Matrix/PF	Novavax COVID 2023-24(PF)(EUA)
COVID vaccine 2023-24 (6 mo-11 yrs) XBB.1.5 (andusomeran)/PF	Moderna COVID 23-24(6m-11y)PF
COVID-19 vac mRNA,tris(Pfizer)/PF	Comirnaty tris Vaccine(PF)
COVID-19 vac mRNA,tris(Pfizer)/PF	Pfizer COVID-19 tris Vaccn(PF)
COVID-19 vac, Ad26.COV2.S (Janssen)/PF	Janssen COVID-19 Vaccine (EUA)
COVID-19 vaccine mRNA,Original,Omicron BA.4/5(Moderna)/PF	Moderna COVID Bival(6m up)(PF)
COVID-19 vaccine mRNA,Original,Omicron BA.4/5(Moderna)/PF	Moderna COVID Bival(6m-5y)-PF
COVID-19 vaccine mRNA,Original,Omicron BA.4/5(Pfizer)/PF	Pfizer COVID Bival(12y up)(PF)
COVID-19 vaccine mRNA,Original,Omicron BA.4/5(Pfizer)/PF	Pfizer COVID Bival(5-11yr)(PF)
COVID-19 vaccine mRNA,Original,Omicron BA.4/5(Pfizer)/PF	Pfizer COVID Bival(6mo-4y)(PF)
COVID-19 vaccine, AZD-1222 (AstraZeneca)/PF	AstraZeneca COVID19 Vac(Unapp)
COVID-19 vaccine, bivalent, mRNA/preservative free	Moderna COVID Biv Boostr(Unap)
COVID-19 vaccine, mRNA, BNT162b2, LNP-S (Pfizer)/PF	Comirnaty (PF)
COVID-19 vaccine, mRNA, BNT162b2, LNP-S (Pfizer)/PF	Pfizer COVID-19 Vaccine (EUA)
COVID-19 vaccine, mRNA, LNP-S, pediatric (Moderna)/PF	Moderna COVID(6-11y) Vac(DNU)
COVID-19 vaccine, mRNA, LNP-S, pediatric (Moderna)/PF	Moderna COVID(6m-5y) Vacc(EUA)
COVID-19 vaccine, mRNA, cx-024414, LNP-S (Moderna)/PF	Moderna COVID-19 (6-11yr)(EUA)
COVID-19 vaccine, mRNA, cx-024414, LNP-S (Moderna)/PF	Moderna COVID-19 Vaccine (EUA)
COVID-19 vaccine, mRNA, cx-024414, LNP-S (Moderna)/PF	Spikevax (PF)
COVID-19 vaccine, recombinant (Novavax)/adjuvant-Matrix/PF	Novavax COVID-19 Vacc,Adj(EUA)
COVID-19 vaccine, recombinant antigen (Sanofi)/PF	Sanofi COVID Booster-Ag Compnt
ACEI/ARB	
aliskiren hemifumarate	Tekturna
aliskiren hemifumarate	aliskiren
aliskiren hemifumarate/hydrochlorothiazide	Tekturna HCT
amlodipine besylate/benazepril HCl	Lotrel
amlodipine besylate/benazepril HCl	amlodipine-benazepril

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
amlodipine besylate/olmesartan medoxomil	Azor
amlodipine besylate/olmesartan medoxomil	amlodipine-olmesartan
amlodipine besylate/valsartan	Exforge
amlodipine besylate/valsartan	amlodipine-valsartan
amlodipine besylate/valsartan/hydrochlorothiazide	Exforge HCT
amlodipine besylate/valsartan/hydrochlorothiazide	amlodipine-valsartan-hcthiazid
azilsartan medoxomil	Edarbi
azilsartan medoxomil/chlorthalidone	Edarbyclor
benazepril HCl	Lotensin
benazepril HCl	benazepril
benazepril HCl/hydrochlorothiazide	Lotensin HCT
benazepril HCl/hydrochlorothiazide	benazepril-hydrochlorothiazide
candesartan cilexetil	Atacand
candesartan cilexetil	candesartan
candesartan cilexetil/hydrochlorothiazide	Atacand HCT
candesartan cilexetil/hydrochlorothiazide	candesartan-hydrochlorothiazid
captopril	captopril
captopril/hydrochlorothiazide	captopril-hydrochlorothiazide
enalapril maleate	Epaned
enalapril maleate	Vasotec
enalapril maleate	enalapril maleate
enalapril maleate/hydrochlorothiazide	Vaseretic
enalapril maleate/hydrochlorothiazide	enalapril-hydrochlorothiazide
enalaprilat dihydrate	enalaprilat
eprosartan mesylate	eprosartan
fosinopril sodium	fosinopril
fosinopril sodium/hydrochlorothiazide	fosinopril-hydrochlorothiazide
irbesartan	Avapro
irbesartan	irbesartan
irbesartan/hydrochlorothiazide	Avalide
irbesartan/hydrochlorothiazide	irbesartan-hydrochlorothiazide
lisinopril	Prinivil
lisinopril	Qbrelis
lisinopril	Zestril
lisinopril	lisinopril
lisinopril/hydrochlorothiazide	Zestoretic
lisinopril/hydrochlorothiazide	lisinopril-hydrochlorothiazide
losartan potassium	Cozaar
losartan potassium	losartan
losartan potassium/hydrochlorothiazide	Hyzaar
losartan potassium/hydrochlorothiazide	losartan-hydrochlorothiazide
moexipril HCl	moexipril
nebivolol HCl/valsartan	Byvalson
olmesartan medoxomil	Benicar
olmesartan medoxomil	olmesartan
olmesartan medoxomil/amlodipine besylate/hydrochlorothiazide	Tribenzor
olmesartan medoxomil/amlodipine besylate/hydrochlorothiazide	olmesartan-amlodipin-hcthiazid
olmesartan medoxomil/hydrochlorothiazide	Benicar HCT

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
olmesartan medoxomil/hydrochlorothiazide	olmesartan-hydrochlorothiazide
perindopril arginine/amlodipine besylate	Prestalia
perindopril erbumine	perindopril erbumine
quinapril HCl	Accupril
quinapril HCl	quinapril
quinapril HCl/hydrochlorothiazide	Accuretic
quinapril HCl/hydrochlorothiazide	quinapril-hydrochlorothiazide
ramipril	Altace
ramipril	ramipril
sacubitril/valsartan	Entresto
telmisartan	Micardis
telmisartan	telmisartan
telmisartan/amlodipine besylate	Twynsta
telmisartan/amlodipine besylate	telmisartan-amlodipine
telmisartan/hydrochlorothiazide	Micardis HCT
telmisartan/hydrochlorothiazide	telmisartan-hydrochlorothiazid
trandolapril	trandolapril
trandolapril/verapamil HCl	Tarka
trandolapril/verapamil HCl	trandolapril-verapamil
valsartan	Diovan
valsartan	valsartan
valsartan/hydrochlorothiazide	Diovan HCT
valsartan/hydrochlorothiazide	valsartan-hydrochlorothiazide
NSAID	
amlodipine besylate/celecoxib	Consensi
bupivacaine/ketorolac/ketamine	bupivacaine-ketorolac-ketamine
bupivacaine/meloxicam	Zynrelef
celecoxib	Celebrex
celecoxib	Elyxyb
celecoxib	celecoxib
chlorpheniramine maleate/phenylephrine HCl/ibuprofen	Advil Allergy-Congestion Rlf
chlorpheniramine maleate/phenylephrine HCl/ibuprofen	Advil Multi-Symptom Cold-Flu
chlorpheniramine maleate/pseudoephedrine HCl/ibuprofen	Advil Allergy Sinus
diclofenac epolamine	Flector
diclofenac epolamine	Licart
diclofenac epolamine	diclofenac epolamine
diclofenac potassium	Cambia
diclofenac potassium	Cataflam
diclofenac potassium	Lofena
diclofenac potassium	Zipsor
diclofenac potassium	diclofenac potassium
diclofenac sodium	Voltaren-XR
diclofenac sodium	diclofenac sodium
diclofenac sodium/misoprostol	Arthrotec 50
diclofenac sodium/misoprostol	Arthrotec 75
diclofenac sodium/misoprostol	diclofenac-misoprostol
diclofenac submicronized	Zorvolex
diclofenac submicronized	diclofenac submicronized

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
etodolac	Lodine
etodolac	etodolac
fenoprofen calcium	Fenortho
fenoprofen calcium	Nalfon
fenoprofen calcium	fenoprofen
flurbiprofen	flurbiprofen
hydrocodone/ibuprofen	Ibudone
hydrocodone/ibuprofen	hydrocodone-ibuprofen
ibuprofen	Addaprin
ibuprofen	Advil
ibuprofen	Advil Junior Strength
ibuprofen	Advil Liqui-Gel
ibuprofen	Advil Liqui-Gels Minis
ibuprofen	Advil Migraine
ibuprofen	Caldolor
ibuprofen	Children's Advil
ibuprofen	Children's Ibuprofen
ibuprofen	Children's Motrin
ibuprofen	Children's Motrin Jr Strength
ibuprofen	Children's Profen IB
ibuprofen	I-Prin
ibuprofen	IBU
ibuprofen	IBU-200
ibuprofen	Ibuprofen IB
ibuprofen	Ibuprofen Jr Strength
ibuprofen	Infant's Advil
ibuprofen	Infant's Ibuprofen
ibuprofen	Infant's Motrin
ibuprofen	Infants ProfenIB
ibuprofen	Motrin IB
ibuprofen	Provil
ibuprofen	Wal-Profen
ibuprofen	ibuprofen
ibuprofen lysine/PF	NeoProfen (ibuprofen lysn)(PF)
ibuprofen lysine/PF	ibuprofen lysine (PF)
ibuprofen sodium/acetaminophen	Combogesic IV
ibuprofen/acetaminophen	Advil Dual Action
ibuprofen/acetaminophen	Dual Action Pain Reliever
ibuprofen/acetaminophen	ibuprofen-acetaminophen
ibuprofen/diphenhydramine HCl	Advil PM Liqui-Gels
ibuprofen/diphenhydramine HCl	Ibuprofen PM
ibuprofen/diphenhydramine citrate	Advil PM
ibuprofen/diphenhydramine citrate	Ibuprofen PM
ibuprofen/diphenhydramine citrate	Motrin PM
ibuprofen/famotidine	Duexis
ibuprofen/famotidine	ibuprofen-famotidine
ibuprofen/glycerin	Ibupak
ibuprofen/oxycodone HCl	ibuprofen-oxycodone

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
ibuprofen/phenylephrine HCl	Advil Sinus Congestion-Pain
ibuprofen/phenylephrine HCl	Congestion Relief (ibuprof-PE)
ibuprofen/phenylephrine HCl	Sudafed PE Head Congestn-Pain
ibuprofen/pseudoephedrine HCl	Advil Cold and Sinus
ibuprofen/pseudoephedrine HCl	Cold and Sinus Pain Relief
ibuprofen/pseudoephedrine HCl	Cold-Sinus Relief
ibuprofen/pseudoephedrine HCl	Cold-Sinus Relief (ibuprofen)
ibuprofen/pseudoephedrine HCl	Ibuprofen Cold-Sinus(with PSE)
ibuprofen/pseudoephedrine HCl	Wal-Profen Cold-Sinus
ibuprofen/pseudoephedrine HCl	Wal-Profen D Cold and Sinus
indomethacin	Indocin
indomethacin	indomethacin
indomethacin sodium	indomethacin sodium
indomethacin, submicronized	Tivorbex
indomethacin, submicronized	indomethacin submicronized
ketoprofen	ketoprofen
ketorolac tromethamine	ReadySharp ketorolac
ketorolac tromethamine	ketorolac
meclofenamate sodium	meclofenamate
mefenamic acid	mefenamic acid
meloxicam	Anjeso
meloxicam	Mobic
meloxicam	Qmiiz ODT
meloxicam	meloxicam
meloxicam, submicronized	Vivlodex
meloxicam, submicronized	meloxicam submicronized
nabumetone	Relafen
nabumetone	Relafen DS
nabumetone	nabumetone
naproxen	EC-Naprosyn
naproxen	EC-Naproxen
naproxen	Naprosyn
naproxen	naproxen
naproxen sodium	Aleve
naproxen sodium	All Day Pain Relief
naproxen sodium	All Day Relief
naproxen sodium	Anaprox DS
naproxen sodium	Flanax (naproxen)
naproxen sodium	Mediproxen
naproxen sodium	Midol (naproxen)
naproxen sodium	Naprelan CR
naproxen sodium	Wal-Proxen
naproxen sodium	naproxen sodium
naproxen sodium/diphenhydramine HCl	Aleve PM
naproxen sodium/diphenhydramine HCl	Naproxen PM
naproxen sodium/pseudoephedrine HCl	Aleve Cold and Sinus
naproxen sodium/pseudoephedrine HCl	Aleve Sinus and Headache
naproxen sodium/pseudoephedrine HCl	Aleve-D Sinus and Cold

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
naproxen sodium/pseudoephedrine HCl	Aleve-D Sinus and Headache
naproxen sodium/pseudoephedrine HCl	All Day Cold and Sinus
naproxen sodium/pseudoephedrine HCl	All Day Pain Relief Sinus,Cold
naproxen sodium/pseudoephedrine HCl	Sinus and Cold-D
naproxen sodium/pseudoephedrine HCl	Sudafed Sinus 12Hr Pressr-Pain
naproxen/esomeprazole magnesium	Vimovo
naproxen/esomeprazole magnesium	naproxen-esomeprazole
oxaprozin	Coxanto
oxaprozin	Daypro
oxaprozin	oxaprozin
piroxicam	Feldene
piroxicam	piroxicam
ropivacaine HCl/clonidine HCl/ketorolac tromethamine	ropivacaine-clonidin-ketorolac
ropivacaine HCl/epinephrine/clonidine HCl/ketorolac trometh	ropivacaine-epi-clonid-ketorol
ropivacaine/ketorolac/ketamine	ropivacaine-ketorolac-ketamine
sulindac	sulindac
sumatriptan succinate/naproxen sodium	Treximet
sumatriptan succinate/naproxen sodium	sumatriptan-naproxen
tolmetin sodium	tolmetin
tramadol HCl/celecoxib	Seglentis
Aspirin	
aspirin	Adult Aspirin Regimen
aspirin	Adult Low Dose Aspirin
aspirin	Aspir-81
aspirin	Aspir-Low
aspirin	Aspir-Trin
aspirin	Aspirin Childrens
aspirin	Bayer Advanced
aspirin	Bayer Aspirin
aspirin	Bayer Chewable Aspirin
aspirin	Bayer Low Dose Aspirin
aspirin	Children's Aspirin
aspirin	Durlaza
aspirin	E.C. Prin
aspirin	Ecotrin
aspirin	Ecotrin Low Strength
aspirin	Enteric Coated Aspirin
aspirin	Extra Strength Bayer
aspirin	Lo-Dose Aspirin
aspirin	St Joseph Aspirin
aspirin	St. Joseph Aspirin
aspirin	Vazalore
aspirin	aspirin
aspirin/acetaminophen	Goody's Back and Body Pain
aspirin/acetaminophen/caffeine	Added Strength Headache Relief
aspirin/acetaminophen/caffeine	BC Max Strength
aspirin/acetaminophen/caffeine	Excedrin Extra Strength
aspirin/acetaminophen/caffeine	Excedrin Migraine

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
aspirin/acetaminophen/caffeine	Extra Pain Relief
aspirin/acetaminophen/caffeine	Extraprin
aspirin/acetaminophen/caffeine	Goody's Extra Strength
aspirin/acetaminophen/caffeine	Headache Relief (ASA-acet-caf)
aspirin/acetaminophen/caffeine	Migraine Formula
aspirin/acetaminophen/caffeine	Migraine Relief
aspirin/acetaminophen/caffeine	Pain Reliever (acetam-aspirin)
aspirin/acetaminophen/caffeine	Pain Reliever Plus
aspirin/acetaminophen/caffeine	Pain-Off
aspirin/acetaminophen/caffeine	Vanquish
aspirin/acetaminophen/diphenhydramine citrate	Pain Relief PM (w-aspirin)
aspirin/caffeine	Anacin
aspirin/caffeine	BC Arthritis
aspirin/caffeine	BC Pain Relief
aspirin/caffeine	Back and Body Pain Reliever
aspirin/caffeine	Bayer Aspirin (with caffeine)
aspirin/caffeine	Bayer Back and Body
aspirin/caffeine	Goody's Hangover
aspirin/caffeine	Pain Relief (aspirin-caffeine)
aspirin/caffeine	Stanback
aspirin/calcium carbonate	Women's Aspirin with Calcium
aspirin/calcium carbonate/magnesium	Buffered Aspirin
aspirin/calcium carbonate/magnesium	Bufferin
aspirin/calcium carbonate/magnesium	Tri-Buffered Aspirin
aspirin/calcium carbonate/magnesium	aspirin,buffd-calcium carb-mag
aspirin/calcium carbonate/magnesium/aluminum hydroxide	Bayer Plus Extra Strength
aspirin/diphenhydramine citrate	Bayer PM
aspirin/dipyridamole	Aggrenox
aspirin/dipyridamole	aspirin-dipyridamole
aspirin/omeprazole	Yosprala
aspirin/omeprazole	aspirin-omeprazole
aspirin/salicylamide/acetaminophen/caffeine	Pain Relief(with salicylamide)
aspirin/sodium bicarbonate/citric acid	Alka-Seltzer Extra Strength
aspirin/sodium bicarbonate/citric acid	Alka-Seltzer Original
aspirin/sodium bicarbonate/citric acid	Antacid and Pain Relief
aspirin/sodium bicarbonate/citric acid	Efferves Pain Relief Antacid
aspirin/sodium bicarbonate/citric acid	Effervescent Pain Relief
aspirin/sodium bicarbonate/citric acid	Medi-Seltzer
butalbital/aspirin/caffeine	Fiorinal
butalbital/aspirin/caffeine	butalbital-aspirin-caffeine
carisoprodol/aspirin	carisoprodol-aspirin
carisoprodol/aspirin/codeine phosphate	carisoprodol-aspirin-codeine
chlorpheniramine mal/phenylephrine/d-methorphan Hb/aspirin	Alka-Seltzer Plus C/C(PE,DM)
chlorpheniramine maleate/phenylephrine bitartrate/aspirin	Alka-Seltzer Plus Cold (PE)
chlorpheniramine maleate/phenylephrine bitartrate/aspirin	Alka-Seltzer Severe Cold
chlorpheniramine maleate/phenylephrine bitartrate/aspirin	Cold Relief
chlorpheniramine maleate/phenylephrine bitartrate/aspirin	Cold Relief Plus
codeine phosphate/butalbital/aspirin/caffeine	Ascomp with Codeine

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
codeine phosphate/butalbital/aspirin/caffeine	Butalbital Compound W/Codeine
codeine phosphate/butalbital/aspirin/caffeine	Fiorinal-Codeine #3
codeine phosphate/butalbital/aspirin/caffeine	codeine-butalbital-ASA-caff
orphenadrine citrate/aspirin/caffeine	Norgesic
orphenadrine citrate/aspirin/caffeine	Norgesic Forte
orphenadrine citrate/aspirin/caffeine	Orphengesic Forte
orphenadrine citrate/aspirin/caffeine	orphenadrine-ASA-caffeine
oxycodone HCl/aspirin	oxycodone-aspirin
Antidepressants	
St. John's wort	St. John's wort
amitriptyline HCl	amitriptyline
amitriptyline HCl/chlordiazepoxide	amitriptyline-chlordiazepoxide
amoxapine	amoxapine
brexanolone	Zulresso
bupropion HBr	Aplenzin
bupropion HCl	Forfivo XL
bupropion HCl	Wellbutrin SR
bupropion HCl	Wellbutrin XL
bupropion HCl	bupropion HCl
citalopram hydrobromide	Celexa
citalopram hydrobromide	citalopram
clomipramine HCl	Anafranil
clomipramine HCl	clomipramine
desipramine HCl	Norpramin
desipramine HCl	desipramine
desvenlafaxine	Khedezla
desvenlafaxine	desvenlafaxine
desvenlafaxine succinate	Pristiq
desvenlafaxine succinate	desvenlafaxine succinate
dextromethorphan HBr/bupropion HCl	Auvelity
doxepin HCl	Silenor
doxepin HCl	doxepin
duloxetine HCl	Cymbalta
duloxetine HCl	Drizalma Sprinkle
duloxetine HCl	duloxetine
escitalopram oxalate	Lexapro
escitalopram oxalate	escitalopram oxalate
esketamine HCl	Spravato
fluoxetine HCl	Prozac
fluoxetine HCl	Sarafem
fluoxetine HCl	fluoxetine
fluvoxamine maleate	fluvoxamine
imipramine HCl	Tofranil
imipramine HCl	imipramine HCl
imipramine pamoate	imipramine pamoate
isocarboxazid	Marplan
levomilnacipran HCl	Fetzima
maprotiline HCl	maprotiline

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
milnacipran HCl	Savella
mirtazapine	Remeron
mirtazapine	Remeron SolTab
mirtazapine	mirtazapine
nefazodone HCl	nefazodone
nortriptyline HCl	Pamelor
nortriptyline HCl	nortriptyline
olanzapine/fluoxetine HCl	Symbyax
olanzapine/fluoxetine HCl	olanzapine-fluoxetine
paroxetine HCl	Paxil
paroxetine HCl	Paxil CR
paroxetine HCl	paroxetine HCl
paroxetine mesylate	Brisdelle
paroxetine mesylate	Pexeva
paroxetine mesylate	paroxetine mesylate(menop.sym)
perphenazine/amitriptyline HCl	perphenazine-amitriptyline
phenelzine sulfate	Nardil
phenelzine sulfate	phenelzine
protriptyline HCl	protriptyline
selegiline	Emsam
sertraline HCl	Zoloft
sertraline HCl	sertraline
tranylcypromine sulfate	Parnate
tranylcypromine sulfate	tranylcypromine
trazodone HCl	trazodone
trimipramine maleate	Surmontil
trimipramine maleate	trimipramine
tryptophan	tryptophan
venlafaxine HCl	Effexor XR
venlafaxine HCl	venlafaxine
venlafaxine besylate	venlafaxine besylate
vilazodone HCl	Viibryd
vilazodone HCl	vilazodone
vortioxetine hydrobromide	Trintellix
zuranolone	Zurzuvae
Statins	
amlodipine besylate/atorvastatin calcium	Caduet
amlodipine besylate/atorvastatin calcium	amlodipine-atorvastatin
atorvastatin calcium	AtorvaliQ
atorvastatin calcium	Lipitor
atorvastatin calcium	atorvastatin
ezetimibe/atorvastatin calcium	ezetimibe-atorvastatin
ezetimibe/rosuvastatin calcium	Roszet
ezetimibe/rosuvastatin calcium	ezetimibe-rosuvastatin
ezetimibe/simvastatin	Vytorin 10-10
ezetimibe/simvastatin	Vytorin 10-20
ezetimibe/simvastatin	Vytorin 10-40
ezetimibe/simvastatin	Vytorin 10-80

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
ezetimibe/simvastatin	ezetimibe-simvastatin
fluvastatin sodium	Lescol
fluvastatin sodium	Lescol XL
fluvastatin sodium	fluvastatin
lovastatin	Altoprev
lovastatin	lovastatin
pitavastatin calcium	Livalo
pitavastatin calcium	pitavastatin calcium
pitavastatin magnesium	Zypitamag
pravastatin sodium	Pravachol
pravastatin sodium	pravastatin
rosuvastatin calcium	Crestor
rosuvastatin calcium	Ezallor Sprinkle
rosuvastatin calcium	rosuvastatin
simvastatin	FloLipid
simvastatin	Zocor
simvastatin	simvastatin
Insulin	
blood glucose meter/insulin data transf accessory, bluetooth	Tempo Welcome Kit
data transfer accessory (insulin pen), bluetooth	Tempo Smart Button
data transfer pen cap for insulin aspart (B3), reusable, BT	Bigfoot Unity Pen Cap-Fiasp
data transfer pen cap for insulin aspart, reusable,bluetooth	Bigfoot Unity Pen Cap-Aspart
data transfer pen cap for insulin aspart, reusable,bluetooth	Bigfoot Unity Pen Cap-Novolog
data transfer pen cap for insulin degludec, reusable, BT	Bigfoot Unity Pen Cap-Tresiba
data transfer pen cap for insulin glulisine, reusable, BT	Bigfoot Unity Pen Cap-Apidra
data transfer pen cap for insulin lispro, reusable,bluetooth	Bigfoot Unity Pen Cap-Admelog
data transfer pen cap for insulin lispro, reusable,bluetooth	Bigfoot Unity Pen Cap-Humalog
data transfer pen cap for insulin lispro, reusable,bluetooth	Bigfoot Unity Pen Cap-Lispro
data transfer pen cap for insulin lispro-aabc, reusable, BT	Bigfoot Unity Pen Cap-Lyumjev
data transfr pen cap for insulin glargine,reusable,bluetooth	Bigfoot Unity Pen Cap-Basaglar
data transfr pen cap for insulin glargine,reusable,bluetooth	Bigfoot Unity Pen Cap-Lantus
data transfr pen cap for insulin glargine,reusable,bluetooth	Bigfoot Unity Pen Cap-Toujeo
data transfr pen cap for insulin glargine,reusable,bluetooth	Bigfoot Unity Pen Cap-ToujeoMx
diluent for insulin lispro and regular insulin	Sterile Diluent For Humalog
diluent,insulin aspart combination no.1	Diluting Medium for Novolog
infusion set for insulin pump	AutoSoft 30
infusion set for insulin pump	AutoSoft XC Infusion Set 23"
infusion set for insulin pump	AutoSoft XC Infusion Set 32"
infusion set for insulin pump	AutoSoft XC Infusion Set 43"
infusion set for insulin pump	Autosoft 90
infusion set for insulin pump	Cleo 90 Infusion Set 24"
infusion set for insulin pump	Cleo 90 Infusion Set 31"
infusion set for insulin pump	Comfort Infusion Set 23"
infusion set for insulin pump	Comfort Infusion Set 31"
infusion set for insulin pump	Comfort Infusion Set 32"
infusion set for insulin pump	Comfort Infusion Set 43"
infusion set for insulin pump	Comfort Short Infusion Set 23"
infusion set for insulin pump	Comfort Short Infusion Set 31"

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
infusion set for insulin pump	Comfort Short Infusion Set 43"
infusion set for insulin pump	Comfort Short Insulin Pump 23"
infusion set for insulin pump	Comfort Short Insulin Pump 32"
infusion set for insulin pump	Comfort Short Insulin Pump 43"
infusion set for insulin pump	Contact Detach Infus Set 23"
infusion set for insulin pump	Contact Detach Infus Set 32"
infusion set for insulin pump	Contact Detach Infus Set 43"
infusion set for insulin pump	Infusion Set
infusion set for insulin pump	Infusion Set 23"
infusion set for insulin pump	Infusion Set 23" 6MM
infusion set for insulin pump	Infusion Set 23" Comfort
infusion set for insulin pump	Infusion Set 43"
infusion set for insulin pump	Infusion Set 43" 6MM
infusion set for insulin pump	Infusion Set 43" 9MM
infusion set for insulin pump	Inset 30 Infusion Set 23"
infusion set for insulin pump	Inset Infusion Set 23"
infusion set for insulin pump	Medtronic Ext Infusion Set 23"
infusion set for insulin pump	Medtronic Ext Infusion Set 32"
infusion set for insulin pump	MiniMed Mio 32"
infusion set for insulin pump	MiniMed Mio Advance Inf Set23"
infusion set for insulin pump	MiniMed Mio Advance Inf Set43"
infusion set for insulin pump	MiniMed Quick Set 18"
infusion set for insulin pump	MiniMed Quick Set 23"
infusion set for insulin pump	MiniMed Quick Set 32"
infusion set for insulin pump	MiniMed Quick Set 43"
infusion set for insulin pump	MiniMed Silhouette 18"
infusion set for insulin pump	MiniMed Silhouette 23"
infusion set for insulin pump	MiniMed Silhouette 32"
infusion set for insulin pump	MiniMed Silhouette 43"
infusion set for insulin pump	MiniMed Sure T 18"
infusion set for insulin pump	MiniMed Sure T 23"
infusion set for insulin pump	MiniMed Sure T 32"
infusion set for insulin pump	Minimed Infusion Set
infusion set for insulin pump	Minimed Infusion Set-MMT 390
infusion set for insulin pump	Minimed Infusion Set-MMT 391
infusion set for insulin pump	Minimed Infusion Set-MMT 392
infusion set for insulin pump	Minimed Infusion Set-MMT 393
infusion set for insulin pump	Minimed Mio 18"
infusion set for insulin pump	Minimed Mio 23"
infusion set for insulin pump	Mio Infusion Set
infusion set for insulin pump	Quick-Set Paradigm
infusion set for insulin pump	Quick-Set Paradigm 43"
infusion set for insulin pump	Silhouette
infusion set for insulin pump	Silhouette 23"-Full Set
infusion set for insulin pump	Silhouette 43"-Full Set
infusion set for insulin pump	Sof-Set
infusion set for insulin pump	Sof-Set Cannula 24" Tubing
infusion set for insulin pump	Sof-Set Micro 24" Polyfin Tub

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
infusion set for insulin pump	Sof-Set Micro 42" Polyfin Tub
infusion set for insulin pump	Sof-Set QR 42" Tubing
infusion set for insulin pump	Sure-T Paradigm
infusion set for insulin pump	TruSteel Infusion Set 23"
infusion set for insulin pump	TruSteel Infusion Set 32"
infusion set for insulin pump	VariSoft Infusion Set 23"
infusion set for insulin pump	VariSoft Infusion Set 32"
infusion set for insulin pump	VariSoft Infusion Set 43"
infusion set for insulin pump	t:30 Infusion Set
infusion set for insulin pump	t:90 Infusion Set 23"
infusion set for insulin pump	t:90 Infusion Set 43"
infusion set for insulin pump/insulin pump cartridge	iLET Infusion Kit-Inset 23"
infusion set for insulin pump/insulin pump cartridge	iLET Infusion-Contact Dtch 23"
insulin NPH human isophane	Humulin N NPH Insulin KwikPen
insulin NPH human isophane	Humulin N NPH U-100 Insulin
insulin NPH human isophane	Novolin N FlexPen
insulin NPH human isophane	Novolin N NPH U-100 Insulin
insulin NPH human isophane/insulin regular, human	Humulin 70/30 U-100 Insulin
insulin NPH human isophane/insulin regular, human	Humulin 70/30 U-100 KwikPen
insulin NPH human isophane/insulin regular, human	Novolin 70-30 FlexPen U-100
insulin NPH human isophane/insulin regular, human	Novolin 70/30 U-100 Insulin
insulin admin. supplies	Autoject 2 Injection Device
insulin admin. supplies	Autopen 1 to 21 units
insulin admin. supplies	Autopen 2 to 42 units
insulin admin. supplies	Novopen Echo
insulin aspart	Novolog FlexPen U-100 Insulin
insulin aspart	Novolog PenFill U-100 Insulin
insulin aspart	Novolog U-100 Insulin aspart
insulin aspart	insulin aspart U-100
insulin aspart (niacinamide)	Fiasp FlexTouch U-100 Insulin
insulin aspart (niacinamide)	Fiasp Penfill U-100 Insulin
insulin aspart (niacinamide)	Fiasp U-100 Insulin
insulin aspart (niacinamide)/pump cartridge	Fiasp Pumpcart
insulin aspart protamine human/insulin aspart	Novolog Mix 70-30 U-100 Insuln
insulin aspart protamine human/insulin aspart	Novolog Mix 70-30FlexPen U-100
insulin aspart protamine human/insulin aspart	insulin asp prt-insulin aspart
insulin degludec	Tresiba FlexTouch U-100
insulin degludec	Tresiba FlexTouch U-200
insulin degludec	Tresiba U-100 Insulin
insulin degludec	insulin degludec
insulin degludec/liraglutide	Xultophy 100/3.6
insulin detemir	Levemir FlexPen
insulin detemir	Levemir FlexTouch U100 Insulin
insulin detemir	Levemir U-100 Insulin
insulin glargine,human recombinant analog	Basaglar KwikPen U-100 Insulin
insulin glargine,human recombinant analog	Basaglar Tempo Pen(U-100)Insln
insulin glargine,human recombinant analog	Lantus Solostar U-100 Insulin
insulin glargine,human recombinant analog	Lantus U-100 Insulin

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
insulin glargine,human recombinant analog	Semglee Pen U-100 Insulin
insulin glargine,human recombinant analog	Semglee U-100 Insulin
insulin glargine,human recombinant analog	Toujeo Max U-300 SoloStar
insulin glargine,human recombinant analog	Toujeo SoloStar U-300 Insulin
insulin glargine,human recombinant analog	insulin glargine
insulin glargine,human recombinant analog	insulin glargine U-300 conc
insulin glargine,human recombinant analog/lixisenatide	Soliqua 100/33
insulin glargine-aglr	Rezvoglar KwikPen
insulin glargine-yfgn	Semglee(insulin glarg-yfgn)Pen
insulin glargine-yfgn	Semglee(insulin glargine-yfgn)
insulin glargine-yfgn	insulin glargine-yfgn
insulin glulisine	Apidra SoloStar U-100 Insulin
insulin glulisine	Apidra U-100 Insulin
insulin lispro	Admelog SoloStar U-100 Insulin
insulin lispro	Admelog U-100 Insulin lispro
insulin lispro	Humalog Junior KwikPen U-100
insulin lispro	Humalog KwikPen Insulin
insulin lispro	Humalog Tempo Pen(U-100)Insuln
insulin lispro	Humalog U-100 Insulin
insulin lispro	insulin lispro
insulin lispro protamine and insulin lispro	Humalog Mix 50-50 Insuln U-100
insulin lispro protamine and insulin lispro	Humalog Mix 50-50 KwikPen
insulin lispro protamine and insulin lispro	Humalog Mix 75-25 KwikPen
insulin lispro protamine and insulin lispro	Humalog Mix 75-25(U-100)Insuln
insulin lispro protamine and insulin lispro	insulin lispro protamin-lispro
insulin lispro-aabc	Lyumjev KwikPen U-100 Insulin
insulin lispro-aabc	Lyumjev KwikPen U-200 Insulin
insulin lispro-aabc	Lyumjev Tempo Pen(U-100)Insuln
insulin lispro-aabc	Lyumjev U-100 Insulin
insulin pen, reusable, bluetooth for use with insulin aspart	InPen (Novolog or Fiasp) Blue
insulin pen, reusable, bluetooth for use with insulin aspart	InPen (Novolog or Fiasp) Grey
insulin pen, reusable, bluetooth for use with insulin aspart	InPen (Novolog or Fiasp) Pink
insulin pen, reusable, bluetooth for use with insulin lispro	InPen (for Humalog) Blue
insulin pen, reusable, bluetooth for use with insulin lispro	InPen (for Humalog) Grey
insulin pen, reusable, bluetooth for use with insulin lispro	InPen (for Humalog) Pink
insulin pump cartridge	Cartridge Stamped IR 1200
insulin pump cartridge	t:flex
insulin pump cartridge	t:slim
insulin pump cartridge	t:slim G4
insulin pump cartridge	t:slim X2
insulin pump cartridge, basal rate 10 units/day, disposable	Omnipod Go Pods 10 units/day
insulin pump cartridge, basal rate 15 units/day, disposable	Omnipod Go Pods 15 units/day
insulin pump cartridge, basal rate 20 units/day, disposable	Omnipod Go Pods 20 units/day
insulin pump cartridge, basal rate 25 units/day, disposable	Omnipod Go Pods 25 units/day
insulin pump cartridge, basal rate 30 units/day, disposable	Omnipod Go Pods 30 units/day
insulin pump cartridge, basal rate 35 units/day, disposable	Omnipod Go Pods
insulin pump cartridge, basal rate 40 units/day, disposable	Omnipod Go Pods 40 units/day
insulin pump cartridge, subcut automated dosing, bluetooth	Omnipod 5 G6 Pods (Gen 5)

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
insulin pump cartridge,automated dosing,BT with controller	Omnipod 5 G6 Intro Kit (Gen 5)
insulin pump cartridge,continuous infusion,BT and controller	Omnipod Dash Intro Kit (Gen 4)
insulin pump cartridge,continuous subcut infusion,bluetooth	Omnipod Dash Pods (Gen 4)
insulin pump cartridge,continuous subcut infusion,radio freq	Omnipod Classic Pods (Gen 3)
insulin pump controller	Omnipod DASH PDM Kit (Gen 4)
insulin pump controller, radio frequency	Omnipod Classic PDM Kit(Gen 3)
insulin pump syringe, 1.8 mL	MiniMed Syringe Reservoir
insulin pump syringe, 1.8 mL	Paradigm Reservoir
insulin pump syringe, 3 mL	Extended Reservoir
insulin pump syringe, 3 mL	MiniMed Syringe Reservoir
insulin pump syringe, 3 mL	Paradigm Reservoir
insulin pump/infusion set/blood-glucose meter	Accu-Chek Combo System
insulin regular, human	Afrezza
insulin regular, human	Humulin R Regular U-100 Insuln
insulin regular, human	Humulin R U-500 (Conc) Insulin
insulin regular, human	Humulin R U-500 (Conc) Kwikpen
insulin regular, human	Novolin R FlexPen
insulin regular, human	Novolin R Regular U100 Insulin
insulin regular, human in 0.9 % sodium chloride	Myxredlin
insulin syringe-needle,safety,disposal unit,0.5 mL	SafeSnap Insulin Syringe
pen needle, diabetic	1st Tier Unifine Pentips
pen needle, diabetic	1st Tier Unifine Pentips Plus
pen needle, diabetic	AboutTime Pen Needle
pen needle, diabetic	Advocate Pen Needle
pen needle, diabetic	Aqinject Pen Needle
pen needle, diabetic	BD Nano 2nd Gen Pen Needle
pen needle, diabetic	BD Ultra-Fine Micro Pen Needle
pen needle, diabetic	BD Ultra-Fine Mini Pen Needle
pen needle, diabetic	BD Ultra-Fine Nano Pen Needle
pen needle, diabetic	BD Ultra-Fine Orig Pen Needle
pen needle, diabetic	BD Ultra-Fine Short Pen Needle
pen needle, diabetic	CareFine Pen Needle
pen needle, diabetic	CareTouch Pen Needle
pen needle, diabetic	Clickfine Pen Needle
pen needle, diabetic	Comfort EZ Pen Needles
pen needle, diabetic	Comfort Touch Pen Needle
pen needle, diabetic	Droplet Micron Pen Needle
pen needle, diabetic	Droplet Pen Needle
pen needle, diabetic	Easy Comfort Pen Needles
pen needle, diabetic	Easy Glide Pen Needle
pen needle, diabetic	Easy Touch
pen needle, diabetic	Easy Touch Pen Needle
pen needle, diabetic	Embrace Pen Needle
pen needle, diabetic	HealthWise Pen Needle
pen needle, diabetic	Healthy Accents Unifine Pentip
pen needle, diabetic	Insupen Pen Needle
pen needle, diabetic	Lite Touch Insulin Pen Needles
pen needle, diabetic	Maxicomfort II Pen Needle

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
pen needle, diabetic	Microdot Insulin Pen Needle
pen needle, diabetic	Mini Ultra-Thin II
pen needle, diabetic	NovoFine Plus
pen needle, diabetic	NovoTwist
pen needle, diabetic	Novofine 32
pen needle, diabetic	Pen Needle
pen needle, diabetic	Pentips
pen needle, diabetic	Pip Pen Needle
pen needle, diabetic	Pro Comfort Pen Needle
pen needle, diabetic	Pure Comfort Pen Needle
pen needle, diabetic	ReliOn Needles
pen needle, diabetic	ReliOn Pen Needles
pen needle, diabetic	Sure Comfort Pen Needle
pen needle, diabetic	Sure-Fine Pen Needles
pen needle, diabetic	TRUEplus Pen Needle
pen needle, diabetic	TechLITE Pen Needle
pen needle, diabetic	Topcare Clickfine
pen needle, diabetic	True Comfort Pen Needle
pen needle, diabetic	UltiCare Pen Needle
pen needle, diabetic	Ultilet Pen Needle
pen needle, diabetic	Ultra Flo Pen Needle
pen needle, diabetic	Ultra Thin Pen Needle
pen needle, diabetic	Ultra-Thin II (Short) Pen NDL
pen needle, diabetic	Ultra-Thin II Ins Pen Needles
pen needle, diabetic	Ultracare Pen Needle
pen needle, diabetic	Unifine Pen Needle
pen needle, diabetic	Unifine Pentips
pen needle, diabetic	Unifine Pentips Maxflow
pen needle, diabetic	Unifine Pentips Plus
pen needle, diabetic	Unifine Pentips Plus Maxflow
pen needle, diabetic	Unifine Ultra Pen Needle
pen needle, diabetic	Verifine Pen Needle
pen needle, diabetic	Verifine Plus Pen Needle
pen needle, diabetic	inControl Pen Needle
pen needle, diabetic	pen needle, diabetic
pen needle, diabetic disposable, safety	Assure ID DUO-Shield
pen needle, diabetic disposable, safety	BD AutoShield Duo Pen Needle
pen needle, diabetic disposable, safety	Unifine PROtect
pen needle, diabetic disposable, safety	Unifine SafeControl
pen needle, diabetic, remover and disposal unit	UltiGuard SafePack-Pen Needle
pen needle, diabetic, safety	Assure ID Duo Pro Sfty Pen Ndl
pen needle, diabetic, safety	Assure ID Pen Needle
pen needle, diabetic, safety	Assure ID Pro Pen Needle
pen needle, diabetic, safety	Comfort EZ PRO Safety Pen Ndl
pen needle, diabetic, safety	DropSafe Pen Needle
pen needle, diabetic, safety	Easy Touch Safety Pen Needle
pen needle, diabetic, safety	Healthy Accents Unifine Pentip
pen needle, diabetic, safety	Maxicomfort Safety Pen Needle

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
pen needle, diabetic, safety	Novofine Autocover
pen needle, diabetic, safety	Prevent DropSafe Pen Needle
pen needle, diabetic, safety	Pure Comfort Safety Pen Needle
pen needle, diabetic, safety	Safety Pen Needle
pen needle, diabetic, safety	SecureSafe Pen Needle
pen needle, diabetic, safety	Sky Safety Pen Needle
pen needle, diabetic, safety	Sure Comfort Safety Pen Needle
pen needle, diabetic, safety	True Comfort Safety Pen Needle
pen needle, diabetic, safety	Ulticare Safety Pen Needle
pen needle, diabetic, safety	pen needle, diabetic, safety
sub-q insulin delivery device, 20 unit,disposable	V-GO 20
sub-q insulin delivery device, 30 unit, disposable	V-GO 30
sub-q insulin delivery device, 40 unit, disposable	V-GO 40
sub-q insulin pump, continuous glucose monitoring system	Animas Vibe
subcutaneous bolus insulin patch pump, 200 unit, disposable	CeQur Simplicity
subcutaneous insulin pump	MiniMed 530G Insulin Pump
subcutaneous insulin pump	MiniMed 630G Insulin Pump
subcutaneous insulin pump	MiniMed 670G Insulin Pump
subcutaneous insulin pump	MiniMed 770G Insulin Pump
subcutaneous insulin pump	MiniMed 780G Insulin Pump
subcutaneous insulin pump	OneTouch Ping Insulin Pump
subcutaneous insulin pump	Revel Pediatric Program Pump
subcutaneous insulin pump	Revel Programmable Pump
subcutaneous insulin pump	T:Slim X2 Control-IQ
subcutaneous insulin pump	iLet Insulin Pump
subcutaneous insulin pump	t:flex Insulin Delivery Pump
subcutaneous insulin pump	t:slim G4 Insulin Pump
subcutaneous insulin pump	t:slim Insulin Delivery System
subcutaneous insulin pump	t:slim X2 Basal-IQ Insulin Pmp
subcutaneous insulin pump	t:slim X2 Insulin Pump
syringe w-needle 0.3 mL,insulin,safety w-self-cont.dis.unit	SafeSnap Insulin Syringe
syringe with needle 1 mL,insulin,safety w-self-con.disp.unit	SafeSnap Insulin Syringe
syringe with needle, insulin, safety, 0.3 mL	BD SafetyGlide Insulin Syringe
syringe with needle, insulin, safety, 0.3 mL	Dropsafe Insulin Syringe
syringe with needle, insulin, safety, 0.3 mL	Magellan Insulin Safety Syrng
syringe with needle, insulin, safety, 0.3 mL	Magellan Syringe
syringe with needle, insulin, safety, 0.5 mL	Assure ID Insulin Safety
syringe with needle, insulin, safety, 0.5 mL	BD SafetyGlide Insulin Syringe
syringe with needle, insulin, safety, 0.5 mL	Dropsafe Insulin Syringe
syringe with needle, insulin, safety, 0.5 mL	Easy Touch Insulin Safety Syr
syringe with needle, insulin, safety, 0.5 mL	Magellan Insulin Safety Syrng
syringe with needle, insulin, safety, 0.5 mL	Magellan Syringe
syringe with needle, insulin, safety, 0.5 mL	SecureSafe Insulin Syringe
syringe with needle, insulin, safety, 1 mL	Assure ID Insulin Safety
syringe with needle, insulin, safety, 1 mL	BD SafetyGlide Insulin Syringe
syringe with needle, insulin, safety, 1 mL	Dropsafe Insulin Syringe
syringe with needle, insulin, safety, 1 mL	Easy Touch FlipLock Insulin
syringe with needle, insulin, safety, 1 mL	Easy Touch Insulin Safety Syr

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
syringe with needle, insulin, safety, 1 mL	Easy Touch SheathLock Insulin
syringe with needle, insulin, safety, 1 mL	Magellan Insulin Safety Syrng
syringe with needle, insulin, safety, 1 mL	SecureSafe Insulin Syringe
syringe with needle, insulin, safety, 1 mL	VanishPoint Insulin Syringe
syringe with needle, insulin,1 mL and sharps container	UltiGuard SafePack-Insulin Syr
syringe with needle,disposable,insulin 1 mL	Advocate Syringes
syringe with needle,disposable,insulin 1 mL	BD Eclipse Luer-Lok
syringe with needle,disposable,insulin 1 mL	BD Insulin Syringe
syringe with needle,disposable,insulin 1 mL	BD Insulin Syringe Micro-Fine
syringe with needle,disposable,insulin 1 mL	BD Insulin Syringe Safety-Lok
syringe with needle,disposable,insulin 1 mL	BD Insulin Syringe Ultra-Fine
syringe with needle,disposable,insulin 1 mL	BD SafetyGlide Insulin Syringe
syringe with needle,disposable,insulin 1 mL	BD SafetyGlide Syringe
syringe with needle,disposable,insulin 1 mL	BD Veo Insulin Syringe UF
syringe with needle,disposable,insulin 1 mL	CareTouch Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Comfort EZ Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Droplet Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Easy Comfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Easy Glide Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Easy Touch Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Exel Insulin
syringe with needle,disposable,insulin 1 mL	FreeStyle Precision
syringe with needle,disposable,insulin 1 mL	HealthWise Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Insulin Syringe MicroFine
syringe with needle,disposable,insulin 1 mL	Lite Touch Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Maxi-Comfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Maxicomfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Monoject Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Pro Comfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Prodigy Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Sure Comfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Sure-Ject Insulin Syringe
syringe with needle,disposable,insulin 1 mL	TRUEplus Insulin
syringe with needle,disposable,insulin 1 mL	TechLITE Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Terumo Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Thinpro Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Topcare Ultra Comfort
syringe with needle,disposable,insulin 1 mL	True Comfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	True Comfort Pro Ins Syringe
syringe with needle,disposable,insulin 1 mL	UltiCare
syringe with needle,disposable,insulin 1 mL	UltiCare Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Ultilet Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Ultra Comfort Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Ultra-Thin II (Short) Ins Syr
syringe with needle,disposable,insulin 1 mL	Ultra-Thin II Insulin Syringe
syringe with needle,disposable,insulin 1 mL	Ultracare Insulin Syringe
syringe with needle,disposable,insulin 1 mL	VanishPoint Syringe

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
syringe with needle,disposable,insulin 1 mL	Verifine Insulin Syringe
syringe with needle,disposable,insulin 1 mL	insulin syringe-needle U-100
syringe with needle,insulin 0.3 mL (half unit mark)	BD Insulin Syringe (half unit)
syringe with needle,insulin 0.3 mL (half unit mark)	BD Veo Insulin Syr (half unit)
syringe with needle,insulin 0.3 mL (half unit mark)	TechLITE Insuln Syr(half unit)
syringe with needle,insulin 0.3 mL (half unit mark)	UltiCare Insuln Syr(half unit)
syringe with needle,insulin 0.3 mL (half unit mark)	Ultra Cmft Ins Syr (half unit)
syringe with needle,insulin 0.3 mL (half unit mark)	Ultra Flo Insul Syr(half unit)
syringe with needle,insulin 0.3 mL (half unit mark)	insulin syr/ndl U100 half mark
syringe with needle,insulin 0.5 mL (half unit mark)	Droplet Insulin Syr(half unit)
syringe with needle,insulin 0.5 mL (half unit mark)	TechLITE Insuln Syr(half unit)
syringe with needle,insulin disposable	Monoject Insulin Safety Syring
syringe with needle,insulin disposable,0.3 mL/empty containr	UltiGuard SafePack-Insulin Syr
syringe with needle,insulin,0.3 mL	Advocate Syringes
syringe with needle,insulin,0.3 mL	BD Insulin Syringe
syringe with needle,insulin,0.3 mL	BD Insulin Syringe Ultra-Fine
syringe with needle,insulin,0.3 mL	BD Veo Insulin Syringe UF
syringe with needle,insulin,0.3 mL	CareTouch Insulin Syringe
syringe with needle,insulin,0.3 mL	Comfort EZ Insulin Syringe
syringe with needle,insulin,0.3 mL	Droplet Insulin Syringe
syringe with needle,insulin,0.3 mL	Easy Comfort Insulin Syringe
syringe with needle,insulin,0.3 mL	Easy Glide Insulin Syringe
syringe with needle,insulin,0.3 mL	Easy Touch Insulin Syringe
syringe with needle,insulin,0.3 mL	Exel Insulin
syringe with needle,insulin,0.3 mL	HealthWise Insulin Syringe
syringe with needle,insulin,0.3 mL	Lite Touch Insulin Syringe
syringe with needle,insulin,0.3 mL	Monoject Insulin Safety Syring
syringe with needle,insulin,0.3 mL	Monoject Insulin Syringe
syringe with needle,insulin,0.3 mL	Prodigy Insulin Syringe
syringe with needle,insulin,0.3 mL	Sure Comfort Insulin Syringe
syringe with needle,insulin,0.3 mL	Sure-Ject Insulin Syringe
syringe with needle,insulin,0.3 mL	TRUEplus Insulin
syringe with needle,insulin,0.3 mL	Terumo Insulin Syringe
syringe with needle,insulin,0.3 mL	Thinpro Insulin Syringe
syringe with needle,insulin,0.3 mL	Topcare Ultra Comfort
syringe with needle,insulin,0.3 mL	UltiCare
syringe with needle,insulin,0.3 mL	UltiCare Insulin Syringe
syringe with needle,insulin,0.3 mL	Ultilet Insulin Syringe
syringe with needle,insulin,0.3 mL	Ultra Comfort Insulin Syringe
syringe with needle,insulin,0.3 mL	Ultra Flo Insulin Syringe
syringe with needle,insulin,0.3 mL	Ultra-Thin II (Short) Ins Syr
syringe with needle,insulin,0.3 mL	Ultracare Insulin Syringe
syringe with needle,insulin,0.3 mL	Verifine Insulin Syringe
syringe with needle,insulin,0.3 mL	insulin syringe-needle U-100
syringe with needle,insulin,0.5 mL	Advocate Syringes
syringe with needle,insulin,0.5 mL	BD Insulin Syringe
syringe with needle,insulin,0.5 mL	BD Insulin Syringe Ultra-Fine
syringe with needle,insulin,0.5 mL	BD Lo-Dose Micro-Fine IV

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
syringe with needle,insulin,0.5 mL	BD Lo-Dose Ultra-Fine
syringe with needle,insulin,0.5 mL	BD Veo Insulin Syringe UF
syringe with needle,insulin,0.5 mL	CareTouch Insulin Syringe
syringe with needle,insulin,0.5 mL	Comfort EZ Insulin Syringe
syringe with needle,insulin,0.5 mL	Easy Comfort Insulin Syringe
syringe with needle,insulin,0.5 mL	Easy Glide Insulin Syringe
syringe with needle,insulin,0.5 mL	Easy Touch Insulin Syringe
syringe with needle,insulin,0.5 mL	Exel Insulin
syringe with needle,insulin,0.5 mL	FreeStyle Precision
syringe with needle,insulin,0.5 mL	HealthWise Insulin Syringe
syringe with needle,insulin,0.5 mL	Insulin Syringe
syringe with needle,insulin,0.5 mL	Insulin Syringe MicroFine
syringe with needle,insulin,0.5 mL	Lite Touch Insulin Syringe
syringe with needle,insulin,0.5 mL	Maxi-Comfort Insulin Syringe
syringe with needle,insulin,0.5 mL	Maxicomfort Insulin Syringe
syringe with needle,insulin,0.5 mL	Monoject Insulin Safety Syring
syringe with needle,insulin,0.5 mL	Monoject Insulin Syringe
syringe with needle,insulin,0.5 mL	Monoject Syringe
syringe with needle,insulin,0.5 mL	Monoject Ultra Comfort Insulin
syringe with needle,insulin,0.5 mL	Pro Comfort Insulin Syringe
syringe with needle,insulin,0.5 mL	Prodigy Insulin Syringe
syringe with needle,insulin,0.5 mL	Sure Comfort Ins. Syr. U-100
syringe with needle,insulin,0.5 mL	Sure Comfort Insulin Syringe
syringe with needle,insulin,0.5 mL	Sure-Ject Insulin Syringe
syringe with needle,insulin,0.5 mL	TRUEplus Insulin
syringe with needle,insulin,0.5 mL	Terumo Insulin Syringe
syringe with needle,insulin,0.5 mL	Thinpro Insulin Syringe
syringe with needle,insulin,0.5 mL	Topcare Ultra Comfort
syringe with needle,insulin,0.5 mL	True Comfort Insulin Syringe
syringe with needle,insulin,0.5 mL	True Comfort Pro Ins Syringe
syringe with needle,insulin,0.5 mL	UltiCare
syringe with needle,insulin,0.5 mL	UltiCare Insulin Syringe
syringe with needle,insulin,0.5 mL	Ultilet Insulin Syringe
syringe with needle,insulin,0.5 mL	Ultra Comfort Insulin Syringe
syringe with needle,insulin,0.5 mL	Ultra Flo Insulin Syringe
syringe with needle,insulin,0.5 mL	Ultra-Thin II (Short) Ins Syr
syringe with needle,insulin,0.5 mL	Ultra-Thin II Insulin Syringe
syringe with needle,insulin,0.5 mL	Ultracare Insulin Syringe
syringe with needle,insulin,0.5 mL	VanishPoint Syringe
syringe with needle,insulin,0.5 mL	Verifine Insulin Syringe
syringe with needle,insulin,0.5 mL	insulin syringe-needle U-100
syringe without needle,insulin disposible, 1 mL	BD Insulin Syringe Slip Tip
syringe without needle,insulin disposible, 1 mL	Easy Touch Luer Lock Insulin
syringe without needle,insulin disposible, 1 mL	Easy Touch Uni-Slip
syringe without needle,insulin disposible, 1 mL	insulin syringe needleless
syringe, insulin U-500 with needle, disposable, 0.5 mL	BD Insulin Syringe U-500
syringe-needle,insulin,0.5 mL/container,empty	UltiGuard SafePack-Insulin Syr
Oral Antidiabetic Drugs	

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
alogliptin benzoate	Nesina
alogliptin benzoate	alogliptin
alogliptin benzoate/metformin HCl	Kazano
alogliptin benzoate/metformin HCl	alogliptin-metformin
alogliptin benzoate/pioglitazone HCl	Oseni
alogliptin benzoate/pioglitazone HCl	alogliptin-pioglitazone
bexagliflozin	Brenzavvy
bexagliflozin	bexagliflozin
canagliflozin	Invokana
canagliflozin/metformin HCl	Invokamet
canagliflozin/metformin HCl	Invokamet XR
chlorpropamide	chlorpropamide
dapagliflozin propanediol	Farxiga
dapagliflozin propanediol	dapagliflozin propanediol
dapagliflozin propanediol/metformin HCl	Xigduo XR
dapagliflozin propanediol/metformin HCl	dapaglifloz propaned-metformin
dapagliflozin propanediol/saxagliptin HCl	Qtern
empagliflozin	Jardiance
empagliflozin/linagliptin	Glyxambi
empagliflozin/linagliptin/metformin HCl	Trijardy XR
empagliflozin/metformin HCl	Synjardy
empagliflozin/metformin HCl	Synjardy XR
ertugliflozin pidolate	Steglatro
ertugliflozin pidolate/metformin HCl	Segluromet
ertugliflozin pidolate/sitagliptin phosphate	Steglujan
glimepiride	Amaryl
glimepiride	glimepiride
glipizide	Glucotrol
glipizide	Glucotrol XL
glipizide	glipizide
glipizide/metformin HCl	glipizide-metformin
glyburide	glyburide
glyburide,micronized	Glynase
glyburide,micronized	glyburide micronized
glyburide/metformin HCl	glyburide-metformin
linagliptin	Tradjenta
linagliptin/metformin HCl	Jentadueto
linagliptin/metformin HCl	Jentadueto XR
metformin HCl	Fortamet
metformin HCl	Glucophage
metformin HCl	Glumetza
metformin HCl	Riomet
metformin HCl	Riomet ER
metformin HCl	metformin
miglitol	Glyset
miglitol	miglitol
nateglinide	Starlix
nateglinide	nateglinide

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
pioglitazone HCl	Actos
pioglitazone HCl	pioglitazone
pioglitazone HCl/glimepiride	DUETACT
pioglitazone HCl/glimepiride	pioglitazone-glimepiride
pioglitazone HCl/metformin HCl	Actoplus MET
pioglitazone HCl/metformin HCl	Actoplus Met XR
pioglitazone HCl/metformin HCl	pioglitazone-metformin
repaglinide	Prandin
repaglinide	repaglinide
repaglinide/metformin HCl	repaglinide-metformin
rosiglitazone maleate	Avandia
saxagliptin HCl	Onglyza
saxagliptin HCl	saxagliptin
saxagliptin HCl/metformin HCl	Kombiglyze XR
saxagliptin HCl/metformin HCl	saxagliptin-metformin
semaglutide	Rybelsus
sitagliptin	Zituvio
sitagliptin phosphate	Januvia
sitagliptin phosphate/metformin HCl	Janumet
sitagliptin phosphate/metformin HCl	Janumet XR
sotagliflozin	Inpefa
tolazamide	tolazamide
tolbutamide	tolbutamide
Antihypertensive Drugs	
aliskiren hemifumarate	Tekturna
aliskiren hemifumarate	aliskiren
aliskiren hemifumarate/hydrochlorothiazide	Tekturna HCT
amlodipine besylate/benazepril HCl	Lotrel
amlodipine besylate/benazepril HCl	amlodipine-benazepril
amlodipine besylate/olmesartan medoxomil	Azor
amlodipine besylate/olmesartan medoxomil	amlodipine-olmesartan
amlodipine besylate/valsartan	Exforge
amlodipine besylate/valsartan	amlodipine-valsartan
amlodipine besylate/valsartan/hydrochlorothiazide	Exforge HCT
amlodipine besylate/valsartan/hydrochlorothiazide	amlodipine-valsartan-hcthiazid
atenolol/chlorthalidone	Tenoretic 100
atenolol/chlorthalidone	Tenoretic 50
atenolol/chlorthalidone	atenolol-chlorthalidone
azilsartan medoxomil	Edarbi
azilsartan medoxomil/chlorthalidone	Edarbyclor
benazepril HCl	Lotensin
benazepril HCl	benazepril
benazepril HCl/hydrochlorothiazide	Lotensin HCT
benazepril HCl/hydrochlorothiazide	benazepril-hydrochlorothiazide
bisoprolol fumarate/hydrochlorothiazide	Ziac
bisoprolol fumarate/hydrochlorothiazide	bisoprolol-hydrochlorothiazide
candesartan cilexetil	Atacand
candesartan cilexetil	candesartan

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
candesartan cilexetil/hydrochlorothiazide	Atacand HCT
candesartan cilexetil/hydrochlorothiazide	candesartan-hydrochlorothiazid
captopril	captopril
captopril/hydrochlorothiazide	captopril-hydrochlorothiazide
clonidine	Catapres-TTS-1
clonidine	Catapres-TTS-2
clonidine	Catapres-TTS-3
clonidine	clonidine
clonidine HCl	Catapres
clonidine HCl	Nexiclon XR
clonidine HCl	clonidine HCl
doxazosin mesylate	Cardura
doxazosin mesylate	Cardura XL
doxazosin mesylate	doxazosin
enalapril maleate	Epaned
enalapril maleate	Vasotec
enalapril maleate	enalapril maleate
enalapril maleate/hydrochlorothiazide	Vaseretic
enalapril maleate/hydrochlorothiazide	enalapril-hydrochlorothiazide
enalaprilat dihydrate	enalaprilat
eplerenone	Inspra
eplerenone	eplerenone
eprosartan mesylate	eprosartan
finerenone	Kerendia
fosinopril sodium	fosinopril
fosinopril sodium/hydrochlorothiazide	fosinopril-hydrochlorothiazide
hydralazine HCl	hydralazine
irbesartan	Avapro
irbesartan	irbesartan
irbesartan/hydrochlorothiazide	Avalide
irbesartan/hydrochlorothiazide	irbesartan-hydrochlorothiazide
isosorbide dinitrate/hydralazine HCl	BiDil
isosorbide dinitrate/hydralazine HCl	isosorbide-hydralazine
lisinopril	Prinivil
lisinopril	Qbrelis
lisinopril	Zestril
lisinopril	lisinopril
lisinopril/hydrochlorothiazide	Zestoretic
lisinopril/hydrochlorothiazide	lisinopril-hydrochlorothiazide
losartan potassium	Cozaar
losartan potassium	losartan
losartan potassium/hydrochlorothiazide	Hyzaar
losartan potassium/hydrochlorothiazide	losartan-hydrochlorothiazide
methyldopa	methyldopa
methyldopa/hydrochlorothiazide	methyldopa-hydrochlorothiazide
methyldopate HCl	methyldopate
metoprolol succinate/hydrochlorothiazide	Dutoprol
metoprolol succinate/hydrochlorothiazide	metoprolol su-hydrochlorothiaz

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
metoprolol tartrate/hydrochlorothiazide	metoprolol ta-hydrochlorothiaz
minoxidil	minoxidil
moexipril HCl	moexipril
nadolol/bendroflumethiazide	nadolol-bendroflumethiazide
nebivolol HCl/valsartan	Byvalson
nitroprusside sodium	Nitropress
nitroprusside sodium	sodium nitroprusside
nitroprusside sodium in 0.9 % sodium chloride	Nipride RTU
olmesartan medoxomil	Benicar
olmesartan medoxomil	olmesartan
olmesartan medoxomil/amlodipine besylate/hydrochlorothiazide	Tribenzor
olmesartan medoxomil/amlodipine besylate/hydrochlorothiazide	olmesartan-amlodipin-hcthiazid
olmesartan medoxomil/hydrochlorothiazide	Benicar HCT
olmesartan medoxomil/hydrochlorothiazide	olmesartan-hydrochlorothiazide
papaverine HCl	papaverine
perindopril arginine/amlodipine besylate	Prestalia
perindopril erbumine	perindopril erbumine
phenoxybenzamine HCl	Dibenzyline
phenoxybenzamine HCl	phenoxybenzamine
phentolamine mesylate	phentolamine
prazosin HCl	Minipress
prazosin HCl	prazosin
propranolol HCl/hydrochlorothiazide	propranolol-hydrochlorothiazid
quinapril HCl	Accupril
quinapril HCl	quinapril
quinapril HCl/hydrochlorothiazide	Accuretic
quinapril HCl/hydrochlorothiazide	quinapril-hydrochlorothiazide
ramipril	Altace
ramipril	ramipril
sacubitril/valsartan	Entresto
spironolactone	Aldactone
spironolactone	CaroSpir
spironolactone	spironolactone
telmisartan	Micardis
telmisartan	telmisartan
telmisartan/amlodipine besylate	Twynsta
telmisartan/amlodipine besylate	telmisartan-amlodipine
telmisartan/hydrochlorothiazide	Micardis HCT
telmisartan/hydrochlorothiazide	telmisartan-hydrochlorothiazid
terazosin HCl	terazosin
trandolapril	trandolapril
trandolapril/verapamil HCl	Tarka
trandolapril/verapamil HCl	trandolapril-verapamil
valsartan	Diovan
valsartan	valsartan
valsartan/hydrochlorothiazide	Diovan HCT
valsartan/hydrochlorothiazide	valsartan-hydrochlorothiazide
Anticoagulants	

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
apixaban	Eliquis
apixaban	Eliquis DVT-PE Treat 30D Start
betrixaban maleate	Bevyxxa
dabigatran etexilate mesylate	Pradaxa
dabigatran etexilate mesylate	dabigatran etexilate
edoxaban tosylate	Savaysa
heparin sodium,porcine	heparin (porcine)
heparin sodium,porcine/PF	heparin, porcine (PF)
rivaroxaban	Xarelto
rivaroxaban	Xarelto DVT-PE Treat 30d Start
sodium citrate dihydrate	TriCitrasol
warfarin sodium	Coumadin
warfarin sodium	Jantoven
warfarin sodium	warfarin
Corticosteroids (Systemic Glucocorticoids)	
betamethasone acetate and sodium phos in sterile water/PF	betameth ac,sod phos(PF)-water
betamethasone acetate/betamethasone sodium phosphate	BSP-0820
betamethasone acetate/betamethasone sodium phosphate	Beta-1
betamethasone acetate/betamethasone sodium phosphate	Celestone Soluspan
betamethasone acetate/betamethasone sodium phosphate	Pod-Care 100C
betamethasone acetate/betamethasone sodium phosphate	ReadySharp Betamethasone
betamethasone acetate/betamethasone sodium phosphate	betamethasone acet,sod phos
betamethasone acetate/betamethasone sodium phosphate/water	betamethasone ace,sod phos-wtr
betamethasone sodium phosph in sterile water for injection	betamethasone sod phosph-water
budesonide	Tarpeyo
bupivacaine HCl/dexamethasone sodium phos in sterile water	bupivacaine-dexameth in water
cortisone acetate	cortisone
deflazacort	Emflaza
dexamethasone	Decadron
dexamethasone	DexPak 10 day
dexamethasone	DexPak 13 Day
dexamethasone	DexPak 6 Day
dexamethasone	Dexabliss
dexamethasone	Dexamethasone Intensol
dexamethasone	Dxevo
dexamethasone	Hemady
dexamethasone	HiDex
dexamethasone	TaperDex
dexamethasone	ZCort
dexamethasone	dexamethasone
dexamethasone acetate and sodium phosphate in sterile water	dexamethasone ac, sod ph-water
dexamethasone acetate in sodium chloride, iso-osmotic	dexamethasone ace-NaCl,iso-osm
dexamethasone sodium phosphate	ReadySharp dexamethasone
dexamethasone sodium phosphate	dexamethasone sodium phosphate
dexamethasone sodium phosphate in 0.9 % sodium chloride	dexamethasone-0.9 % sod. chlor
dexamethasone sodium phosphate/PF	Active Injection Kit D (PF)
dexamethasone sodium phosphate/PF	DoubleDex (PF)
dexamethasone sodium phosphate/PF	MAS Care-Pak (PF)

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
dexamethasone sodium phosphate/PF	dexamethasone sodium phos (PF)
dexamethasone sodium phosphate/lidocaine HCl	Lidocidex-I
hydrocortisone	Alkindi Sprinkle
hydrocortisone	Cortef
hydrocortisone	hydrocortisone
hydrocortisone sodium succinate	A-Hydrocort
hydrocortisone sodium succinate	Solu-Cortef
hydrocortisone sodium succinate/PF	Solu-Cortef Act-O-Vial (PF)
methylprednisolone	Medrol
methylprednisolone	Medrol (Pak)
methylprednisolone	Methylpred DP
methylprednisolone	methylprednisolone
methylprednisolone acetate	Depo-Medrol
methylprednisolone acetate	P-Care D40
methylprednisolone acetate	P-Care D80
methylprednisolone acetate	methylprednisolone acetate
methylprednisolone acetate in sodium chloride,iso-osmotic/PF	methylpred ac(PF)-NaCl,iso-osm
methylprednisolone acetate in sterile water for injection	methylprednisolone acet-water
methylprednisolone acetate/bupivacaine HCl in sterile water	methylprednisol ac-bupivac-wat
methylprednisolone sodium succinate	Solu-Medrol
methylprednisolone sodium succinate	methylprednisolone sodium succ
methylprednisolone sodium succinate/PF	Solu-Medrol (PF)
prednisolone	Millipred
prednisolone	Millipred DP
prednisolone	prednisolone
prednisolone sodium phosphate	Orapred ODT
prednisolone sodium phosphate	Pediapred
prednisolone sodium phosphate	Veripred 20
prednisolone sodium phosphate	prednisolone sodium phosphate
prednisone	Prednisone Intensol
prednisone	Rayos
prednisone	prednisone
triamcinolone acetonide	Kenalog
triamcinolone acetonide	Kenalog-80
triamcinolone acetonide	P-Care K40
triamcinolone acetonide	P-Care K80
triamcinolone acetonide	Pod-Care 100K
triamcinolone acetonide	Pro-C-Dure 5
triamcinolone acetonide	Pro-C-Dure 6
triamcinolone acetonide	Zilretta
triamcinolone acetonide	triamcinolone acetonide
triamcinolone acetonide in 0.9 % sodium chloride	triamcinolone aceton-0.9% NaCl
triamcinolone acetonide/0.9% sodium chloride/PF	triamcinol ac (PF) in 0.9%NaCl
triamcinolone acetonide/bupivacaine/in 0.9% sodium chloride	triamcinol ace-bupiv-0.9% NaCl
triamcinolone diacetate in 0.9 % sodium chloride	triamcinolone diacet-0.9% NaCl
triamcinolone diacetate in 0.9 % sodium chloride/PF	triamcinolone dia(PF)-0.9%NaCl
triamcinolone hexacetonide	Aristospan Intra-Articular
triamcinolone hexacetonide	Aristospan Intralesional

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
triamcinolone hexacetonide	Hexatrione
vamorolone	Agamree
Acetaminophen	
acetaminophen	7T Gummy ES
acetaminophen	8 Hour Pain Reliever
acetaminophen	8HR Muscle Aches-Pain
acetaminophen	Acetaminophen Extra Strength
acetaminophen	Acetaminophen Pain Relief
acetaminophen	Aphen
acetaminophen	Arthritis Pain Relief (acetam)
acetaminophen	Arthritis Pain Reliever
acetaminophen	Athenol
acetaminophen	BetaTemp
acetaminophen	Child Fever Reducer-Pain Relvr
acetaminophen	Child Pain Rel-Fever Reducer
acetaminophen	Children's Acetaminophen
acetaminophen	Children's Aurophen Pain-Fever
acetaminophen	Children's Easy-Melts
acetaminophen	Children's Fever Reducing
acetaminophen	Children's Mapap
acetaminophen	Children's Non-Aspirin
acetaminophen	Children's Pain Relief
acetaminophen	Children's Pain Reliever
acetaminophen	Children's Pain-Fever Relief
acetaminophen	Children's Tactinal
acetaminophen	Children's Tylenol
acetaminophen	Ed-APAP
acetaminophen	Fever Reducer
acetaminophen	Feverall
acetaminophen	Infant Fever Reducer-Pain Relf
acetaminophen	Infant Pain Reliever
acetaminophen	Infant's Acetaminophen
acetaminophen	Infant's Pain Relief
acetaminophen	Infant's Pain Reliever
acetaminophen	Infant's Tylenol
acetaminophen	Infants' Pain Relief
acetaminophen	Infants' Pain and Fever
acetaminophen	Jr. Acetaminophen
acetaminophen	Jr. Str Non-Aspirin Pain
acetaminophen	Jr. Strength Pain Reliever
acetaminophen	KinderMed Infants Pain-Fever
acetaminophen	KinderMed Kids Pain-Fever
acetaminophen	Little Remedies Fever and Pain
acetaminophen	M-PAP
acetaminophen	MAXrelief junior
acetaminophen	Mapap (acetaminophen)
acetaminophen	Mapap Arthritis Pain
acetaminophen	Mapap Extra Strength

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
acetaminophen	Masophen
acetaminophen	Non-Aspirin
acetaminophen	Non-Aspirin Extra Strength
acetaminophen	Non-Aspirin Pain Relief
acetaminophen	Nortemp
acetaminophen	Ofirmev
acetaminophen	Pain Relief (acetaminophen)
acetaminophen	Pain Relief Adult
acetaminophen	Pain Relief ES (acetaminophen)
acetaminophen	Pain Reliever (acetaminophen)
acetaminophen	Pain Reliever ES(acetaminophn)
acetaminophen	Pain and Fever
acetaminophen	PediaCare Fever Reducer
acetaminophen	Pharbetol
acetaminophen	Redutemp
acetaminophen	Shake That Ache
acetaminophen	Silapap
acetaminophen	Tactinal
acetaminophen	Tactinal Extra Strength
acetaminophen	Tylenol
acetaminophen	Tylenol 8 Hour
acetaminophen	Tylenol Arthritis Pain
acetaminophen	Tylenol Extra Strength
acetaminophen	Tylophen
acetaminophen	acetaminophen
acetaminophen with codeine phosphate	Tylenol-Codeine #3
acetaminophen with codeine phosphate	Tylenol-Codeine #4
acetaminophen with codeine phosphate	acetaminophen-codeine
acetaminophen/caffeine	Excedrin Tension Headache
acetaminophen/caffeine	Tension Headache
acetaminophen/caffeine	Tension Headache Pain Reliever
acetaminophen/caffeine	Tension Headache Relief
acetaminophen/caffeine/dihydrocodeine bitartrate	Dvorah
acetaminophen/caffeine/dihydrocodeine bitartrate	Trezix
acetaminophen/caffeine/dihydrocodeine bitartrate	acetaminophen-caff-dihydrocod
acetaminophen/chlorpheniramine maleate	Cold and Flu HBP
acetaminophen/chlorpheniramine maleate	Coricidin HBP Cold and Flu
acetaminophen/dexbrompheniramine maleate	Actidogesic
acetaminophen/dexbrompheniramine maleate	Actidogesic-DF
acetaminophen/dexbrompheniramine maleate	Dologen
acetaminophen/dexbrompheniramine maleate	Dologen 325
acetaminophen/dexbrompheniramine maleate	Dologesic (w-dexbromphenirmn)
acetaminophen/dexbrompheniramine maleate	Dologesic-DF
acetaminophen/dexbrompheniramine maleate	G-Dologen
acetaminophen/dextromethorphan HBr	Child Cough and Sore Throat
acetaminophen/dextromethorphan HBr	Child Delsym Cough-Sore Throat
acetaminophen/dextromethorphan HBr	Coricidin HBP Max Cld(acet-DM)
acetaminophen/dextromethorphan HBr	Daytime Cold and Cough

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
acetaminophen/dextromethorphan HBr	Delsym Cough-Sore Throat
acetaminophen/dextromethorphan HBr	Pain Relief Cold and Cough
acetaminophen/dextromethorphan HBr	Robitussin Cough-Sore Throat
acetaminophen/diphenhydramine HCl	Acetadryl
acetaminophen/diphenhydramine HCl	Acetaminophen PM
acetaminophen/diphenhydramine HCl	Acetaminophen PM Extra Str
acetaminophen/diphenhydramine HCl	EaZZZe The Pain
acetaminophen/diphenhydramine HCl	Headache PM
acetaminophen/diphenhydramine HCl	Mapap PM
acetaminophen/diphenhydramine HCl	Night Time Pain Medicine
acetaminophen/diphenhydramine HCl	Non-Aspirin PM
acetaminophen/diphenhydramine HCl	Pain Relief PM
acetaminophen/diphenhydramine HCl	Pain Relief PM Rapid Release
acetaminophen/diphenhydramine HCl	Pain Reliever PM
acetaminophen/diphenhydramine HCl	Pain Reliever PM Ex-Strength
acetaminophen/diphenhydramine HCl	Pain and Sleep
acetaminophen/diphenhydramine HCl	Percogesic
acetaminophen/diphenhydramine HCl	Percogesic Extra Strength
acetaminophen/diphenhydramine HCl	Severe Allergy
acetaminophen/diphenhydramine HCl	Tylenol PM Extra Strength
acetaminophen/diphenhydramine HCl	Unisom PM Pain
acetaminophen/diphenhydramine HCl	Wal-Nadol PM
acetaminophen/diphenhydramine HCl	diphenhydramine-acetaminophen
acetaminophen/diphenhydramine citrate	Goody's PM
acetaminophen/diphenhydramine citrate	Headache Relief PM
acetaminophen/diphenhydramine citrate	Midol PM
acetaminophen/guaifenesin	Mucinex Cold-Flu HBP
acetaminophen/pamabrom	Cramp Tabs
acetaminophen/pamabrom	Midol
acetaminophen/phenyltoloxamine citrate	Relagesic
acetaminophen/pyrilamine maleate	HistaFlex
acetaminophen/pyrilamine maleate/caffeine	Menstrual Complete
acetaminophen/pyrilamine maleate/caffeine	Menstrual Relief
acetaminophen/pyrilamine maleate/caffeine	Midol Complete
acetaminophen/pyrilamine maleate/caffeine	Midol Max St Menstrual
acetaminophen/pyrilamine maleate/pamabrom	Menstrual Relief(pamabr-pyril)
acetaminophen/pyrilamine maleate/pamabrom	Pre-Menstrual Relief
acetaminophen/simethicone/sod chlor/zinc/ginger/fennel	Little Remedies New Baby
aspirin/acetaminophen	Goody's Back and Body Pain
aspirin/acetaminophen/caffeine	BC Max Strength
aspirin/acetaminophen/caffeine	Excedrin Extra Strength
aspirin/acetaminophen/caffeine	Excedrin Migraine
aspirin/acetaminophen/caffeine	Extra Pain Relief
aspirin/acetaminophen/caffeine	Extraprin
aspirin/acetaminophen/caffeine	Goody's Extra Strength
aspirin/acetaminophen/caffeine	Headache Relief (ASA-acet-caf)
aspirin/acetaminophen/caffeine	Migraine Formula
aspirin/acetaminophen/caffeine	Migraine Relief

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
aspirin/acetaminophen/caffeine	Pain Reliever (acetam-aspirin)
aspirin/acetaminophen/caffeine	Pain Reliever Plus
aspirin/acetaminophen/caffeine	Pain-Off
aspirin/acetaminophen/caffeine	Vanquish
aspirin/acetaminophen/diphenhydramine citrate	Pain Relief PM (w-aspirin)
aspirin/salicylamide/acetaminophen/caffeine	Pain Relief(with salicylamide)
benzhydrocodone HCl/acetaminophen	Apadaz
benzhydrocodone HCl/acetaminophen	benzhydrocodone-acetaminophen
butalbital/acetaminophen	Allzital
butalbital/acetaminophen	Bupap
butalbital/acetaminophen	Tencon
butalbital/acetaminophen	butalbital-acetaminophen
butalbital/acetaminophen/caffeine	Esgic
butalbital/acetaminophen/caffeine	Fioricet
butalbital/acetaminophen/caffeine	Phrenilin Forte(with caffeine)
butalbital/acetaminophen/caffeine	Vanatol LQ
butalbital/acetaminophen/caffeine	Vanatol S
butalbital/acetaminophen/caffeine	Vtol LQ
butalbital/acetaminophen/caffeine	Zebutal
butalbital/acetaminophen/caffeine	butalbital-acetaminophen-caff
butalbital/acetaminophen/caffeine/codeine phosphate	Fioricet with Codeine
butalbital/acetaminophen/caffeine/codeine phosphate	butalbital-acetaminop-caf-cod
chlorpheniram/phenyleph/dextromethorphn/acetaminophen/guaifn	Cold-Flu M-Symptom Day-Night
chlorpheniram/phenyleph/dextromethorphn/acetaminophen/guaifn	Tylenol Cold-Flu Severe Day-Nt
chlorpheniramine/dextromethorphan/acetaminophen/guaifenesin	Coricidin HBP Day-Night
dextromethorphan HBr/acetaminophen/chlorpheniramine maleate	Child Plus Cough and RunnyNose
dextromethorphan HBr/acetaminophen/chlorpheniramine maleate	Child's Tylenol plusCough,RNos
dextromethorphan HBr/acetaminophen/chlorpheniramine maleate	Children's Cough and RunnyNose
dextromethorphan HBr/acetaminophen/chlorpheniramine maleate	Coricidin HBP Flu
dextromethorphan HBr/acetaminophen/chlorpheniramine maleate	Flu HBP
dextromethorphan HBr/acetaminophen/chlorpheniramine maleate	Vicks NyQuil Cold/Flu (cpm)
dextromethorphan HBr/acetaminophen/diphenhydramine HCl	Diabetic Tussin Night Time
dextromethorphan HBr/acetaminophen/doxylamine	All-Nite Cold-Flu
dextromethorphan HBr/acetaminophen/doxylamine	Cold-Flu Relief
dextromethorphan HBr/acetaminophen/doxylamine	Contac Cold-Flu Night
dextromethorphan HBr/acetaminophen/doxylamine	Coricidin HBP Cold-Multi Sympt
dextromethorphan HBr/acetaminophen/doxylamine	Coricidin HBP Max Cold-Flu Nt
dextromethorphan HBr/acetaminophen/doxylamine	Cough-Sore Throat Night
dextromethorphan HBr/acetaminophen/doxylamine	Night Time
dextromethorphan HBr/acetaminophen/doxylamine	Night Time Cold and Flu Relief

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
dextromethorphan HBr/acetaminophen/doxylamine	Nighttime Cold-Flu
dextromethorphan HBr/acetaminophen/doxylamine	Nighttime Cold-Flu Relief
dextromethorphan HBr/acetaminophen/doxylamine	Nite Time Cold-Flu
dextromethorphan HBr/acetaminophen/doxylamine	Nite Time Cold-Flu Relief
dextromethorphan HBr/acetaminophen/doxylamine	Nite-Time Cold-Flu
dextromethorphan HBr/acetaminophen/doxylamine	Nitetime Multi-Symptom
dextromethorphan HBr/acetaminophen/doxylamine	Vicks NyQuil Cold/Flu Liquicap
dextromethorphan HBr/acetaminophen/doxylamine	Vicks Nyquil Nighttime Relief
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Alka-Seltzer Plus Day
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Alka-Seltzer Plus Sinus-Cough
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Cold Head Congestion Daytime
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Cold Max Daytime
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Cold Multi-Symptom
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Cold-Flu Relief
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Day Multi-Symp Flu-Severe Cold
dextromethorphan HBr/phenylephrine HCl/acetaminophen	DayTime
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Daytime Cold
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Daytime Cold-Flu
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Daytime Cold-Flu Relief (PE)
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Flu-Severe Cold-Cough Daytime
dextromethorphan HBr/phenylephrine HCl/acetaminophen	HerbioMed Body Aches-Sinus M-S
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Mapap Cold Formula
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Mucinex Fast-Max Cong-HA (DM)
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Mucinex Sinus-Max Cng-Pain(DM)
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Severe Cold and Flu-Day (DM)
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Theraflu ExpressMax Cold Day
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Theraflu Multi-Symptom Cold
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Theraflu Severe Cold Rlf
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Tylenol Cold Max Day
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Tylenol Cold Multi-Symptom Day
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Vicks DayQuil Cold-Flu Relief
dextromethorphan HBr/phenylephrine HCl/acetaminophen	Wal-Flu Severe Cold-Cough
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Alka-Seltzer Plus D-N (acetam)
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Alka-Seltzer Plus Night
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Alka-Seltzer Plus Sin-Allg-Cgh
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Cold Multi-Symptom NightTime
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Cold and Flu Relief Plus (D/N)
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Daytime-Nighttime
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Daytime-Nighttime Cold-Flu
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Severe Cold and Flu Nighttime

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Tylenol Cold Max Night
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Vicks DayQuil-NyQuil
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Vicks DayQuil-NyQuil Cold-Flu
dextromethorphan HBr/phenylephrine/acetaminophen/doxylamine	Vicks NyQuil Severe Cold-Flu
dextromethorphan HBr/pseudoephedrine HCl/acetaminophen	DAY-TIME
dextromethorphan HBr/pseudoephedrine HCl/acetaminophen	Daytime Cold and Flu Relief
dextromethorphan HBr/pseudoephedrine HCl/acetaminophen	Non-Aspirin Flu
dextromethorphan HBr/pseudoephedrine HCl/acetaminophen	Tylenol Cold-Flu Multi-Act Day
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Alka-Seltzer Plus Cold/CoughFm
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Alka-Seltzer Plus Flu
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Child Giltuss MultSym Cold-Flu
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Child Triaminic MS Fever-Cold
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Children's Cold And Flu
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Children's Flu Relief
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Children's Plus Flu
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Children's Tylenol Cold-Flu
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Childrens Plus Multi-Symp Cold
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Cold Head Congestion Day/Nite
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Cold Head Congestion Nighttime
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Cold Max Day-Night
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Cold Multi-Symptom (chlorphen)
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Cold Multi-Symptom Day/Night
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Cold Relief M/S Day/Night
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Daytime and Nighttime Cold
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Giltuss Multi-Symptom Cold-Flu
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Head Congestion Day-Night

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
dextromethorphan/phenylephrine/acetaminophen/chlorpheniramin	Multi-Symptom Cold (pe-cpm)
dextromethorphan/phenylephrine/acetaminophen/diphenhydramine	Day-Night Severe Cold-Flu
dextromethorphan/phenylephrine/acetaminophen/diphenhydramine	HerbioMed Deep Cold-Flu Night
dextromethorphan/phenylephrine/acetaminophen/diphenhydramine	Multi-Symptom Severe Cold-Nt
dextromethorphan/phenylephrine/acetaminophen/diphenhydramine	Wal-Flu Day-Night Cold-Cough
dextromethorphan/pseudoephedrine/acetaminophen/chlorpheniram	Alka-Seltzer Plus-D Sinus-Cold
dextromethorphan/pseudoephedrine/acetaminophen/chlorpheniram	Tylenol Cold-Flu Multi-Act D-N
dextromethorphan/pseudoephrine HCl/acetaminophen/doxylamine	Alka-Seltzer Plus Cold-Flu
dextromethorphan/pseudoephrine HCl/acetaminophen/doxylamine	Nite Time-D Cold-Flu Relief
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Allergy Sinus Headache (PE)
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Child Delsym Cough-Cold
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Child Mucinex M-S Cold Night
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Children Dimetapp M-S Cold-Flu
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Children's Mucinex Night Time
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Cold and Flu Relief(diphen-pe)
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Cough and Severe Cold
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Delsym Cough-Cold NightTime
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Flu Relief Therapy Nighttime
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Flu Severe Cold-Night(diph-pe)
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Flu-Severe Cold-Cough Night
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Herbiomed Allergy Cold-Sinus
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Mucinex Fast-Max Nite Cold-Flu
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Mucinex Sinus-Max Nite Congest
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Robitussin Cold-Flu Night (PE)
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Severe Allergy-Sinus Headache
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Severe Cold Cough-Flu
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Severe Cold PE
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Theraflu ExpressMax Cold Night
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Theraflu Night Severe Cold-Cgh
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Theraflu Nighttime PowerPod
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Wal-Dryl Severe Allergy-Sinus
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Wal-Flu Night Severe Cold
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Wal-Flu Severe Cold and Cough
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Wal-Phed PE Nighttime Cold
diphenhydramine HCl/phenylephrine HCl/acetaminophen	Wal-phed PE Severe Cold
diphenhydramine HCl/phenylephrine/acetaminophen/guaifenesin	Mucinex Sinus-Max D-N (diphen)
diphenhydramine HCl/phenylephrine/acetaminophen/guaifenesin	Sinus Relief Max Str Day-Night
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Child Delsym Cough Plus Dy-Nt

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Child Mucinex M-S Cold Day-Nte
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Children's M-S Cold Day-Night
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Daytime-Cold Nighttime-Cld-Flu
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Delsym Cough Plus Day-Night
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Mucinex Fast-Max Day-Nite Cold
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Mucinex Fast-Max Day-Nite Cong
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Mucinex Fst-Mx Dy-Nt Cold(dph)
diphenhydramine/phenylephrin/dextromethorph/acetaminophen/GG	Wal-Phed PE Day-Night
doxylamine succinate/dextromethorphan/acetaminophen/guaifen	Coricidin HBP Max Cold-Flu D-N
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Alka-Seltzer Plus Cold Day-Nt
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Day-Cold Night-Cold-Flu(doxyl)
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Day-Nite Severe Cold-Flu
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Mucinex Fast-Max Day-Nt(doxyl)
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Mucinex Sinus-Max Dy-Nt (dxyl)
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Severe Cold and Flu(Day/Night)
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Tylenol Cold-Flu-Cough Dy-Nt
doxylamine/phenylephrine/dextromethorphan/acetaminophen/GG	Vicks DayQuil-NyQuil Severe
guaifenesin/dextromethorphan hydrobromide/acetaminophen	Coricidin HBP Max Cold-Cgh-Flu
guaifenesin/phenylephrine HCl/acetaminophen	CCP Caffeine Free
guaifenesin/phenylephrine HCl/acetaminophen	Cold Head Congest(gg-pe-acetm)
guaifenesin/phenylephrine HCl/acetaminophen	Coldonyl
guaifenesin/phenylephrine HCl/acetaminophen	Flu Relief Therapy Cold-Chest
guaifenesin/phenylephrine HCl/acetaminophen	Head Congestion-Mucus
guaifenesin/phenylephrine HCl/acetaminophen	Mucinex Fast-Max Cold-Sinus
guaifenesin/phenylephrine HCl/acetaminophen	Mucinex Fast-Max Cong-HA (GG)
guaifenesin/phenylephrine HCl/acetaminophen	Mucinex Freefrom Cold-Flu-Cong
guaifenesin/phenylephrine HCl/acetaminophen	Mucinex Sinus-Max Cng-Pain(gg)
guaifenesin/phenylephrine HCl/acetaminophen	Mucinex Sinus-Max Sev Congestn
guaifenesin/phenylephrine HCl/acetaminophen	Mucus Relief Cold and Sinus
guaifenesin/phenylephrine HCl/acetaminophen	Mucus Relief SinusPressur-Pain
guaifenesin/phenylephrine HCl/acetaminophen	Mucus Rlf Severe Sinus Congest
guaifenesin/phenylephrine HCl/acetaminophen	Pressure-Pain PE Plus Mucus

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
guaifenesin/phenylephrine HCl/acetaminophen	Severe Congestion Relief
guaifenesin/phenylephrine HCl/acetaminophen	Severe Sinus
guaifenesin/phenylephrine HCl/acetaminophen	Sinus Congestion-Pain(guaif)
guaifenesin/phenylephrine HCl/acetaminophen	Sinus Relief Pressure and Pain
guaifenesin/phenylephrine HCl/acetaminophen	Sinus Relief Severe Congestion
guaifenesin/phenylephrine HCl/acetaminophen	Sudafed PE Head Congestn-Mucus
guaifenesin/phenylephrine HCl/acetaminophen	Sudafed PE Pressure-Pain-Mucus
guaifenesin/phenylephrine HCl/acetaminophen	Tylenol Cold Head Congest Sevr
guaifenesin/phenylephrine HCl/acetaminophen	Tylenol Sinus Severe
guaifenesin/phenylephrine HCl/acetaminophen	Wal-Phed PE Triple Relief
hydrocodone bitartrate/acetaminophen	Lorcet (hydrocodone)
hydrocodone bitartrate/acetaminophen	Lorcet HD
hydrocodone bitartrate/acetaminophen	Lorcet Plus
hydrocodone bitartrate/acetaminophen	Lortab Elixir
hydrocodone bitartrate/acetaminophen	Norco
hydrocodone bitartrate/acetaminophen	Vicodin
hydrocodone bitartrate/acetaminophen	Vicodin HP
hydrocodone bitartrate/acetaminophen	hydrocodone-acetaminophen
ibuprofen sodium/acetaminophen	Combogesic IV
ibuprofen/acetaminophen	Advil Dual Action
ibuprofen/acetaminophen	Dual Action Pain Reliever
ibuprofen/acetaminophen	ibuprofen-acetaminophen
magnesium salicylate/acetaminophen/caffeine	Back Pain-Off
oxycodone HCl/acetaminophen	Endocet
oxycodone HCl/acetaminophen	Nalocet
oxycodone HCl/acetaminophen	Percocet
oxycodone HCl/acetaminophen	Primlev
oxycodone HCl/acetaminophen	Prolate
oxycodone HCl/acetaminophen	oxycodone-acetaminophen
pheniramine maleate/phenylephrine HCl/acetaminophen	Theraflu Flu-Sore Throat
pheniramine maleate/phenylephrine HCl/acetaminophen	Wal-Flu Cold and Sore Throat
pheniramine maleate/phenylephrine HCl/acetaminophen	Wal-Flu Night Time
phenylephrine HCl/acetaminophen	Acetaminophen Congestion-Pain
phenylephrine HCl/acetaminophen	Contac Cold-Flu Day
phenylephrine HCl/acetaminophen	Mapap Sinus Max Strength (PE)
phenylephrine HCl/acetaminophen	Sinus Congestion and Pain
phenylephrine HCl/acetaminophen	Sinus Headache PE
phenylephrine HCl/acetaminophen	Sinus Pain Relief
phenylephrine HCl/acetaminophen	Sinus Pain-Pressure (PE)
phenylephrine HCl/acetaminophen	Sinus Relief (Non-Drowsy)
phenylephrine HCl/acetaminophen	Sudafed PE Pressure-Pain
phenylephrine HCl/acetaminophen	Suphedrine PE Sinus Headache
phenylephrine HCl/acetaminophen	Tylenol Sinus Headache
phenylephrine HCl/acetaminophen	Vicks Sinex Daytime
phenylephrine HCl/acetaminophen	Wal-Phed PE Sinus Headache
phenylephrine HCl/acetaminophen/chlorpheniramine	Allergy Multi-Symptom
phenylephrine HCl/acetaminophen/chlorpheniramine	Allergy Relief Multi-Symptom
phenylephrine HCl/acetaminophen/chlorpheniramine	Allergy Relief(chlorphen-acet)

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
phenylephrine HCl/acetaminophen/chlorpheniramine	Allergy Sinus PE
phenylephrine HCl/acetaminophen/chlorpheniramine	BC Sinus Pain and Congestion
phenylephrine HCl/acetaminophen/chlorpheniramine	Childrens Plus Cold
phenylephrine HCl/acetaminophen/chlorpheniramine	Contac Cold-Flu Day and Night
phenylephrine HCl/acetaminophen/chlorpheniramine	Contac Cold-Flu Max Strength
phenylephrine HCl/acetaminophen/chlorpheniramine	Dristan Cold
phenylephrine HCl/acetaminophen/chlorpheniramine	Medicidin-D
phenylephrine HCl/acetaminophen/chlorpheniramine	Norel AD
phenylephrine HCl/acetaminophen/chlorpheniramine	Sinus Congest-Pain Day-Night
phenylephrine HCl/acetaminophen/chlorpheniramine	Sinus Congestion-Pain(chlorph)
phenylephrine HCl/acetaminophen/chlorpheniramine	Sinus-Headache Day-Night
phenylephrine HCl/acetaminophen/chlorpheniramine	Sinutrol PE
phenylephrine HCl/acetaminophen/chlorpheniramine	Valihist
phenylephrine HCl/acetaminophen/doxylamine succinate	Sinus Daytime-Nightime
phenylephrine HCl/acetaminophen/doxylamine succinate	Vicks DayQuil-NyQuil Sinex
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Child Mucinex Cough-Cold-Fever
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Child Mucinex Freefrom Dy Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Child Mucinex MS Cold-Throat
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Child Multi-Symptom Cold-Fever
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Children's Cold-Cough-Sore
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Children's Mucinex Cold-Fever
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Children's Mucinex Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Cold Head Congestion Sever Day
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Cold Max Severe Daytime
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Cold Severe Congestion
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Cold and Flu Severe
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Cold-Cough Sinus Relief PE
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Cold-Flu-Sore Throat
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Decorel Forte Plus
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Dometuss G
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Fast Mucus Relief Severe Cold

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Herbiomed Severe Cold-Flu M-S
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Maximum Strength Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Cold,Flu,Sore Throat
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Fast-Max Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Fast-Max Cold-Flu-Thrt
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Fast-Max Severe Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Freefrom Day Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Junior Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucinex Sinus-Max Pressure-Cgh
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucus Relief Cold-Flu-Sore Thr
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucus Relief Sev Congest-Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Mucus Relief Severe Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Multi-Symptom Cold (PE)
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Non-Pseudo Cold Relief
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Pressure-Pain PE Plus Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Robitussin Sevr Cough-Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Rompe Pecho Max Multi Symptoms
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Severe Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Severe Cold Multi-Symptom
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Severe Cold and Flu (PE)
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Sinus PE Pressure-Pain-Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Sudafed PE Head Congestion-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Sudafed PE Pressure-Pain-Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Theraflu ExpressMax Sv Cld-Flu

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Tussin CF Max Severe M-S Cold
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Tylenol Cold and Flu Severe
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Vicks DayQuil Severe Cold-Flu
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Wal-Phed PE Cold-Cough
phenylephrine HCl/dextromethorphan HBr/acetaminophen/guaifen	Wal-Phed PE Pressure+Pain+Cold
pseudoephedrine HCl/acetaminophen	Nexafed Sinus Pressure-Pain
pseudoephedrine HCl/acetaminophen/chlorpheniramine	Allergy Sinus-D
pseudoephedrine/dextromethorphan/guaifenesin/acetaminophen	Duraflu
pyrilamine maleate/chlophedianol HCl/acetaminophen	Ninjacof-A
tramadol HCl/acetaminophen	Ultracet
tramadol HCl/acetaminophen	tramadol-acetaminophen
triprolidine HCl/dextromethorphan HBr/acetaminophen	Delsym Nighttime Cough
triprolidine HCl/dextromethorphan HBr/acetaminophen	Mucinex Nightshift Cold-Flu
triprolidine HCl/dextromethorphan/acetaminophen/guaifenesin	Mucinex Fast-Max DM Nightshift
triprolidine HCl/phenylephrine/dextromethorphn/acetaminophen	Child Mucinex Freefrom Nt Cold
triprolidine HCl/phenylephrine/dextromethorphn/acetaminophen	Mucinex Freefrom Nt Cold-Flu
triprolidine HCl/phenylephrine/dextromethorphn/acetaminophen	Mucinex Nightshft Cold-Flu Clr
triprolidine HCl/phenylephrine/dextromethorphn/acetaminophen	Mucinex Nightshft Sevr Cld-Flu
triprolidine HCl/phenylephrine/dextromethorphn/acetaminophen	Mucinex Nightshift Sinus
TNF Inhibitors	
adalimumab	Humira
adalimumab	Humira Pediatric Crohns Start
adalimumab	Humira Pen
adalimumab	Humira Pen Crohns-UC-HS Start
adalimumab	Humira Pen Psor-Uveits-Adol HS
adalimumab	Humira(CF)
adalimumab	Humira(CF) Pedi Crohns Starter
adalimumab	Humira(CF) Pen
adalimumab	Humira(CF) Pen Crohns-UC-HS
adalimumab	Humira(CF) Pen Pediatric UC
adalimumab	Humira(CF) Pen Psor-Uv-Adol HS
adalimumab-aacf	Idacio(CF)
adalimumab-aacf	Idacio(CF) Pen
adalimumab-aacf	Idacio(CF) Pen Crohn-UC Startr
adalimumab-aacf	Idacio(CF) Pen Psoriasis Start
adalimumab-aacf	adalimumab-aacf
adalimumab-aaty	Yuflyma(CF)
adalimumab-aaty	Yuflyma(CF) AI Crohn's-UC-HS
adalimumab-aaty	Yuflyma(CF) Autoinjector
adalimumab-adaz	Hyrimoz
adalimumab-adaz	Hyrimoz Pen
adalimumab-adaz	Hyrimoz Pen Crohn's-UC Starter
adalimumab-adaz	Hyrimoz Pen Psoriasis Starter

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
adalimumab-adaz	Hyrimoz(CF)
adalimumab-adaz	Hyrimoz(CF) Pedi Crohn Starter
adalimumab-adaz	Hyrimoz(CF) Pen
adalimumab-adaz	adalimumab-adaz
adalimumab-adbm	Cyltezo(CF)
adalimumab-adbm	Cyltezo(CF) Pen
adalimumab-adbm	Cyltezo(CF) Pen Crohn's-UC-HS
adalimumab-adbm	Cyltezo(CF) Pen Psoriasis-UV
adalimumab-adbm	adalimumab-adbm
adalimumab-adbm	adalimumab-adbm(CF) pen Crohns
adalimumab-adbm	adalimumab-adbm(CF) pen PS-UV
adalimumab-afzb	Abrilada(CF)
adalimumab-afzb	Abrilada(CF) Pen
adalimumab-aqvh	Yusimry(CF) Pen
adalimumab-atto	Amjevita(CF)
adalimumab-atto	Amjevita(CF) Autoinjector
adalimumab-bwwd	Hadlima
adalimumab-bwwd	Hadlima PushTouch
adalimumab-bwwd	Hadlima(CF)
adalimumab-bwwd	Hadlima(CF) PushTouch
adalimumab-fkjp	Hulio(CF)
adalimumab-fkjp	Hulio(CF) Pen
adalimumab-fkjp	adalimumab-fkjp
certolizumab pegol	Cimzia
certolizumab pegol	Cimzia Powder for Reconst
certolizumab pegol	Cimzia Starter Kit
etanercept	Enbrel
etanercept	Enbrel Mini
etanercept	Enbrel SureClick
golimumab	Simponi
golimumab	Simponi ARIA
infliximab	Remicade
infliximab	infliximab
infliximab-abda	Renflexis
infliximab-axxq	Avsola
infliximab-dyyb	Inflectra
Immunosuppressants	
abatacept	Orencia
abatacept	Orencia ClickJect
abatacept/maltose	Orencia (with maltose)
abemaciclib	Verzenio
acalabrutinib	Calquence
adalimumab	Humira(CF) Pen Crohns-UC-HS
adalimumab	Humira(CF) Pen Pediatric UC
adalimumab	Humira(CF) Pen
adalimumab	Humira(CF)
adalimumab	Humira(CF) Pedi Crohns Starter
adalimumab	Humira

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
adalimumab	Humira Pediatric Crohns Start
adalimumab	Humira Pen
adalimumab	Humira Pen Crohns-UC-HS Start
adalimumab	Humira Pen Psor-Uveits-Adol HS
ado-trastuzumab emtansine	Kadcyla
afatinib dimaleate	Gilotrif
aldesleukin	Proleukin
alectinib HCl	Alecensa
alemtuzumab	Lemtrada
alemtuzumab	Campath
alpelisib	Piqray
amivantamab-vmjw	Rybrevant
anakinra	Kineret
anifrolumab-fnia	Saphnelo
anti-thymocyte globulin,rabbit	Thymoglobulin
apremilast	Otezla Starter
apremilast	Otezla
arsenic trioxide	arsenic trioxide
arsenic trioxide	Trisenox
asparaginase (Erwinia chrysanthemi)	Erwinaze
asparaginase (Erwinia chrysanthemi)	Erwinase
asparaginase Erwinia chrysanthemi (recombinant)-rywn	Rylaze
atezolizumab	Tecentriq
auranofin	Ridaura
avapritinib	Ayvakit
avelumab	Bavencio
axicabtagene ciloleucel	Yescarta
axitinib	Inlyta
azacitidine	azacitidine
azacitidine	Vidaza
azacitidine	Onureg
azathioprine	azathioprine
azathioprine	Imuran
azathioprine	Azasan
azathioprine sodium	azathioprine sodium
baricitinib	Olumiant
basiliximab	Simulect
belatacept	Nulojix
belimumab	Benlysta
belinostat	Beleodaq
belumosudil mesylate	Rezurock
belzutifan	Welireg
bendamustine HCl	bendamustine
bendamustine HCl	Belrapzo
bendamustine HCl	Bendeka
bendamustine HCl	Treanda
bevacizumab	Avastin
bevacizumab-awwb	Mvasi

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
bevacizumab-bvzr	Zirabev
bexarotene	Targretin
bexarotene	bexarotene
binimetinib	Mektovi
bleomycin sulfate	bleomycin
blinatumomab	Blincyto
bortezomib	bortezomib
bortezomib	Velcade
bosutinib	Bosulif
brentuximab vedotin	Adcetris
brigatinib	Alunbrig
busulfan	busulfan
busulfan	Busulfex
busulfan	Myleran
cabazitaxel	Jevtana
cabozantinib s-malate	Cometriq
cabozantinib s-malate	Cabometyx
calaspargase pegol-mknl	Asparlas
canakinumab/PF	Ilaris (PF)
capecitabine	Xeloda
capecitabine	capecitabine
carboplatin	carboplatin
carfilzomib	Kyprolis
carmustine	BiCNU
carmustine	carmustine
carmustine in polifeprosan 20	Gliadel Wafer
cemiplimab-rwlc	Libtayo
ceritinib	Zykadia
cetuximab	Erbitux
chlorambucil	Leukeran
cisplatin	cisplatin
cladribine	cladribine
clofarabine	Clolar
clofarabine	clofarabine
cobimetinib fumarate	Cotellic
copanlisib di-HCl	Aliqopa
crizotinib	Xalkori
cyclophosphamide	cyclophosphamide
cyclosporine	Sandimmune
cyclosporine	cyclosporine
cyclosporine, modified	Gengraf
cyclosporine, modified	Neoral
cyclosporine, modified	cyclosporine modified
cytarabine	cytarabine
cytarabine/PF	cytarabine (PF)
dabrafenib mesylate	Tafinlar
dacarbazine	dacarbazine
dacomitinib	Vizimpro

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
dactinomycin	dactinomycin
dactinomycin	Cosmegen
daratumumab	Darzalex
dasatinib	Sprycel
daunorubicin HCl	daunorubicin
daunorubicin/cytarabine liposomal	Vyxeos
decitabine	decitabine
decitabine	Dacogen
dinutuximab	Unituxin
docetaxel	Taxotere
docetaxel	docetaxel
docetaxel	Docefrez
dostarlimab-gxly	Jemperli
doxorubicin HCl	doxorubicin
doxorubicin HCl	Adriamycin
doxorubicin HCl pegylated liposomal	Doxil
doxorubicin HCl pegylated liposomal	doxorubicin, peg-liposomal
doxorubicin HCl pegylated liposomal	Lipodox
doxorubicin HCl pegylated liposomal	Lipodox 50
durvalumab	Imfinzi
duvelisib	Copiktra
elotuzumab	Empliciti
emapalumab-lzsg	Gamifant
enasidenib mesylate	Idhifa
encorafenib	Braftovi
enfortumab vedotin-ejfv	Padcev
entrectinib	Rozlytrek
epirubicin HCl	Ellence
epirubicin HCl	epirubicin
erdafitinib	Balversa
eribulin mesylate	Halaven
erlotinib HCl	erlotinib
erlotinib HCl	Tarceva
etanercept	Enbrel
etanercept	Enbrel SureClick
etanercept	Enbrel Mini
etoposide	etoposide
etoposide	Toposar
etoposide phosphate	Etopophos
everolimus	everolimus (antineoplastic)
everolimus	Zortress
everolimus	Afinitor
everolimus	Afinitor Disperz
everolimus	everolimus (immunosuppressive)
fam-trastuzumab deruxtecan-nxki	Enhertu
fedratinib dihydrochloride	Inrebic
fingolimod HCl	Gilenya
floxuridine	floxuridine

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
fludarabine phosphate	fludarabine
fluorouracil	Adrucil
fluorouracil	fluorouracil
fostamatinib disodium	Tavalisse
gefitinib	Iressa
gemcitabine HCl	gemcitabine
gemcitabine HCl in 0.9 % sodium chloride	Infugem
gemtuzumab ozogamicin	Mylotarg
gilteritinib fumarate	Xospata
glasdegib maleate	Daurismo
glucarpidase	Voraxaze
golimumab	Simponi
golimumab	Simponi ARIA
hydroxyurea	Hydrea
hydroxyurea	hydroxyurea
ibrutinib	Imbruvica
idarubicin HCl	Idamycin PFS
idarubicin HCl	idarubicin
idecabtagene vicleucel	Abecma
idelalisib	Zydelig
ifosfamide	ifosfamide
ifosfamide	Ifex
ifosfamide/mesna	ifosfamide-mesna
imatinib mesylate	imatinib
imatinib mesylate	Gleevec
infigratinib phosphate	Truseltiq
inotuzumab ozogamicin	Besponsa
interferon alfa-2b,recomb.	Intron A
interferon alfa-n3	Alferon N
interferon gamma-1b,recomb.	Actimmune
ipilimumab	Yervoy
irinotecan HCl	Camptosar
irinotecan HCl	irinotecan
irinotecan liposomal	Onivyde
ivosidenib	Tibsovo
ixabepilone	Ixempra
ixazomib citrate	Ninlaro
kit for prep yttrium-90/ibritumomab tiuxetan/albumin human	Zevalin (Y-90)
lapatinib ditosylate	Tykerb
larotrectinib sulfate	Vitrakvi
leflunomide	Arava
leflunomide	leflunomide
lenalidomide	Revlimid
lenvatinib mesylate	Lenvima
lomustine	Gleostine
loncastuximab tesirine-lpyl	Zynlonta
lorlatinib	Lorbrena
lymphocyte immune globulin,antithymocyte (equine)	Atgam

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
margetuximab-cmkb	Margenza
melphalan	melphalan
melphalan	Alkeran
melphalan flufenamide hydrochloride	Pepaxto
melphalan HCl	melphalan HCl
melphalan HCl	Alkeran (as HCl)
melphalan HCl/betadex sulfobutyl ether sodium	Evomela
mercaptopurine	mercaptopurine
mercaptopurine	Purixan
methotrexate	Xatmep
methotrexate sodium	methotrexate sodium
methotrexate sodium	Trexall
methotrexate sodium/PF	methotrexate sodium (PF)
methotrexate/PF	Otrexup (PF)
methotrexate/PF	Rasuvo (PF)
midostaurin	Rydapt
mitomycin	mitomycin
mitomycin	Mutamycin
mitoxantrone HCl	mitoxantrone
mogamulizumab-kpkc	Poteligeo
moxetumomab pasudotox-tdfk	Lumoxiti
mycophenolate mofetil	CellCept
mycophenolate mofetil	mycophenolate mofetil
mycophenolate mofetil HCl	CellCept Intravenous
mycophenolate mofetil HCl	mycophenolate mofetil (HCl)
mycophenolate sodium	Myfortic
mycophenolate sodium	mycophenolate sodium
necitumumab	Portrazza
nelarabine	Arranon
neratinib maleate	Nerlynx
nilotinib HCl	Tasigna
niraparib tosylate	Zejula
nivolumab	Opdivo
obinutuzumab	Gazyva
ofatumumab	Arzerra
olaparib	Lynparza
olaratumab	Lartruvo
omacetaxine mepesuccinate	Synribo
osimertinib mesylate	Tagrisso
oxaliplatin	oxaliplatin
paclitaxel	paclitaxel
paclitaxel protein-bound	Abraxane
palbociclib	Ibrance
panitumumab	Vectibix
panobinostat lactate	Farydak
pazopanib HCl	Votrient
pegaspargase	Oncaspar
peginterferon alfa-2b	Sylatron

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
pembrolizumab	Keytruda
pemetrexed disodium	Alimta
pentostatin	Nipent
pertuzumab	Perjeta
pexidartinib hydrochloride	Turalio
polatuzumab vedotin-piiq	Polivy
pomalidomide	Pomalyst
ponatinib HCl	Iclusig
pralatrexate	Folotyn
pralsetinib	Gavreto
procarbazine HCl	Matulane
ramucirumab	Cyramza
regorafenib	Stivarga
ribociclib succinate	Kisqali
ribociclib succinate/letrozole	Kisqali Femara Co-Pack
rilonacept	Arcalyst
rituximab	Rituxan
rituximab/hyaluronidase, human recombinant	Rituxan Hycela
rituximab-abbs	Truxima
rituximab-pvvr	Ruxience
romidepsin	romidepsin
romidepsin	Istodax
rucaparib camsylate	Rubraca
ruxolitinib phosphate	Jakafi
sarilumab	Kevzara
selinexor	Xpovio
selumetinib sulfate/vitamin E TPGS	Koselugo
sipuleucel-T/lactated ringers solution	Provenge
sirolimus	Rapamune
sirolimus	sirolimus
sonidegib phosphate	Odomzo
sorafenib tosylate	Nexavar
sotorasib	Lumakras
streptozocin	Zanosar
sunitinib malate	Sutent
sunitinib malate	sunitinib malate
tacrolimus	tacrolimus
tacrolimus	Prograf
tacrolimus	Astagraf XL
tacrolimus	Envarsus XR
tagraxofusp-erzs	Elzonris
talazoparib tosylate	Talzenna
talimogene laherparepvec	Imlygic
tazemetostat hydrobromide	Tazverik
temozolomide	Temodar
temozolomide	temozolomide
temsirolimus	Torisel
temsirolimus	temsirolimus

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
teniposide	teniposide
thalidomide	Thalomid
thioguanine	Tabloid
thiotepa	thiotepa
thiotepa	Tepadina
tisagenlecleucel	Kymriah
tivozanib HCl	Fotivda
tocilizumab	Actemra
tocilizumab	Actemra ACTPen
tofacitinib citrate	Xeljanz XR
tofacitinib citrate	Xeljanz
topotecan HCl	Hycamtin
topotecan HCl	topotecan
trabectedin	Yondelis
trametinib dimethyl sulfoxide	Mekinist
trastuzumab	Herceptin
trastuzumab-anns	Kanjinti
trastuzumab-dkst	Ogivri
trastuzumab-dttb	Ontruzant
trastuzumab-hyaluronidase-oysk	Herceptin Hylecta
trastuzumab-qyyp	Trazimera
trifluridine/tipiracil HCl	Lonsurf
upadacitinib	Rinvoq
valrubicin	valrubicin
valrubicin	Valstar
vandetanib	Caprelsa
vemurafenib	Zelboraf
venetoclax	Venclexta
venetoclax	Venclexta Starting Pack
vinblastine sulfate	vinblastine
vincristine sulfate	Vincasar PFS
vincristine sulfate	vincristine
vincristine sulfate liposomal	Marqibo
vinorelbine tartrate	vinorelbine
vinorelbine tartrate	Navelbine
vismodegib	Erivedge
vorinostat	Zolinza
zanubrutinib	Brukinsa
ziv-aflibercept	Zaltrap
Inhaled Corticosteroids	
albuterol sulfate/budesonide	Airsupra
beclomethasone dipropionate	Qvar
beclomethasone dipropionate	Qvar RediHaler
budesonide	Pulmicort
budesonide	Pulmicort Flexhaler
budesonide	budesonide
budesonide/formoterol fumarate	Breyna
budesonide/formoterol fumarate	Symbicort

Appendix BB. List of Generic and Brand Names of Medical Products Used to Define Covariates in this Request

Generic Name	Brand Name
budesonide/formoterol fumarate	budesonide-formoterol
budesonide/glycopyrrolate/formoterol fumarate	Breztri Aerosphere
ciclesonide	Alvesco
fluticasone furoate	Arnuity Ellipta
fluticasone furoate/umeclidinium bromide/vilanterol trifenat	Trelegy Ellipta
fluticasone furoate/vilanterol trifenatate	Breo Ellipta
fluticasone propionate	ArmonAir Digihaler
fluticasone propionate	Flovent Diskus
fluticasone propionate	Flovent HFA
fluticasone propionate/salmeterol xinafoate	Advair Diskus
fluticasone propionate/salmeterol xinafoate	Advair HFA
fluticasone propionate/salmeterol xinafoate	AirDuo Digihaler
fluticasone propionate/salmeterol xinafoate	AirDuo RespiClick
fluticasone propionate/salmeterol xinafoate	Wixela Inhub
fluticasone propionate/salmeterol xinafoate	fluticasone propion-salmeterol
mometasone furoate	Asmanex HFA
mometasone furoate	Asmanex Twisthaler
mometasone furoate/formoterol fumarate	Dulera

Appendix BC. Specifications Defining Parameters Used in this Request

The Center for Drug Evaluation and Research (CDER) has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) tool, version 13.1.2, to examine the association between PPI/Famotidine use and COVID-19 related outcomes (hospitalization, severe clinical course of COVID-19 defined as requiring intubation or mechanical ventilation or ICU care, and inpatient death) in the Sentinel Distributed Database.

Index Start Date:	4/1/2020
Index End Date:	3/31/2023
Coverage Requirement:	Medical and Drug Coverage
Pre-index enrollment requirement:	183 days
Post-index enrollment requirement:	0 days
Allowed enrollment gap:	45 days
Demographic Restrictions:	Sex: Male, Female
Age groups:	18-49, 50-64, 65-74, 75+
Envelope macro:	*Reclassify encounters during inpatient stay as inpatient except on Adate
Never-exposed cohort:	No
Additional Output (Dist of Index, MFU):	N/A
Freeze data:	Yes
Lab Date Hierarchy:	Lab date (L) > Result date (R) > Order date (O)
List of Analyses:	**Analysis 1: Updated user-specified PS model, IPTW, ATT weight**
	Analysis 2: HDPS model, IPTW, ATT weight
	Analysis 3: HDPS model, PS fine stratification, ATT weight
	Analysis 4: HDPS model, Overlap Weighting, ATO weight
	Analysis 5: HDPS model, IPTW, ATE weight

	Comparison 1	
Logic	**COVID-19 Hospitalization**	
Group	ppi_hosp	famo_hosp
Analysis Group	ppi_famo_hosp	
Index Exposure/Comparator	Proton Pump Inhibitor	Famotidine only
Cohort Definition	First valid incident treatment episode during the query period	
Incidence Exposure washout period	-183 days	
Incident w/ Respect to:	PPI (done as t2washper), H2RA (done as an exclusion criteria)	PPI (done as an exclusion criteria, H2RA (done as an exclusion criteria and t2washper)
Exclude evidence of days supply if exposure washout include dispensings	Washout lookback period should search for evidence of days supply	
Stockpiling	Generic Name	
Point Exposure	No	
Treatment Episode Gap	15 days	
Exposure Episode Extension	15 days	
Maximum exposure episode duration	184 days	

Appendix BC. Specifications Defining Parameters Used in this Request		
Incidence Criteria Care Setting/PDX	Any	
Create Baseline Table?	Yes	
xclusion Criteria		
Criteria	GERD diagnosis	
Type	Inclusion	
Evaluation Window	-90, 0	
Care Setting/PDX	Any	
Number of instances the criteria should be found in the evaluation period	1	
Criteria	ICD-10 U07.1 or B97.29, (+) COVID-19 PCR	
Type	Exclusion	
Evaluation Window	-183, -1	
Care Setting/PDX	Any	
Number of instances the criteria should be found in the evaluation period	1	
Criteria	H2RA dispensing	PPI dispensing, H2RA dispensing (other than Famotidine)
Type	Exclusion	
Evaluation Window	-183, 0	
Care Setting/PDX	N/A	
Number of instances the criteria should be found in the evaluation period	1	
isk Time		
Minimum exposure episode duration	1	
Maximum exposure episode duration	----	
Censoring Criteria	*Death, DP end date, Query end date; *Disenrollment; *Event; *H2RA dispensing (including Famotidine)	*Death, DP end date, Query end date; *Disenrollment; *Event; *PPI dispensing, *H2RA dispensing (other than Famotidine)
Delayed Risk Window (T2ATRISKSTART)	--	--
Blackout Period	1	1
/Outcome		
Event/Outcome *Further details on Outcomes tab*	Hospitalization due to COVID-19: defined as the U07.1 DX code in ANY diagnosis position (IP*)	
Incident event washout period	0	
Care Setting	Inpatient	
Event de-duplication	De-duplicates occurrences of the same event group on the same day	
Propensity Score Estimation and Cohort Balancing		
Propensity Score Model Specifications		

Appendix BC. Specifications Defining Parameters Used in this Request	
Model 1: Updated user-specified PS model	
Propensity Score Model Name	ps_hosp
PS Model User-Specified vs HDPS	User-Specified
Covariates for User-Specified Model	See PSModel_Cov tab
Apply Firth Correction	No
Model 2: HDPS Model	
Propensity Score Model Name (PSESTIMATEGRP)	hdps_hosp
PS Model User-Specified vs HDPS	HDPS
Apply Firth Correction	No
HDPS Evaluation Period Start	-183
HDPS Evaluation Period End	-1
Number of Covariates Considered for HDPS Model	300
Number of Covariates Selected for HDPS Model	100
Method for Selecting Covariates in HDPS Model (Ranking)	Bias
Zero Cell Correlation	No
Truncation Parameter for ICD-10 DX Codes	3
Cohort Balancing (Weighting) and Confounding Adjustment Specifications	
Cohort Balancing 1: IPTW **Confounding Adjustment 1: ATT**	
Comparison Identifier (ANALYSISGRP)	ps_iptw_att_hosp_0, ps_iptw_att_hosp_1, hdps_iptw_att_hosp_0, hdps_iptw_att_hosp_1
Propensity Score Models Used	ps_hosp, hdps_hosp
Cohort Balancing/Weight Scheme Used	IPTW
IP Weight	ATT
Truncate IP Weight	p = 0, 1
Cohort Balancing 1: IPTW **Confounding Adjustment 2: ATE**	
Comparison Identifier (ANALYSISGRP)	hdps_iptw_ate_hosp_0, hdps_iptw_ate_hosp_1
Propensity Score Models Used	hdps_hosp
Cohort Balancing/Weight Scheme Used	IPTW
IP Weight	ATE
Truncate IP Weight	p = 0, 1
Cohort Balancing 2: Overlap weighting **Confounding Adjustment 1: ATO**	
Comparison Identifier (ANALYSISGRP)	hdps_ow_ato_hosp
Propensity Score Models Used	hdps_hosp

Appendix BC. Specifications Defining Parameters Used in this Request	
Cohort Balancing/Weight Scheme Used	Overlap weighting **(Plus Programming)**
IP Weight	ATO
Truncate IP Weight	p = 0
Cohort Balancing 3: Propensity Score Fine Stratification **Confounding Adjustment 1: ATT**	
Comparison Identifier (ANALYSISGRP)	hdps_strat_att_hosp
Propensity Score Models Used	hdps_hosp
Cohort Balancing/Weight Scheme Used	Propensity Score Fine Stratification
Percentile Stratification	50
PS Stratum Weighting Method	ATT
PS Trimming Indicator	Trim non-overlap (0)
Percentile Distribution Indicator	E (use the distribution of PS in only the exposed cohort to create percentiles)
Subgroup Analysis	
Comparison Identifier (ANALYSISGRP)	ps_iptw_att_hosp_0, ps_iptw_att_hosp_1, hdps_iptw_att_hosp_0, hdps_iptw_att_hosp_1, hdps_strat_att_hosp, hdps_ow_ato_hosp, hdps_iptw_ate_hosp_0, hdps_iptw_ate_hosp_1
Subgroup Analysis	**Age Group (18-49, 50-64, 65-74, 75+)**
Re-estimate PS within subgroups	Yes
Restrict re-matching within matched population?	Yes
Apply Firth Correction	No
Figures to Include in Report	
PS distribution histogram (unweighted, weighted before trimming, and weighted after trimming)	Yes
Forest Plots	Yes
Kaplan Meier Plot	Yes - unadjusted and adjusted
ICD-9-CM, HCPCS, and CPT codes are provided by Optum360. NDC codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."	

Appendix BC. Specifications Defining Parameters Used in this Request

The Center for Drug Evaluation and Research (CDER) has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) tool, version 13.1.2, to examine the association between PPI/Famotidine use and COVID-19 related outcomes (hospitalization, severe clinical course of COVID-19 defined as requiring intubation or mechanical ventilation or ICU care, and inpatient death) in the Sentinel Distributed Database.

Index Start Date:	4/1/2020
Index End Date:	3/31/2023
Coverage Requirement:	Medical and Drug Coverage
Pre-index enrollment requirement:	183 days
Post-index enrollment requirement:	0 days
Allowed enrollment gap:	45 days
Demographic Restrictions:	Sex: Male, Female
Age groups:	18-49, 50-64, 65-74, 75+
Envelope macro:	*Reclassify encounters during inpatient stay as inpatient except on Adate
Never-exposed cohort:	No
Additional Output (Dist of Index, MFU):	N/A
Freeze data:	Yes
Lab Date Hierarchy:	Lab date (L) > Result date (R) > Order date (O)
List of Analyses:	**Analysis 1: Updated user-specified PS model, IPTW, ATT weight**
	Analysis 2: HDPS model, IPTW, ATT weight
	Analysis 3: HDPS model, PS fine stratification, ATT weight
	Analysis 4: HDPS model, Overlap Weighting, ATO weight
	Analysis 5: HDPS model, IPTW, ATE weight

	Comparison 2	
Logic	**COVID-19 Severe Hospitalization or In-Hospital Death**	
Group	ppi_sev	famo_sev
Analysis Group	ppi_famo_sev	
Index Exposure/Comparator	Proton Pump Inhibitor	Famotidine only
Cohort Definition	First valid incident treatment episode during the query period	
Incidence Exposure washout period	-183 days	
Incident w/ Respect to:	PPI (done as t2washper), H2RA (done as an exclusion criteria)	PPI (done as an exclusion criteria, H2RA (done as an exclusion criteria and t2washper)
Exclude evidence of days supply if exposure washout include dispensings	Washout lookback period should search for evidence of days supply	
Stockpiling	Generic Name	
Point Exposure	No	
Treatment Episode Gap	15 days	
Exposure Episode Extension	15 days	
Maximum exposure episode duration	184 days	

Appendix BC. Specifications Defining Parameters Used in this Request		
Incidence Criteria Care Setting/PDX	Any	
Create Baseline Table?	Yes	
Inclusion/Exclusion Criteria		
Criteria	GERD diagnosis	
Type	Inclusion	
Evaluation Window	-90, 0	
Care Setting/PDX	Any	
Number of instances the criteria should be found in the evaluation period	1	
Criteria	ICD-10 U07.1 or B97.29, (+) COVID-19 PCR	
Type	Exclusion	
Evaluation Window	-183, -1	
Care Setting/PDX	Any	
Number of instances the criteria should be found in the evaluation period	1	
Criteria	H2RA dispensing	PPI dispensing, H2RA dispensing (other than Famotidine)
Type	Exclusion	
Evaluation Window	-183, 0	
Care Setting/PDX	N/A	
Number of instances the criteria should be found in the evaluation period	1	
At Risk Time		
Minimum exposure episode duration	1	
Maximum exposure episode duration	----	
Censoring Criteria	*Death, DP end date, Query end date; *Disenrollment; *Event; *H2RA dispensing (including Famotidine)	*Death, DP end date, Query end date; *Disenrollment; *Event; *PPI dispensing, *H2RA dispensing (other than Famotidine)
Delayed Risk Window (T2ATRISKSTART)	--	--
Blackout Period	1	1
Event/Outcome		
Event/Outcome *Further details on Outcomes tab*	Severe outcome due to COVID-19 (Mechnical Ventilation or ICU Admission) or In-Hospital Death during COVID-19 hospitalization (Combo: SEVOUTCOME1 or Death)	
Incident event washout period	0	
Care Setting	Inpatient	
Event de-duplication	De-duplicates occurrences of the same event group on the same day	
Propensity Score Estimation and Cohort Balancing		
Propensity Score Model Specifications		

Appendix BC. Specifications Defining Parameters Used in this Request	
Model 1: Updated user-specified PS model	
Propensity Score Model Name	ps_sev
PS Model User-Specified vs HDPS	User-Specified
Covariates for User-Specified Model	See PSModel_Cov tab
Apply Firth Correction	No
Model 2: HDPS Model	
Propensity Score Model Name (PSESTIMATEGRP)	hdps_sev
PS Model User-Specified vs HDPS	HDPS
Apply Firth Correction	No
HDPS Evaluation Period Start	-183
HDPS Evaluation Period End	-1
Number of Covariates Considered for HDPS Model	300
Number of Covariates Selected for HDPS Model	100
Method for Selecting Covariates in HDPS Model (Ranking)	Bias
Zero Cell Correlation	No
Truncation Parameter for ICD-10 DX Codes	3
Cohort Balancing (Weighting) and Confounding Adjustment Specifications	
Cohort Balancing 1: IPTW **Confounding Adjustment 1: ATT**	
Comparison Identifier (ANALYSISGRP)	ps_iptw_att_sev_0, ps_iptw_att_sev_1, hdps_iptw_att_sev_0, hdps_iptw_att_sev_1
Propensity Score Models Used	ps_sev, hdps_sev
Cohort Balancing/Weight Scheme Used	IPTW
IP Weight	ATT
Truncate IP Weight	p = 0, 1
Cohort Balancing 1: IPTW **Confounding Adjustment 2: ATE**	
Comparison Identifier (ANALYSISGRP)	
Propensity Score Models Used	
Cohort Balancing/Weight Scheme Used	
IP Weight	
Truncate IP Weight	
Cohort Balancing 2: Overlap weighting **Confounding Adjustment 1: ATO**	
Comparison Identifier (ANALYSISGRP)	
Propensity Score Models Used	

Appendix BC. Specifications Defining Parameters Used in this Request	
Cohort Balancing/Weight Scheme Used	
IP Weight	
Truncate IP Weight	
Cohort Balancing 3: Propensity Score Fine Stratification **Confounding Adjustment 1: ATT**	
Comparison Identifier (ANALYSISGRP)	
Propensity Score Models Used	
Cohort Balancing/Weight Scheme Used	
Percentile Stratification	
PS Stratum Weighting Method	
PS Trimming Indicator	
Percentile Distribution Indicator	
Subgroup Analysis	
Comparison Identifier (ANALYSISGRP)	ps_iptw_att_sev_0, ps_iptw_att_sev_1, hdps_iptw_att_sev_0, hdps_iptw_att_sev_1
Subgroup Analysis	**Age Group (18-49, 50-64, 65-74, 75+)**
Re-estimate PS within subgroups	Yes
Restrict re-matching within matched population?	Yes
Apply Firth Correction	No
Figures to Include in Report	
PS distribution histogram (unweighted, weighted before trimming, and weighted after trimming)	Yes
Forest Plots	Yes
Kaplan Meier Plot	Yes - unadjusted and adjusted
ICD-9-CM, HCPCS, and CPT codes are provided by Optum360. NDC codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."	

Appendix BD. Specifications Defining Baseline Characteristic Parameters in this Request

	Baseline Characteristics							
Covar Num	Covariate	Care setting	Principal diagnosis position	Evaluation period start	Evaluation period end	Exclude evidence of days supply if covariate includes dispensings	Number of instances the covariate should be found in evaluation period	Forced supply to attach to dispensings
1	Diabetes	*Any care setting	*Any	-183	0	N/A	>=1	N/A
2	Obesity	*Any care setting	*Any	-183	0	N/A	>=1	N/A
3	Hypertension	*Any care setting	*Any	-183	0	N/A	>=1	N/A
4	Hospitalized Stroke/Transient Ishchemic Attack	***Inpatient Care Setting**	*Any	-183	0	N/A	>=1	N/A
5	Coronary Revascularization	*Any care setting	*Any	-183	0	N/A	>=1	N/A
6	Atrial Fibrillation	*Any care setting	*Any	-183	0	N/A	>=1	N/A
7	Congestive Heart Failure	*Any care setting	*Any	-183	0	N/A	>=1	N/A
8	Hospitalized Acute Myocardial Infarction	***Inpatient Care Setting**	*Any	-183	0	N/A	>=1	N/A
9	Other Cerebrovascular Disease	*Any care setting	*Any	-183	0	N/A	>=1	N/A
10	Chronic Obstructive Pulmonary Disease	*Any care setting	*Any	-183	0	N/A	>=1	N/A
11	Asthma without COPD	*Any care setting	*Any	-183	0	N/A	>=1	N/A
12	Chronic Liver Disease	*Any care setting	*Any	-183	0	N/A	>=1	N/A
13	Chronic Kidney Disease	*Any care setting	*Any	-183	0	N/A	>=1	N/A
14	Any malignant neoplasm	*Any care setting	*Any	-183	0	N/A	>=1	N/A
15	Hemiplegia	*Any care setting	*Any	-183	0	N/A	>=1	N/A
16	Neurological/Neurodegenerative Conditions	*Any care setting	*Any	-183	0	N/A	>=1	N/A
17	Dementia	*Any care setting	*Any	-183	0	N/A	>=1	N/A

Baseline Characteristics								
Covar Num	Covariate	Care setting	Principal diagnosis position	Evaluation period start	Evaluation period end	Exclude evidence of days supply if covariate includes dispensings	Number of instances the covariate should be found in evaluation period	Forced supply to attach to dispensings
18	Depression	*Any care setting	*Any	-183	0	N/A	>=1	N/A
19	Schizophrenia	*Any care setting	*Any	-183	0	N/A	>=1	N/A
20	Rheumatic Disorders	*Any care setting	*Any	-183	0	N/A	>=1	N/A
21	Multiple Sclerosis	*Any care setting	*Any	-183	0	N/A	>=1	N/A
22	HIV	*Any care setting	*Any	-183	0	N/A	>=1	N/A
23	ACEI/ARB	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
24	NSAID	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
25	aspirin (all products and all strengths)	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
26	Anti-depressants	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
27	Statins	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
28	insulin	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A

Baseline Characteristics								
Covar Num	Covariate	Care setting	Principal diagnosis position	Evaluation period start	Evaluation period end	Exclude evidence of days supply if covariate includes dispensings	Number of instances the covariate should be found in evaluation period	Forced supply to attach to dispensings
29	Anti-Diabetic Oral Drugs	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
30	Antihypertensive Drugs	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
31	Anticoagulants (oral and injectable)	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
32	Corticosteroids (only systemic, only glucocorticoids)	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
33	Acetaminophen (all products and all strengths)	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
34	TNF Inhibitors	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
35	Coronary Artery Disease	*Any care setting	*Any	-183	0	N/A	>=1	N/A
36	Immunosuppressants	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
37	Immunodeficiency	*Any care setting	*Any	-183	0	N/A	>=1	N/A

Baseline Characteristics								
Covar Num	Covariate	Care setting	Principal diagnosis position	Evaluation period start	Evaluation period end	Exclude evidence of days supply if covariate includes dispensings	Number of instances the covariate should be found in evaluation period	Forced supply to attach to dispensings
38	Smoking or Nicotine Use	*Any care setting	*Any	-183	0	N/A	>=1	N/A
39	Hyperlipidemia	*Any care setting	*Any	-183	0	N/A	>=1	N/A
40	Inhaled Corticosteroids	N/A	*Any	-183	0	*Evaluation period should search for evidence of days supply;	>=1	N/A
41	Evidence of any COVID-19 vaccine	*Any care setting	*Any	-183	0	N/A	>=1	N/A

N/A: Not Applicable

Appendix BE. Specifications Defining Covariates Used in this Request

Covar Num	Variable	Variable Type	Include in Descriptive "Table 1"?	Include in PS Model?	Pre-specify in HDPS Model?
	Demographic Characteristics				
	Age (years)	Continuous	Yes	Yes	Yes
	Age Group (18-49, 50-64, 65-74, 75+)	Categorical	Yes	Yes	Yes
	Sex	Categorical	Yes	Yes	Yes
	Race	Categorical	Yes	No	No
	Hispanic origin	Categorical	Yes	No	No
	Year-Quarter of Exposure	Categorical	Yes	Yes	Yes
	Social Deprivation Index (SDI)	Categorical	Yes	Yes	Yes
	Calendar Month	Categorical	Yes	No	No
	Health Characteristics [-183, 0]				
	Charlson/Elixhauser combined comorbidity score	Continuous	Yes	Yes	Yes
14	Any Malignant Neoplasm	Categorical	Yes	Yes	Yes
11	Asthma (without COPD)	Categorical	Yes	Yes	Yes
6	Atrial Fibrillation	Categorical	Yes	Yes	Yes
13	Chronic Kidney Disease	Categorical	Yes	Yes	Yes
12	Chronic Liver Disease	Categorical	Yes	Yes	Yes
10	Chronic Obstructive Pulmonary Disease	Categorical	Yes	Yes	Yes
7	Congestive Heart Failure	Categorical	Yes	Yes	Yes
5	Coronary Revascularization	Categorical	Yes	No	No
17	Dementia	Categorical	Yes	Yes	Yes
18	Depression	Categorical	Yes	Yes	Yes
1	Diabetes	Categorical	Yes	Yes	Yes
15	Hemiplegia	Categorical	Yes	No	No
8	Hospitalized Acute Myocardial Infarction	Categorical	Yes	No	No
4	Hospitalized Stroke/Transient Ishchemic Attack	Categorical	Yes	No	No
22	Human Immunodeficiency Virus (HIV)	Categorical	Yes	No	No
3	Hypertension	Categorical	Yes	Yes	Yes
21	Multiple Sclerosis	Categorical	Yes	No	No
16	Neurological/Neurodegenerative Conditions	Categorical	Yes	No	No
2	Obesity	Categorical	Yes	Yes	Yes
9	Other Cerebrovascular Disease	Categorical	Yes	Yes	Yes
20	Rheumatic Disorders	Categorical	Yes	Yes	Yes
19	Schizophrenia	Categorical	Yes	No	No
35	Coronary Artery Disease	Categorical	Yes	Yes	Yes
37	Immunocompromise (Condition)	Categorical	Yes	Yes	Yes
39	Hyperlipidemia	Categorical	Yes	Yes	Yes
	Frailty Index (Kim et al.)	Continuous	Yes	Yes	Yes
	Frailty Index (Kim et al.)	Categorical	Yes	No	No
	Medical Product Use [-183, 0]				
33	Acetaminophen	Categorical	Yes	No	No
23	ACEi/ARB	Categorical	Yes	Yes	Yes
31	Anticoagulants	Categorical	Yes	Yes	Yes
26	Antidepressants	Categorical	Yes	Yes	Yes
29	Antidiabetic Oral Drugs	Categorical	Yes	Yes	Yes
30	Antihypertensive Drugs	Categorical	Yes	Yes	Yes

Covar Num	Variable	Variable Type	Include in Descriptive "Table 1"?	Include in PS Model?	Pre-specify in HDPS Model?
25	Aspirin	Categorical	Yes	No	No
32	Systemic corticosteroids	Categorical	Yes	Yes	Yes
28	Insulin	Categorical	Yes	Yes	Yes
24	NSAID	Categorical	Yes	Yes	Yes
27	Statins	Categorical	Yes	Yes	Yes
34	Tumor Necrosis Factor (TNF) Inhibitors	Categorical	Yes	No	No
36	Immunocompromising Medications	Categorical	Yes	Yes	Yes
38	Evidence of smoking or nicotine use	Categorical	Yes	No	No
40	Inhaled corticosteroids	Categorical	Yes	Yes	Yes
41	Evidence of any COVID-19 vaccine	Categorical (Y/N)	Yes	Yes	Yes
	Health Service Utilization Intensity Metrics [-183, 0]				
	Mean number of ambulatory encounters	Continuous	Yes	Yes	Yes
	Mean number of emergency room encounters	Continuous	Yes	Yes	Yes
	Mean number of inpatient hospital encounters	Continuous	Yes	No	No
	Mean number of non-acute institutional encounters	Continuous	Yes	Yes	Yes
	Mean number of other ambulatory encounters	Continuous	Yes	Yes	Yes
	Mean number of filled prescriptions	Continuous	Yes	Yes	Yes
	Mean number of generics dispensed	Continuous	Yes	Yes	Yes
	Mean number of unique drug classes dispensed	Continuous	Yes	Yes	Yes

Appendix BF. Specifications Defining Combo Parameters Used in this Request

Combo					
Combination description	**Combo Code**	**Combination date**	**Combination Code Behavior**	**Encounter type for each combination component**	**Principal diagnosis for each combination component**
Severe Outcome (Mechnical Ventilation or ICU Admission) due to COVID-19	SEVOUTCOME1	Date of hospital admission	RX	Positive COVID diagnosis: *N/A because of RX code behavior Mechnical ventilation or ICU admission: *N/A because of RX code behavior	Positive COVID diagnosis: *N/A because of RX code behavior Mechanical ventilation or ICU admission: *N/A because of RX code behavior
Inpatient Hospital Death during a COVID-19 Hospitalization	IP_DTH	Date of hospital discharge	PX	Inpatient hospital stay with discharge disposition = expired: Inpatient hospital setting Positive COVID diagnosis: Inpatient hospital setting	Inpatient hospital stay with discharge disposition = expired: Any diagnosis position Positive COVID diagnosis: Any diagnosis position

N/A: Not Applicable

Severe COVID Outcome created by the Combo Tool



Appendix BG. Specifications Defining Risk Score and Utilization Metric Parameters Used in this Request

Comorbidity Score

Evaluation period start	Evaluation period end
-183	0

Utilization

Medical utilization evaluation period start	Medical utilization evaluation period end	Medical visit care settings	Drug utilization evaluation period start	Drug utilization evaluation period end
-183	0	*Inpatient hospital stay; *Non-acute institutional stay; *Emergency department encounter; *Ambulatory visit; *Other ambulatory visit; *Any care setting	-183	0

Appendix BH. Design Diagram of Cohort Entry Requirements and Outcome Evaluation

