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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_ahr_wp012

Request ID: cder_ahr_wp012_ndsp_v01

Query Description: The goal of this query was to estimate refill rates associated with initial opioid analgesic prescriptions of varying durations for oral opioid analgesics following 12 surgical procedures in the Sentinel Distributed Database (SDD).

Sentinel Modular Program Tool Used: Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.4.4, with ad hoc programming.

Data Source: Data from October 1, 2009 to September 30, 2015 from 17 Data Partners contributing to the SDD were included in this report. This request was distributed on October 10, 2018. See Appendix A for a list of dates of available data for each Data Partner.

Study Design: This request was designed to identify patients undergoing common surgical procedures and follow them for subsequent dispensings of oral solid dosage forms of opioid analgesics, excluding fentanyl products. The number of eligible members with each procedure and the subsequent number of eligible members with a dispensing were calculated. Patients were followed for a second dispensing (i.e., “re-fill”) within 14 days after the last day of supply of the initial dispensing. Descriptive statistics concerning the quantity of opioid analgesics in each initial dispensing were calculated, and logistic models were used to estimate the probability of a “re-fill” among patients with an initial dispensing. Descriptive results were calculated overall and stratified by surgery, year of the initial dispensing, patient age group, and opioid analgesic of interest. Modeling results were calculated overall and stratified by surgery and age group.

Surgical Procedures of Interest: The 12 surgical procedures of interest were selected based on regulatory interest and their frequency in the United States, as defined by the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP).^{1,2} Four of the procedures were divided into specific types (e.g., laparoscopic or non-laparoscopic), forming 17 procedures in total. The surgical procedures were identified using Healthcare Common Procedure Coding System (HCPCS), Current Procedural Terminology, Fourth Revision (CPT-4), and International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) procedure codes recorded in health services claims of ambulatory visits or inpatient hospital stays (see Appendix B for specific codes).

Cohort Eligibility Criteria: Seventeen surgery-specific cohorts were identified, comprising patients who had one of the surgical procedures of interest during the study period. Patients were required to be continuously enrolled in medical and prescription drug plans for at least 365 days prior to the admission date of their first valid surgery and 111 days after, during which no gaps in coverage were allowed. The 111 days of enrollment after surgery accounted for the 7-day follow-up period after surgery for an initial dispensing, the maximum anticipated prescription duration of 90 days, and the 14-day follow-up period for a “re-fill”. For surgeries that occurred during inpatient hospital stays spanning more than one day, patients were required to be enrolled for the 111 days following their discharge date. Only the first valid occurrence of each surgical procedure for each patient was included. Patients were excluded if they had a dispensing of an oral solid formulation of an opioid analgesic, a dispensing of fentanyl, evidence of cancer or substance abuse history, or an admission to inpatient rehabilitation, hospice, or a nursing home in the 365 days prior to the admission date of their first valid surgery. Opioid analgesics were defined using National Drug Codes (NDCs); see Appendix C for a list of generic and brand names. Fentanyl use was defined using NDCs; see Appendix D for a list of generic and brand names. Substance abuse history was defined using ICD-9-CM, HCPCS, Current Procedural Terminology, Category II (CPT-II), CPT-4, and NDC codes; see Appendix D for a list of generic and brand names and Appendix E for ICD-9-CM, HCPCS, and CPT-4 codes. Cancer was defined using ICD-9-CM, CPT-4, and HCPCS codes; see Appendix E for specific codes. For each surgical procedure cohort, patients were excluded if they had a recorded history of any of the other study surgeries in the 365 days prior to the admission date of their surgery of interest. Patients were allowed to contribute to multiple surgery-specific cohorts if they had related procedures on the same day, including: (1) same-day hip fracture treatment and hip replacement, (2) same-day spinal fusions of different levels, or (3) same-day spinal fusion and laminectomy/discectomy. An overall “all surgeries” cohort was created and patients were de-duplicated according to the following hierarchy: (1) those with same-day hip fracture treatment and hip replacement only contributed their hip replacement observation, (2) those with same-day spinal fusions of different levels only contributed their observation corresponding to the highest recorded level, and (3) those with same-day spinal fusions and laminectomy/discectomies only contributed their spinal fusion observation. The following age groups were included in the cohorts: 18-40, 41-64, and 65+ years.

Initial Dispensing of Interest: The dispensings of interest were oral solid formulations of opioid analgesics identified using National Drug Codes (NDCs) recorded in outpatient pharmacy dispensings within 7 days of the admission date of the surgery encounter (for ambulatory surgeries) or the discharge date of the surgery encounter (for inpatient surgeries). The oral solid formulations of opioid analgesics did not include fentanyl products. Please see Appendix C for generic and brand names.

Follow-Up Time: Follow-up time for the “re-fill” analysis was determined by the length of the initial dispensing plus an extension period of 14 days following the end of the last day of supply.³ Follow-up began on the date of initial dispensing of interest and continued until the earliest occurrence of either the end of the extension period or a “re-fill”.

Re-fills: Re-fills were defined as a dispensing of an oral solid formulation of an opioid analgesic occurring during follow-up. The re-fill did not have to be for the same opioid analgesic product or moiety as the initial dispensing. Please see Appendix C for generic and brand names.

Descriptive Statistics: Descriptive statistics concerning the days’ supply of the initial dispensing, number of tablets/capsules dispensed, morphine milligram equivalents (MME), and time to first “re-fill” were generated. The MME was calculated by multiplying the number of tablets/capsules in the initial dispensing, the strength associated with the NDC, and a product-specific conversion factor defined by the Centers for Medicare and Medicaid Services (see Appendix F for conversions used).

Baseline Covariates: The following covariates were assessed during the baseline period: age group, sex, recorded use of benzodiazepines, gabapentinoids, and sedative hypnotics, Charlson/Elixhauser combined comorbidity score, length of hospital stay, hospital discharge status, admission to hospice, inpatient rehabilitation, or nursing home, and days’ supply of the initial opioid analgesic dispensing. Age was evaluated on the admission date of the surgery encounter. Benzodiazepines, gabapentinoids, and sedative hypnotics were evaluated in the 30 days before or on the surgery admission date. Charlson/Elixhauser combined comorbidity score was evaluated in the 365 days before or on the surgery admission date. Length of stay and discharge status were evaluated on the discharge date of the surgery admission. Admission to hospice, inpatient rehabilitation, or nursing home was evaluated in the 7 days following the discharge date of the surgery admission. Days’ supply of the initial opioid analgesic dispensing was evaluated on the dispensing date. Benzodiazepines, gabapentinoids, and sedative hypnotics were defined using NDCs; please see Appendix G for generic and brand names.

Estimating Re-fill Rates Associated with Initial Prescription Amounts: For each surgery of interest and for the overall “all surgeries” cohort, a logistic regression model using Firth’s penalized likelihood was fitted to estimate the probability of “re-fill” among patients dispensed ≤ 90 days of an opioid analgesic following surgery. Separate models were fit using three methods of quantifying the amount of initial opioid dispensed: days’ supply, number of tablets/capsules dispensed, and MMEs. Each model included the following terms: surgery, age group, sex (except in female-only surgeries), year of the initial opioid dispensing, Charlson/Elixhauser combined comorbidity score, Drug Enforcement Agency (DEA) schedule of initial opioid dispensing on the dispensing date, length of stay of the surgery admission, comedication use in the 30 days prior to surgery, and Data Partner. Index-defining surgery was also included as a covariate in models fit to the overall “all surgeries” cohort. The three continuous independent variables of interest were modeled with cubic splines to allow for a nonlinear relationship with the probability of “re-fill”. Observations with days’ supply, number of tablets/capsules dispensed, or MME above the 90th percentile were considered outliers and were excluded from the analysis. After model fitting, population-standardized “re-fill” probabilities⁴ were estimated at each possible value of each independent variable (up to its respective 90th percentile). Refill rates associated with initial prescription amounts of opioid analgesics were estimated in two ways: (1) as the first days’ supply value associated with an estimated probability of “re-fill” $< 20\%$ ⁵ and (2) as the days’ supply value associated with the lowest probability of “re-fill” (LPR)³. In analysis of the overall “all surgeries” cohort, odds ratios comparing the frequency of “re-fill” across surgeries, after adjustment for age group, sex, Charlson/Elixhauser combined comorbidity score, year of initial opioid analgesic prescription, Data Partner, history of comedication use, and independent variable of interest (days’ supply, number of tablets/capsules dispensed, or MME of the initial dispensing) were estimated.

Assessing Model Fit: For each model, fit was assessed by the Akaike Information Criterion (AIC), C-statistic, and the Hosmer-Lemeshow test. Likelihood ratio tests were used to evaluate the significance for each variable included in the models.

Limitations: Algorithms used to define the exposure (including the associated days' supply), outcomes, exclusions, and covariates are imperfect and were not validated prior to use in this analysis; thus, it is possible that there may be misclassification. Prescriptions paid for with cash or other insurance coverage were not captured in this data source. Opioid dispensings occurring within 7 days of a surgical procedure or subsequent re-fills may be for indications unrelated to post-surgical pain. Estimates of re-fill rates associated with initial prescription amounts of opioid analgesics only included patients who filled an opioid analgesic prescription within 7 days of a surgical procedure. We used a re-fill to indicate that more opioid analgesic was needed to treat the surgical pain, but the lack of re-fill may also reflect healthcare access issues. While we excluded patients with initial fill values above the 90th percentile for days' supply, units, and MMEs, we did not exclude patients at the low end of the distribution. Patients with lower quantities in their initial prescription fill may have had different probability of re-fills. We can only capture prescription fills in the outpatient setting so the proportion with an opioid analgesic fill within 7 days of surgery may appear low for surgeries with high proportions of discharge to places other than home/self care.

Please see Appendix H for the specifications of parameters used in the analyses for this request.

Please contact the Sentinel Operations Center Query Fulfillment Team (qf@sentinelssystem.org) for questions and to provide comments/suggestions for future enhancements to this document.

¹Steiner CA, et al. Surgeries in Hospital-Based Ambulatory Surgery and Hospital Inpatient Settings, 2014. Agency for Healthcare Research and Quality, 2017.

²McDermott KW, et al. Trends in Hospital Inpatient Stays in the United States, 2005–2014. Agency for Healthcare Research and Quality, 2017.

³Scully R, et al. Defining Optimal Length of Opioid Pain Medication Prescription After Common Surgical Procedures. *JAMA Surgery*, 2017.

⁴Greenland, S. "Introduction to Regression Modeling." *Modern Epidemiology*, by KJ Rothman, Lippincott Williams & Wilkins, 2008, pp. 418–455.

⁵Hill M, et al. Guideline for Discharge Opioid Prescriptions after Inpatient General Surgical Procedures. *Journal of the American College of Surgeons*, 2017.

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<u>Figure 54</u>	Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Tooth Extraction with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015
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**Glossary of Terms for Analyses Using
Cohort Identification and Descriptive Analysis (CIDA) Tool***

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 the blackout period, the episode is excluded.

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), Inpatient (I), Outpatient (O), or Unknown or Missing (U). The Care Setting, along with the Principal Diagnosis

Ambulatory Visit (AV) - includes visits at outpatient clinics, same-day surgeries, urgent care visits, and other same-day ambulatory hospital encounters, but excludes emergency department encounters.

Emergency Department (ED) - includes ED encounters that become inpatient stays (in which case inpatient stays would be a separate encounter). Excludes urgent care visits.

Inpatient Hospital Stay (IP) - includes all inpatient stays, same-day hospital discharges, hospital transfers, and acute hospital care where the discharge is after the admission date.

Non-Acute Institutional Stay (IS) - includes hospice, skilled nursing facility (SNF), rehab center, nursing home, residential, overnight non-hospital dialysis and other non-hospital stays.

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).

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:

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 washout periods) with drug and medical coverage during the query period.

Enrollment Gap - number of days allowed between two consecutive enrollment periods without breaking a "continuously

Episodes - treatment episodes; length of episode is determined by days supplied in one dispensing or consecutive

Episode Gap - number of days allowed between two (or more) consecutive exposures (dispensings/procedures) to be considered the same treatment episode.

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 the same day; 2: de-duplicates occurrences of the same HOI group on the same day (e.g., de-duplicates at the

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 episode. Extensions are added after any episode gaps have been bridged.

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

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

Query Period - period in which the modular program looks for exposures and outcomes of interest.

Treatment Episode Truncation Indicator - indicates whether the exposure episode will be truncated at the occurrence of a requester-specified code.

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

Table 1a. Baseline Characteristics of Patients Undergoing Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

Number (%) with characteristic	All surgeries*	Appendectomy (laparoscopic)	Appendectomy (nonspecific)	Bunionectomy	Cesarean section	Cholecystectomy (laparoscopic)	Cholecystectomy (nonspecific)
Patients undergoing surgery	1,618,135 (100.0%)	74,330 (100.0%)	13,418 (100.0%)	60,417 (100.0%)	323,721 (100.0%)	219,026 (100.0%)	10,389 (100.0%)
Sex							
Female	1,114,034 (68.8%)	35,307 (47.5%)	6,296 (46.9%)	49,088 (81.2%)	323,721 (100.0%)	151,633 (69.2%)	5,419 (52.2%)
Age (years)							
18-40	637,723 (39.4%)	38,780 (52.2%)	4,624 (34.5%)	9,775 (16.2%)	310,769 (96.0%)	50,744 (23.2%)	742 (7.1%)
41-64	408,159 (25.2%)	24,478 (32.9%)	4,764 (35.5%)	31,109 (51.5%)	12,922 (4.0%)	82,463 (37.6%)	2,875 (27.7%)
65+	572,253 (35.4%)	11,072 (14.9%)	4,030 (30.0%)	19,533 (32.3%)	30 (0.0%)	85,819 (39.2%)	6,772 (65.2%)
Baseline medications							
Benzodiazepines	58,296 (3.6%)	1,942 (2.6%)	421 (3.1%)	2,825 (4.7%)	681 (0.2%)	10,031 (4.6%)	466 (4.5%)
Sedative hypnotics	31,272 (1.9%)	1,017 (1.4%)	289 (2.2%)	2,000 (3.3%)	3,034 (0.9%)	5,545 (2.5%)	240 (2.3%)
Gabapentinoids	36,837 (2.3%)	728 (1.0%)	233 (1.7%)	1,561 (2.6%)	84 (0.0%)	5,507 (2.5%)	384 (3.7%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	0.7 (1.6)	0.3 (1.1)	1.0 (1.7)	0.2 (1.1)	0.3 (0.6)	0.8 (1.7)	2.2 (2.5)
Length of stay (days)							
0	620,754 (38.4%)	35,638 (47.9%)	1,962 (14.6%)	59,490 (98.5%)	5,224 (1.6%)	140,510 (64.2%)	430 (4.1%)
1	14,391 (0.9%)	3,770 (5.1%)	287 (2.1%)	100 (0.2%)	1,756 (0.5%)	2,555 (1.2%)	67 (0.6%)
2-5	743,087 (45.9%)	30,263 (40.7%)	5,580 (41.6%)	600 (1.0%)	280,683 (86.7%)	51,489 (23.5%)	2,705 (26.0%)
6+	239,903 (14.8%)	4,659 (6.3%)	5,589 (41.7%)	227 (0.4%)	36,058 (11.1%)	24,472 (11.2%)	7,187 (69.2%)
Discharge status for inpatient surgeries							
Against medical advice	201 (0.0%)	15 (0.0%)	6 (0.0%)	1 (0.0%)	39 (0.0%)	57 (0.0%)	6 (0.1%)
Home health	143,097 (8.8%)	813 (1.1%)	1,189 (8.9%)	150 (0.2%)	5,765 (1.8%)	5,155 (2.4%)	1,529 (14.7%)
Home/self care	589,932 (36.5%)	36,006 (48.4%)	8,889 (66.2%)	522 (0.9%)	307,441 (95.0%)	65,373 (29.8%)	5,932 (57.1%)
Nursing home, includes ICF	3,810 (0.2%)	42 (0.1%)	46 (0.3%)	3 (0.0%)	5 (0.0%)	377 (0.2%)	93 (0.9%)
Other	12,545 (0.8%)	818 (1.1%)	218 (1.6%)	28 (0.0%)	3,375 (1.0%)	1,095 (0.5%)	241 (2.3%)
Other acute inpatient hospital	9,286 (0.6%)	119 (0.2%)	104 (0.8%)	5 (0.0%)	601 (0.2%)	758 (0.3%)	187 (1.8%)
Rehabilitation facility	51,447 (3.2%)	66 (0.1%)	137 (1.0%)	27 (0.0%)	21 (0.0%)	553 (0.3%)	251 (2.4%)
Skilled nursing facility	175,046 (10.8%)	517 (0.7%)	760 (5.7%)	175 (0.3%)	15 (0.0%)	4,310 (2.0%)	1,563 (15.0%)
Still in hospital	6,008 (0.4%)	23 (0.0%)	41 (0.3%)	10 (0.0%)	364 (0.1%)	101 (0.0%)	66 (0.6%)
Unknown	5,484 (0.3%)	264 (0.4%)	58 (0.4%)	6 (0.0%)	852 (0.3%)	707 (0.3%)	84 (0.8%)
Admitted to hospice, inpatient rehab, or nursing home within 7 days	174,317 (10.8%)	1,219 (1.6%)	291 (2.2%)	217 (0.4%)	2,041 (0.6%)	3,697 (1.7%)	516 (5.0%)
Patients initiating oral opioid analgesic within 7 days	935,443 (57.8%)	53,428 (71.9%)	8,035 (59.9%)	43,163 (71.4%)	248,281 (76.7%)	149,026 (68.0%)	4,873 (46.9%)

Table 1a. Baseline Characteristics of Patients Undergoing Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

N (%) with characteristic	Coronary artery bypass graft	Hip fracture treatment	Hip replacement	Hysterectomy (non-laparoscopic)	Hysterectomy (laparoscopic)	Knee arthroplasty	Laminectomy /discectomy
Patients undergoing surgery	62,253 (100.0%)	104,070 (100.0%)	126,506 (100.0%)	17,506 (100.0%)	16,513 (100.0%)	184,769 (100.0%)	22,210 (100.0%)
Sex							
Female	20,609 (33.1%)	82,405 (79.2%)	85,636 (67.7%)	17,506 (100.0%)	16,513 (100.0%)	122,817 (66.5%)	8,921 (40.2%)
Age (years)							
18-40	423 (0.7%)	3,089 (3.0%)	1,353 (1.1%)	3,617 (20.7%)	5,825 (35.3%)	660 (0.4%)	4,483 (20.2%)
41-64	15,078 (24.2%)	8,228 (7.9%)	25,180 (19.9%)	6,831 (39.0%)	7,924 (48.0%)	41,819 (22.6%)	9,178 (41.3%)
65+	46,752 (75.1%)	92,753 (89.1%)	99,973 (79.0%)	7,058 (40.3%)	2,764 (16.7%)	142,290 (77.0%)	8,549 (38.5%)
Baseline medications							
Benzodiazepines	2,602 (4.2%)	6,267 (6.0%)	5,984 (4.7%)	833 (4.8%)	949 (5.7%)	7,645 (4.1%)	1,660 (7.5%)
Sedative hypnotics	1,391 (2.2%)	2,742 (2.6%)	3,141 (2.5%)	424 (2.4%)	436 (2.6%)	5,300 (2.9%)	675 (3.0%)
Gabapentinoids	2,116 (3.4%)	4,030 (3.9%)	4,328 (3.4%)	316 (1.8%)	279 (1.7%)	7,770 (4.2%)	2,170 (9.8%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	2.9 (2.5)	2.6 (2.5)	1.4 (2.2)	0.3 (1.2)	0.3 (0.9)	0.6 (1.6)	0.3 (1.2)
Length of stay (days)							
0	845 (1.4%)	2,360 (2.3%)	1,284 (1.0%)	6,401 (36.6%)	11,994 (72.6%)	5,501 (3.0%)	14,700 (66.2%)
1	233 (0.4%)	338 (0.3%)	816 (0.6%)	414 (2.4%)	452 (2.7%)	960 (0.5%)	1,001 (4.5%)
2-5	6,336 (10.2%)	50,997 (49.0%)	93,265 (73.7%)	10,210 (58.3%)	3,963 (24.0%)	166,039 (89.9%)	5,705 (25.7%)
6+	54,839 (88.1%)	50,375 (48.4%)	31,141 (24.6%)	481 (2.7%)	104 (0.6%)	12,269 (6.6%)	804 (3.6%)
Discharge status for inpatient surgeries							
Against medical advice	13 (0.0%)	17 (0.0%)	18 (0.0%)	0 (0.0%)	3 (0.0%)	15 (0.0%)	0 (0.0%)
Home health	20,457 (32.9%)	7,312 (7.0%)	31,400 (24.8%)	234 (1.3%)	44 (0.3%)	62,819 (34.0%)	574 (2.6%)
Home/self care	23,469 (37.7%)	7,826 (7.5%)	27,159 (21.5%)	10,538 (60.2%)	4,319 (26.2%)	54,286 (29.4%)	5,967 (26.9%)
Nursing home, includes ICF	195 (0.3%)	1,393 (1.3%)	904 (0.7%)	9 (0.1%)	1 (0.0%)	595 (0.3%)	11 (0.0%)
Other	1,636 (2.6%)	1,474 (1.4%)	999 (0.8%)	144 (0.8%)	91 (0.6%)	1,378 (0.7%)	204 (0.9%)
Other acute inpatient hospital	659 (1.1%)	2,107 (2.0%)	1,594 (1.3%)	15 (0.1%)	2 (0.0%)	2,436 (1.3%)	40 (0.2%)
Rehabilitation facility	4,622 (7.4%)	16,649 (16.0%)	13,230 (10.5%)	10 (0.1%)	4 (0.0%)	11,660 (6.3%)	284 (1.3%)
Skilled nursing facility	9,223 (14.8%)	61,655 (59.2%)	47,776 (37.8%)	76 (0.4%)	16 (0.1%)	44,026 (23.8%)	353 (1.6%)
Still in hospital	352 (0.6%)	2,316 (2.2%)	1,407 (1.1%)	3 (0.0%)	1 (0.0%)	1,100 (0.6%)	17 (0.1%)
Unknown	763 (1.2%)	685 (0.7%)	632 (0.5%)	73 (0.4%)	38 (0.2%)	914 (0.5%)	59 (0.3%)
Admitted to hospice, inpatient rehab, or nursing home within 7 days	3,468 (5.6%)	57,469 (55.2%)	47,174 (37.3%)	215 (1.2%)	227 (1.4%)	53,211 (28.8%)	452 (2.0%)
Patients initiating oral opioid analgesic within 7 days	33,289 (53.5%)	11,939 (11.5%)	42,788 (33.8%)	11,600 (66.3%)	11,675 (70.7%)	92,819 (50.2%)	13,935 (62.7%)

Table 1a. Baseline Characteristics of Patients Undergoing Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

N (%) with characteristic	Spinal fusion (all levels)	Spinal fusion (1-3 levels)	Spinal fusion (4+ levels)	Tooth extraction
Patients undergoing surgery	52,259 (100.0%)	35,055 (100.0%)	14,635 (100.0%)	330,748 (100.0%)
Sex				
Female	27,769 (53.1%)	18,846 (53.8%)	7,570 (51.7%)	160,394 (48.5%)
Age (years)				
18-40	4,681 (9.0%)	2,719 (7.8%)	1,621 (11.1%)	198,158 (59.9%)
41-64	21,136 (40.4%)	14,310 (40.8%)	5,693 (38.9%)	114,174 (34.5%)
65+	26,442 (50.6%)	18,026 (51.4%)	7,321 (50.0%)	18,416 (5.6%)
Baseline medications				
Benzodiazepines	3,458 (6.6%)	2,364 (6.7%)	914 (6.2%)	12,532 (3.8%)
Sedative hypnotics	1,936 (3.7%)	1,350 (3.9%)	506 (3.5%)	3,102 (0.9%)
Gabapentinoids	5,585 (10.7%)	3,849 (11.0%)	1,501 (10.3%)	1,746 (0.5%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	0.7 (1.6)	0.6 (1.6)	0.9 (1.7)	0.1 (0.7)
Length of stay (days)				
0	6,234 (11.9%)	4,264 (12.2%)	610 (4.2%)	328,181 (99.2%)
1	1,563 (3.0%)	1,196 (3.4%)	273 (1.9%)	79 (0.0%)
2-5	33,891 (64.9%)	24,728 (70.5%)	8,428 (57.6%)	1,361 (0.4%)
6+	10,571 (20.2%)	4,867 (13.9%)	5,324 (36.4%)	1,127 (0.3%)
Discharge status for inpatient surgeries				
Against medical advice	7 (0.0%)	5 (0.0%)	1 (0.0%)	4 (0.0%)
Home health	5,372 (10.3%)	3,457 (9.9%)	1,773 (12.1%)	284 (0.1%)
Home/self care	30,458 (58.3%)	21,672 (61.8%)	8,137 (55.6%)	1,747 (0.5%)
Nursing home, includes ICF	95 (0.2%)	47 (0.1%)	43 (0.3%)	41 (0.0%)
Other	784 (1.5%)	431 (1.2%)	277 (1.9%)	60 (0.0%)
Other acute inpatient hospital	598 (1.1%)	240 (0.7%)	327 (2.2%)	61 (0.0%)
Rehabilitation facility	3,881 (7.4%)	2,108 (6.0%)	1,640 (11.2%)	52 (0.0%)
Skilled nursing facility	4,302 (8.2%)	2,598 (7.4%)	1,557 (10.6%)	279 (0.1%)
Still in hospital	191 (0.4%)	60 (0.2%)	125 (0.9%)	16 (0.0%)
Unknown	329 (0.6%)	169 (0.5%)	141 (1.0%)	20 (0.0%)
Admitted to hospice, inpatient rehab, or nursing home within 7 days	3,990 (7.6%)	2,449 (7.0%)	1,423 (9.7%)	130 (0.0%)
Patients initiating oral opioid analgesic within 7 days	29,292 (56.1%)	20,908 (59.6%)	7,193 (49.1%)	181,300 (54.8%)

*After exclusion of patients with history of same or other study surgery

Table 1b. Baseline Characteristics of Patients Initiating Opioid Analgesics within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

Number (%) with characteristic	All surgeries*	Appendectomy (laparoscopic)	Appendectomy (nonspecific)	Bunionectomy	Cesarean section
Patients initiating oral opioid analgesic within 7 days	935,443 (100.0%)	53,428 (100.0%)	8,035 (100.0%)	43,163 (100.0%)	248,281 (100.0%)
Sex					
Female	650,447 (69.5%)	24,916 (46.6%)	3,604 (44.9%)	35,351 (81.9%)	248,281 (100.0%)
Age (years)					
18-40	467,619 (50.0%)	30,177 (56.5%)	3,319 (41.3%)	7,354 (17.0%)	239,047 (96.3%)
41-64	241,354 (25.8%)	17,286 (32.4%)	3,043 (37.9%)	22,535 (52.2%)	9,234 (3.7%)
65+	226,470 (24.2%)	5,965 (11.2%)	1,673 (20.8%)	13,274 (30.8%)	0 (0.0%)
Baseline medications					
Benzodiazepines	33,074 (3.5%)	1,490 (2.8%)	247 (3.1%)	2,254 (5.2%)	558 (0.2%)
Sedative hypnotics	18,467 (2.0%)	797 (1.5%)	175 (2.2%)	1,567 (3.6%)	2,649 (1.1%)
Gabapentinoids	17,690 (1.9%)	473 (0.9%)	112 (1.4%)	1,128 (2.6%)	72 (0.0%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	0.4 (1.2)	0.3 (0.9)	0.6 (1.4)	0.2 (1.0)	0.3 (0.6)
Length of stay (days)					
0	389,609 (41.6%)	27,183 (50.9%)	1,365 (17.0%)	42,768 (99.1%)	2,609 (1.1%)
1	8,966 (1.0%)	2,772 (5.2%)	200 (2.5%)	63 (0.1%)	968 (0.4%)
2-5	449,428 (48.0%)	21,230 (39.7%)	3,852 (47.9%)	282 (0.7%)	218,748 (88.1%)
6+	87,440 (9.3%)	2,243 (4.2%)	2,618 (32.6%)	50 (0.1%)	25,956 (10.5%)
Discharge status for inpatient surgeries					
Against medical advice	63 (0.0%)	5 (0.0%)	0 (0.0%)	0 (0.0%)	17 (0.0%)
Home health	99,887 (10.7%)	424 (0.8%)	668 (8.3%)	73 (0.2%)	4,311 (1.7%)
Home/self care	423,930 (45.3%)	25,015 (46.8%)	5,838 (72.7%)	300 (0.7%)	237,806 (95.8%)
Nursing home, includes ICF	732 (0.1%)	12 (0.0%)	9 (0.1%)	1 (0.0%)	2 (0.0%)
Other	5,059 (0.5%)	546 (1.0%)	59 (0.7%)	7 (0.0%)	2,190 (0.9%)
Other acute inpatient hospital	1,619 (0.2%)	47 (0.1%)	12 (0.1%)	1 (0.0%)	409 (0.2%)
Rehabilitation facility	3,008 (0.3%)	3 (0.0%)	10 (0.1%)	1 (0.0%)	12 (0.0%)
Skilled nursing facility	8,269 (0.9%)	29 (0.1%)	28 (0.3%)	7 (0.0%)	8 (0.0%)
Still in hospital	634 (0.1%)	11 (0.0%)	9 (0.1%)	2 (0.0%)	252 (0.1%)
Unknown	2,505 (0.3%)	148 (0.3%)	36 (0.4%)	3 (0.0%)	652 (0.3%)
Days' supply of index opioid dispensing					
1-30	935,101 (100.0%)	53,422 (100.0%)	8,033 (100.0%)	43,153 (100.0%)	248,258 (100.0%)
31-60	293 (0.0%)	5 (0.0%)	2 (0.0%)	8 (0.0%)	20 (0.0%)
61-90	42 (0.0%)	1 (0.0%)	0 (0.0%)	1 (0.0%)	1 (0.0%)
90+	7 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.0%)	2 (0.0%)
Index opioid schedule					
Schedule II	474,207 (50.7%)	24,380 (45.6%)	3,577 (44.5%)	20,184 (46.8%)	165,712 (66.7%)
Oxymorphone	12 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Hydrocodone (after rescheduling)	72,035 (7.7%)	4,663 (8.7%)	415 (5.2%)	3,478 (8.1%)	11,162 (4.5%)
Hydromorphone	13,361 (1.4%)	461 (0.9%)	131 (1.6%)	458 (1.1%)	2,990 (1.2%)
Oxycodone	384,566 (41.1%)	19,175 (35.9%)	3,017 (37.5%)	15,313 (35.5%)	150,885 (60.8%)
Morphine	746 (0.1%)	7 (0.0%)	6 (0.1%)	18 (0.0%)	181 (0.1%)
Other	3,487 (0.4%)	74 (0.1%)	8 (0.1%)	917 (2.1%)	494 (0.2%)
Other schedule	461,236 (49.3%)	29,048 (54.4%)	4,458 (55.5%)	22,979 (53.2%)	82,569 (33.3%)
Tramadol	25,833 (2.8%)	980 (1.8%)	173 (2.2%)	1,030 (2.4%)	1,454 (0.6%)
Codeine	33,992 (3.6%)	1,397 (2.6%)	247 (3.1%)	2,020 (4.7%)	8,046 (3.2%)
Hydrocodone (before rescheduling)	394,504 (42.2%)	26,306 (49.2%)	3,944 (49.1%)	19,521 (45.2%)	70,853 (28.5%)
Other	6,907 (0.7%)	365 (0.7%)	94 (1.2%)	408 (0.9%)	2,216 (0.9%)

Table 1b. Baseline Characteristics of Patients Initiating Opioid Analgesics within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

N (%) with characteristic	Cholecystectomy (laparoscopic)	Cholecystectomy (nonspecific)	Coronary artery bypass graft	Hip fracture treatment	Hip replacement
Patients initiating oral opioid analgesic within 7 days	149,026 (100.0%)	4,873 (100.0%)	33,289 (100.0%)	11,939 (100.0%)	42,788 (100.0%)
Sex					
Female	104,455 (70.1%)	2,486 (51.0%)	8,810 (26.5%)	7,590 (63.6%)	23,747 (55.5%)
Age (years)					
18-40	39,432 (26.5%)	469 (9.6%)	287 (0.9%)	1,597 (13.4%)	776 (1.8%)
41-64	60,139 (40.4%)	1,677 (34.4%)	10,634 (31.9%)	2,975 (24.9%)	15,047 (35.2%)
65+	49,455 (33.2%)	2,727 (56.0%)	22,368 (67.2%)	7,367 (61.7%)	26,965 (63.0%)
Baseline medications					
Benzodiazepines	7,291 (4.9%)	205 (4.2%)	1,504 (4.5%)	722 (6.0%)	1,629 (3.8%)
Sedative hypnotics	4,056 (2.7%)	132 (2.7%)	783 (2.4%)	332 (2.8%)	1,090 (2.5%)
Gabapentinoids	3,456 (2.3%)	155 (3.2%)	969 (2.9%)	407 (3.4%)	1,208 (2.8%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	0.6 (1.4)	1.5 (2.1)	2.4 (2.3)	1.6 (2.2)	0.5 (1.5)
Length of stay (days)					
0	105,100 (70.5%)	219 (4.5%)	177 (0.5%)	569 (4.8%)	446 (1.0%)
1	1,703 (1.1%)	31 (0.6%)	46 (0.1%)	97 (0.8%)	422 (1.0%)
2-5	32,639 (21.9%)	1,755 (36.0%)	4,391 (13.2%)	7,178 (60.1%)	38,929 (91.0%)
6+	9,584 (6.4%)	2,868 (58.9%)	28,675 (86.1%)	4,095 (34.3%)	2,991 (7.0%)
Discharge status for inpatient surgeries					
Against medical advice	10 (0.0%)	2 (0.0%)	4 (0.0%)	8 (0.1%)	4 (0.0%)
Home health	2,243 (1.5%)	807 (16.6%)	14,607 (43.9%)	4,624 (38.7%)	21,778 (50.9%)
Home/self care	40,375 (27.1%)	3,648 (74.9%)	16,842 (50.6%)	3,915 (32.8%)	17,326 (40.5%)
Nursing home, includes ICF	94 (0.1%)	32 (0.7%)	12 (0.0%)	309 (2.6%)	143 (0.3%)
Other	471 (0.3%)	22 (0.5%)	573 (1.7%)	121 (1.0%)	199 (0.5%)
Other acute inpatient hospital	177 (0.1%)	28 (0.6%)	94 (0.3%)	157 (1.3%)	154 (0.4%)
Rehabilitation facility	11 (0.0%)	8 (0.2%)	226 (0.7%)	393 (3.3%)	582 (1.4%)
Skilled nursing facility	173 (0.1%)	68 (1.4%)	348 (1.0%)	1,682 (14.1%)	1,882 (4.4%)
Still in hospital	13 (0.0%)	9 (0.2%)	32 (0.1%)	58 (0.5%)	70 (0.2%)
Unknown	348 (0.2%)	28 (0.6%)	366 (1.1%)	62 (0.5%)	182 (0.4%)
Days' supply of index opioid dispensing					
1-30	148,996 (100.0%)	4,872 (100.0%)	33,265 (99.9%)	11,922 (99.9%)	42,737 (99.9%)
31-60	24 (0.0%)	1 (0.0%)	18 (0.1%)	17 (0.1%)	43 (0.1%)
61-90	6 (0.0%)	0 (0.0%)	5 (0.0%)	0 (0.0%)	8 (0.0%)
90+	0 (0.0%)	0 (0.0%)	1 (0.0%)	0 (0.0%)	0 (0.0%)
Index opioid schedule					
Schedule II	63,618 (42.7%)	2,354 (48.3%)	14,723 (44.2%)	5,757 (48.2%)	23,040 (53.8%)
Oxymorphone	1 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.0%)
Hydrocodone (after rescheduling)	13,496 (9.1%)	332 (6.8%)	2,191 (6.6%)	947 (7.9%)	3,584 (8.4%)
Hydromorphone	1,602 (1.1%)	151 (3.1%)	677 (2.0%)	198 (1.7%)	1,253 (2.9%)
Oxycodone	48,027 (32.2%)	1,859 (38.1%)	11,830 (35.5%)	4,565 (38.2%)	18,018 (42.1%)
Morphine	48 (0.0%)	5 (0.1%)	14 (0.0%)	35 (0.3%)	75 (0.2%)
Other	444 (0.3%)	7 (0.1%)	11 (0.0%)	12 (0.1%)	109 (0.3%)
Other schedule	85,408 (57.3%)	2,519 (51.7%)	18,566 (55.8%)	6,182 (51.8%)	19,748 (46.2%)
Tramadol	4,176 (2.8%)	186 (3.8%)	3,370 (10.1%)	883 (7.4%)	3,522 (8.2%)
Codeine	4,008 (2.7%)	123 (2.5%)	1,189 (3.6%)	284 (2.4%)	500 (1.2%)
Hydrocodone (before rescheduling)	75,891 (50.9%)	2,186 (44.9%)	13,487 (40.5%)	4,985 (41.8%)	15,578 (36.4%)
Other	1,333 (0.9%)	24 (0.5%)	520 (1.6%)	30 (0.3%)	148 (0.3%)

Table 1b. Baseline Characteristics of Patients Initiating Opioid Analgesics within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

N (%) with characteristic	Hysterectomy (non-laparoscopic)	Hysterectomy (laparoscopic)	Knee arthroplasty	Laminectomy /discectomy
Patients initiating oral opioid analgesic within 7 days	11,600 (100.0%)	11,675 (100.0%)	92,819 (100.0%)	13,935 (100.0%)
Sex				
Female	11,600 (100.0%)	11,675 (100.0%)	57,807 (62.3%)	5,358 (38.4%)
Age (years)				
18-40	2,652 (22.9%)	4,337 (37.1%)	331 (0.4%)	3,194 (22.9%)
41-64	4,880 (42.1%)	5,727 (49.1%)	24,716 (26.6%)	5,948 (42.7%)
65+	4,068 (35.1%)	1,611 (13.8%)	67,772 (73.0%)	4,793 (34.4%)
Baseline medications				
Benzodiazepines	626 (5.4%)	743 (6.4%)	3,844 (4.1%)	1,341 (9.6%)
Sedative hypnotics	317 (2.7%)	349 (3.0%)	2,788 (3.0%)	471 (3.4%)
Gabapentinoids	216 (1.9%)	201 (1.7%)	3,485 (3.8%)	1,577 (11.3%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	0.3 (1.1)	0.3 (0.9)	0.4 (1.4)	0.2 (1.1)
Length of stay (days)				
0	4,120 (35.5%)	8,481 (72.6%)	2,566 (2.8%)	9,561 (68.6%)
1	250 (2.2%)	310 (2.7%)	450 (0.5%)	642 (4.6%)
2-5	6,991 (60.3%)	2,833 (24.3%)	85,426 (92.0%)	3,485 (25.0%)
6+	239 (2.1%)	51 (0.4%)	4,377 (4.7%)	247 (1.8%)
Discharge status for inpatient surgeries				
Against medical advice	0 (0.0%)	1 (0.0%)	9 (0.0%)	0 (0.0%)
Home health	140 (1.2%)	24 (0.2%)	45,987 (49.5%)	372 (2.7%)
Home/self care	7,208 (62.1%)	3,071 (26.3%)	37,357 (40.2%)	3,861 (27.7%)
Nursing home, includes ICF	5 (0.0%)	1 (0.0%)	84 (0.1%)	0 (0.0%)
Other	73 (0.6%)	62 (0.5%)	425 (0.5%)	70 (0.5%)
Other acute inpatient hospital	3 (0.0%)	1 (0.0%)	450 (0.5%)	7 (0.1%)
Rehabilitation facility	0 (0.0%)	1 (0.0%)	1,538 (1.7%)	12 (0.1%)
Skilled nursing facility	2 (0.0%)	4 (0.0%)	3,779 (4.1%)	21 (0.2%)
Still in hospital	1 (0.0%)	0 (0.0%)	160 (0.2%)	3 (0.0%)
Unknown	47 (0.4%)	29 (0.2%)	441 (0.5%)	28 (0.2%)
Days' supply of index opioid dispensing				
1-30	11,600 (100.0%)	11,675 (100.0%)	92,681 (99.9%)	13,928 (99.9%)
31-60	0 (0.0%)	0 (0.0%)	122 (0.1%)	7 (0.1%)
61-90	0 (0.0%)	0 (0.0%)	13 (0.0%)	0 (0.0%)
90+	0 (0.0%)	0 (0.0%)	3 (0.0%)	0 (0.0%)
Index opioid schedule				
Schedule II	6,609 (57.0%)	7,382 (63.2%)	52,336 (56.4%)	7,578 (54.4%)
Oxymorphone	0 (0.0%)	0 (0.0%)	10 (0.0%)	0 (0.0%)
Hydrocodone (after rescheduling)	532 (4.6%)	605 (5.2%)	7,236 (7.8%)	1,150 (8.3%)
Hydromorphone	273 (2.4%)	303 (2.6%)	3,548 (3.8%)	236 (1.7%)
Oxycodone	5,736 (49.4%)	6,362 (54.5%)	40,948 (44.1%)	6,150 (44.1%)
Morphine	5 (0.0%)	9 (0.1%)	203 (0.2%)	19 (0.1%)
Other	63 (0.5%)	103 (0.9%)	391 (0.4%)	23 (0.2%)
Other schedule	4,991 (43.0%)	4,293 (36.8%)	40,483 (43.6%)	6,357 (45.6%)
Tramadol	256 (2.2%)	226 (1.9%)	6,203 (6.7%)	460 (3.3%)
Codeine	532 (4.6%)	323 (2.8%)	1,042 (1.1%)	221 (1.6%)
Hydrocodone (before rescheduling)	4,014 (34.6%)	3,605 (30.9%)	32,932 (35.5%)	5,614 (40.3%)
Other	189 (1.6%)	139 (1.2%)	306 (0.3%)	62 (0.4%)

Table 1b. Baseline Characteristics of Patients Initiating Opioid Analgesics within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery

N (%) with characteristic	Spinal fusion (all levels)	Spinal fusion (1-3 levels)	Spinal fusion (4+ levels)	Tooth extraction
Patients initiating oral opioid analgesic within 7 days	29,292 (100.0%)	20,908 (100.0%)	7,193 (100.0%)	181,300 (100.0%)
Sex				
Female	15,191 (51.9%)	10,953 (52.4%)	3,598 (50.0%)	89,576 (49.4%)
Age (years)				
18-40	2,810 (9.6%)	1,767 (8.5%)	875 (12.2%)	131,837 (72.7%)
41-64	13,141 (44.9%)	9,373 (44.8%)	3,261 (45.3%)	44,372 (24.5%)
65+	13,341 (45.5%)	9,768 (46.7%)	3,057 (42.5%)	5,091 (2.8%)
Baseline medications				
Benzodiazepines	2,248 (7.7%)	1,631 (7.8%)	516 (7.2%)	8,372 (4.6%)
Sedative hypnotics	1,277 (4.4%)	928 (4.4%)	302 (4.2%)	1,684 (0.9%)
Gabapentinoids	3,432 (11.7%)	2,496 (11.9%)	811 (11.3%)	799 (0.4%)
Charlson/Elixhauser Combined Comorbidity Score (mean, SD)	0.4 (1.3)	0.4 (1.3)	0.6 (1.4)	0.1 (0.6)
Length of stay (days)				
0	3,842 (13.1%)	2,883 (13.8%)	325 (4.5%)	180,603 (99.6%)
1	983 (3.4%)	785 (3.8%)	152 (2.1%)	29 (0.0%)
2-5	21,242 (72.5%)	15,748 (75.3%)	5,067 (70.4%)	447 (0.2%)
6+	3,225 (11.0%)	1,492 (7.1%)	1,649 (22.9%)	221 (0.1%)
Discharge status for inpatient surgeries				
Against medical advice	3 (0.0%)	1 (0.0%)	1 (0.0%)	0 (0.0%)
Home health	3,739 (12.8%)	2,443 (11.7%)	1,200 (16.7%)	90 (0.0%)
Home/self care	20,799 (71.0%)	15,042 (71.9%)	5,335 (74.2%)	569 (0.3%)
Nursing home, includes ICF	20 (0.1%)	9 (0.0%)	9 (0.1%)	8 (0.0%)
Other	233 (0.8%)	163 (0.8%)	60 (0.8%)	8 (0.0%)
Other acute inpatient hospital	72 (0.2%)	27 (0.1%)	40 (0.6%)	7 (0.0%)
Rehabilitation facility	211 (0.7%)	118 (0.6%)	85 (1.2%)	0 (0.0%)
Skilled nursing facility	230 (0.8%)	139 (0.7%)	83 (1.2%)	8 (0.0%)
Still in hospital	14 (0.0%)	4 (0.0%)	10 (0.1%)	0 (0.0%)
Unknown	128 (0.4%)	78 (0.4%)	45 (0.6%)	7 (0.0%)
Days' supply of index opioid dispensing				
1-30	29,263 (99.9%)	20,888 (99.9%)	7,184 (99.9%)	181,296 (100.0%)
31-60	22 (0.1%)	15 (0.1%)	7 (0.1%)	4 (0.0%)
61-90	7 (0.0%)	5 (0.0%)	2 (0.0%)	0 (0.0%)
90+	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Index opioid schedule				
Schedule II	16,939 (57.8%)	11,949 (57.2%)	4,360 (60.6%)	60,018 (33.1%)
Oxymorphone	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Hydrocodone (after rescheduling)	2,319 (7.9%)	1,708 (8.2%)	514 (7.1%)	19,925 (11.0%)
Hydromorphone	977 (3.3%)	639 (3.1%)	299 (4.2%)	103 (0.1%)
Oxycodone	13,432 (45.9%)	9,460 (45.2%)	3,489 (48.5%)	39,249 (21.6%)
Morphine	116 (0.4%)	74 (0.4%)	35 (0.5%)	5 (0.0%)
Other	95 (0.3%)	68 (0.3%)	23 (0.3%)	736 (0.4%)
Other schedule	12,353 (42.2%)	8,959 (42.8%)	2,833 (39.4%)	121,282 (66.9%)
Tramadol	1,295 (4.4%)	933 (4.5%)	301 (4.2%)	1,619 (0.9%)
Codeine	434 (1.5%)	320 (1.5%)	90 (1.3%)	13,626 (7.5%)
Hydrocodone (before rescheduling)	10,500 (35.8%)	7,618 (36.4%)	2,417 (33.6%)	105,088 (58.0%)
Other	124 (0.4%)	88 (0.4%)	25 (0.3%)	949 (0.5%)

*After exclusion of patients with history of same or other study surgery

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
All surgeries*										
<u>All ages</u>	935,443	5.3 (3.6)	5 (3, 6)	36.8 (21.5)	30 (24, 40)	264.2 (203.6)	225 (150, 300)	167,423 (17.9%)	9.7 (5.3)	9 (6, 13)
Schedule II	474,207	5.4 (3.7)	5 (3, 6)	39.9 (23.3)	30 (30, 45)	312.6 (222.7)	225 (200, 375)	84,378 (17.8%)	9.9 (5.2)	9 (6, 13)
Oxymorphone	12	14.7 (8.6)	11 (9, 20)	34.4 (20.7)	25 (20, 50)	858.8 (775.1)	435 (300, 1,200)	6 (50.0%)	9.0 (4.2)	8 (6, 12)
Hydromorphone	13,361	6.3 (4.2)	5 (4, 8)	51.2 (29.3)	40 (30, 60)	444.0 (289.0)	352 (240, 600)	4,169 (31.2%)	10.1 (5.3)	9 (6, 13)
Hydrocodone (after rescheduling)	72,035	5.7 (3.9)	5 (3, 7)	38.3 (25.3)	30 (20, 42)	247.3 (217.3)	150 (125, 300)	10,040 (13.9%)	11.0 (5.7)	10 (7, 14)
Oxycodone	384,566	5.4 (3.5)	5 (3, 6)	39.9 (22.6)	30 (30, 45)	318.6 (210.3)	225 (225, 375)	69,165 (18.0%)	9.7 (5.1)	9 (6, 13)
Morphine	746	10.5 (7.5)	8 (5, 14)	44.8 (29.1)	30 (30, 60)	745.6 (719.2)	510 (450, 900)	241 (32.3%)	9.6 (6.7)	8 (5, 13)
Other	3,487	5.5 (3.8)	5 (3, 6)	34.1 (19.3)	30 (20, 40)	394.5 (502.7)	150 (100, 500)	757 (21.7%)	8.8 (5.3)	7 (5, 12)
Other Schedule	461,236	5.2 (3.5)	5 (3, 6)	33.6 (18.9)	30 (20, 40)	214.5 (167.9)	150 (120, 250)	83,045 (18.0%)	9.5 (5.3)	8 (6, 13)
Tramadol	25,833	8.8 (5.8)	7 (5, 10)	45.6 (25.0)	40 (30, 60)	225.2 (125.9)	200 (150, 300)	6,340 (24.5%)	11.1 (6.6)	10 (6, 15)
Codeine	33,992	4.4 (2.9)	4 (3, 5)	27.5 (15.1)	25 (20, 30)	126.2 (75.3)	113 (90, 135)	3,587 (10.6%)	8.5 (5.2)	7 (5, 11)
Hydrocodone (before rescheduling)	394,504	5.0 (3.2)	5 (3, 6)	33.3 (18.5)	30 (20, 40)	212.7 (156.5)	150 (125, 250)	72,053 (18.3%)	9.4 (5.1)	8 (6, 13)
Other	6,907	5.6 (3.5)	5 (4, 7)	31.4 (14.4)	30 (20, 40)	713.3 (331.2)	690 (460, 805)	1,065 (15.4%)	8.9 (5.1)	8 (5, 12)
<u>18-40</u>	467,619	4.5 (2.5)	4 (3, 5)	29.6 (12.4)	30 (20, 30)	209.4 (122.6)	200 (150, 225)	53,371 (11.4%)	7.8 (4.3)	7 (5, 10)
Schedule II	254,954	4.5 (2.6)	4 (3, 5)	31.5 (12.8)	30 (25, 40)	239.5 (120.1)	225 (180, 300)	26,521 (10.4%)	7.9 (4.3)	7 (5, 10)
Oxymorphone	1	5.0 (.)	5 (5, 5)	20.0 (.)	20 (20, 20)	300.0 (.)	300 (300, 300)	0 (0.0%)	-	-
Hydromorphone	4,069	5.0 (3.2)	5 (3, 5)	35.6 (18.0)	30 (30, 40)	308.9 (202.0)	240 (240, 320)	626 (15.4%)	8.0 (4.7)	7 (5, 11)
Hydrocodone (after rescheduling)	32,840	4.5 (2.6)	4 (3, 5)	28.6 (13.1)	30 (20, 30)	172.3 (105.8)	150 (100, 200)	2,444 (7.4%)	8.3 (4.5)	7 (5, 11)
Oxycodone	216,306	4.5 (2.6)	4 (3, 5)	31.9 (12.6)	30 (25, 40)	248.2 (114.4)	225 (225, 300)	23,208 (10.7%)	7.9 (4.2)	7 (5, 10)
Morphine	224	6.9 (4.5)	5 (5, 8)	35.6 (16.3)	30 (30, 40)	547.8 (247.9)	450 (450, 600)	27 (12.1%)	8.7 (6.9)	6 (4, 12)
Other	1,514	4.5 (2.6)	4 (3, 5)	27.1 (11.9)	25 (20, 30)	208.0 (242.8)	150 (100, 200)	216 (14.3%)	6.7 (4.1)	6 (4, 8)
Other Schedule	212,665	4.3 (2.4)	4 (3, 5)	27.4 (11.4)	30 (20, 30)	173.4 (115.7)	150 (100, 200)	26,850 (12.6%)	7.6 (4.3)	6 (5, 9)
Tramadol	3,778	6.2 (4.1)	5 (4, 7)	32.1 (15.6)	30 (20, 36)	158.0 (80.4)	150 (100, 160)	485 (12.8%)	7.7 (4.8)	7 (4, 10)
Codeine	16,892	4.1 (2.4)	4 (3, 5)	25.8 (10.8)	26 (20, 30)	117.9 (53.6)	126 (90, 135)	1,518 (9.0%)	7.1 (4.3)	6 (4, 9)
Hydrocodone (before rescheduling)	188,557	4.3 (2.4)	4 (3, 5)	27.5 (11.4)	30 (20, 30)	169.7 (94.8)	150 (100, 200)	24,435 (13.0%)	7.6 (4.3)	7 (5, 9)
Other	3,438	5.1 (2.8)	5 (3, 5)	29.1 (10.3)	30 (20, 30)	662.6 (241.3)	690 (460, 690)	412 (12.0%)	7.6 (4.4)	6 (4, 10)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
All surgeries*, continued										
41-64	241,354	5.5 (3.7)	5 (3, 7)	39.6 (24.4)	30 (24, 50)	293.0 (245.0)	225 (150, 375)	48,767 (20.2%)	10.0 (5.3)	9 (6, 13)
Schedule II	113,106	5.9 (4.0)	5 (3, 7)	45.8 (27.1)	40 (30, 60)	369.5 (275.6)	300 (225, 450)	25,922 (22.9%)	10.2 (5.3)	9 (6, 13)
Oxymorphone	4	21.8 (10.9)	25 (14, 30)	43.5 (21.8)	50 (27, 60)	1,530.0 (963.1)	1,500 (810, 2,250)	2 (50.0%)	5.5 (0.7)	6 (5, 6)
Hydromorphone	4,653	6.4 (4.1)	5 (4, 8)	57.0 (31.4)	50 (30, 80)	499.3 (314.1)	480 (240, 640)	1,684 (36.2%)	9.9 (5.2)	9 (6, 13)
Hydrocodone (after rescheduling)	17,827	5.8 (4.1)	5 (3, 7)	39.3 (27.3)	30 (20, 50)	260.2 (242.1)	175 (125, 300)	2,489 (14.0%)	11.0 (5.8)	10 (7, 15)
Oxycodone	89,000	5.9 (3.9)	5 (3, 7)	46.6 (26.5)	40 (30, 60)	381.3 (260.2)	300 (225, 450)	21,284 (23.9%)	10.1 (5.2)	9 (6, 13)
Morphine	233	12.2 (8.1)	10 (6, 15)	52.5 (34.9)	40 (30, 60)	913.6 (958.5)	720 (450, 1,125)	100 (42.9%)	10.3 (7.1)	9 (5, 15)
Other	1,389	6.0 (4.2)	5 (3, 7)	37.7 (21.1)	30 (24, 45)	485.4 (568.8)	200 (140, 600)	363 (26.1%)	9.3 (5.4)	8 (5, 13)
Other Schedule	128,248	5.2 (3.5)	5 (3, 6)	34.2 (20.4)	30 (20, 40)	225.6 (190.4)	150 (113, 263)	22,845 (17.8%)	9.7 (5.4)	9 (6, 13)
Tramadol	6,142	8.3 (5.7)	7 (5, 10)	43.7 (25.6)	40 (30, 60)	215.5 (129.6)	188 (150, 300)	1,371 (22.3%)	10.6 (6.8)	9 (5, 15)
Codeine	10,382	4.1 (2.7)	3 (2, 5)	25.1 (15.2)	20 (16, 30)	115.9 (76.5)	90 (72, 135)	984 (9.5%)	8.7 (5.3)	8 (5, 12)
Hydrocodone (before rescheduling)	109,213	5.1 (3.3)	5 (3, 6)	34.6 (20.2)	30 (20, 40)	225.1 (176.7)	150 (120, 263)	20,047 (18.4%)	9.7 (5.3)	9 (6, 13)
Other	2,511	5.6 (3.7)	5 (3, 7)	31.8 (15.8)	30 (20, 40)	723.1 (361.3)	690 (460, 920)	443 (17.6%)	9.3 (5.3)	8 (6, 13)
65+	226,470	6.9 (4.5)	5 (4, 8)	48.5 (26.5)	40 (30, 60)	346.8 (249.6)	300 (160, 450)	65,285 (28.8%)	11.1 (5.4)	11 (7, 14)
Schedule II	106,147	7.1 (4.6)	6 (5, 9)	54.0 (29.0)	50 (30, 60)	427.5 (276.5)	375 (225, 576)	31,935 (30.1%)	11.3 (5.3)	11 (7, 14)
Oxymorphone	7	12.0 (4.3)	10 (10, 15)	31.3 (21.1)	20 (20, 40)	555.0 (421.5)	300 (300, 1,125)	4 (57.1%)	10.8 (4.1)	10 (8, 14)
Hydromorphone	4,639	7.4 (4.8)	6 (5, 10)	59.2 (29.9)	60 (40, 80)	507.0 (287.7)	480 (320, 640)	1,859 (40.1%)	10.9 (5.3)	10 (7, 14)
Hydrocodone (after rescheduling)	21,368	7.4 (4.8)	6 (5, 10)	52.4 (30.4)	41 (30, 60)	351.9 (270.7)	300 (150, 450)	5,107 (23.9%)	12.3 (5.6)	12 (8, 15)
Oxycodone	79,260	7.0 (4.5)	6 (5, 8)	54.2 (28.5)	50 (30, 60)	440.3 (264.8)	375 (225, 600)	24,673 (31.1%)	11.2 (5.3)	11 (7, 14)
Morphine	289	12.0 (7.9)	10 (6, 15)	45.7 (29.9)	36 (24, 60)	763.4 (704.6)	600 (420, 900)	114 (39.4%)	9.2 (6.3)	8 (4, 12)
Other	584	7.2 (4.7)	5 (4, 10)	43.7 (23.4)	40 (30, 60)	661.7 (637.4)	400 (150, 1,000)	178 (30.5%)	10.2 (5.8)	9 (6, 13)
Other Schedule	120,323	6.8 (4.5)	5 (4, 8)	43.7 (23.0)	40 (30, 60)	275.6 (197.5)	225 (150, 300)	33,350 (27.7%)	10.9 (5.5)	10 (7, 14)
Tramadol	15,913	9.6 (6.0)	8 (5, 12)	49.5 (25.4)	45 (30, 60)	244.9 (127.3)	200 (150, 300)	4,484 (28.2%)	11.6 (6.6)	11 (7, 15)
Codeine	6,718	5.6 (3.9)	5 (3, 7)	35.3 (20.8)	30 (20, 40)	163.1 (103.7)	135 (90, 180)	1,085 (16.2%)	10.1 (5.8)	9 (6, 14)
Hydrocodone (before rescheduling)	96,734	6.4 (4.0)	5 (4, 8)	43.3 (22.5)	40 (30, 60)	282.5 (196.1)	225 (150, 338)	27,571 (28.5%)	10.8 (5.3)	10 (7, 14)
Other	958	7.2 (4.6)	6 (5, 9)	38.7 (19.8)	30 (30, 45)	869.9 (454.2)	690 (575, 1,035)	210 (21.9%)	10.6 (5.5)	10 (7, 14)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Appendectomy (laparoscopic)										
<u>All ages</u>	53,428	4.5 (2.5)	4 (3, 5)	31.7 (10.7)	30 (30, 40)	208.6 (103.6)	200 (150, 225)	3,939 (7.4%)	8.1 (4.9)	7 (5, 11)
Schedule II	24,380	4.5 (2.5)	4 (3, 5)	32.4 (11.1)	30 (30, 40)	238.8 (101.7)	225 (180, 300)	1,501 (6.2%)	8.2 (5.0)	7 (5, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	461	4.4 (2.7)	4 (3, 5)	31.3 (13.7)	30 (20, 40)	260.9 (127.9)	240 (160, 320)	53 (11.5%)	7.7 (4.9)	7 (4, 9)
Hydrocodone (after rescheduling)	4,663	4.7 (2.5)	4 (3, 5)	32.5 (11.2)	30 (30, 40)	185.8 (90.1)	150 (150, 200)	228 (4.9%)	8.8 (5.1)	8 (5, 12)
Oxycodone	19,175	4.4 (2.5)	4 (3, 5)	32.4 (11.1)	30 (30, 40)	250.4 (96.2)	225 (225, 300)	1,213 (6.3%)	8.1 (5.0)	7 (5, 11)
Morphine	7	8.3 (10.0)	5 (2, 10)	31.4 (14.9)	30 (20, 40)	600.0 (542.6)	450 (300, 600)	1 (14.3%)	2.0 (.)	2 (2, 2)
Other	74	4.6 (1.8)	5 (3, 5)	28.9 (9.1)	30 (24, 30)	406.5 (349.7)	228 (150, 600)	6 (8.1%)	10.8 (7.4)	13 (2, 15)
Other Schedule	29,048	4.5 (2.5)	4 (3, 5)	31.2 (10.2)	30 (30, 35)	183.3 (98.2)	150 (150, 200)	2,438 (8.4%)	8.1 (4.8)	7 (5, 11)
Tramadol	980	6.4 (4.6)	5 (4, 7)	30.8 (12.8)	30 (23, 30)	151.6 (64.7)	150 (103, 150)	89 (9.1%)	7.7 (5.1)	7 (3, 11)
Codeine	1,397	4.5 (2.4)	4 (3, 5)	30.2 (10.2)	30 (25, 30)	140.2 (53.2)	135 (113, 135)	85 (6.1%)	7.4 (5.3)	6 (3, 10)
Hydrocodone (before rescheduling)	26,306	4.5 (2.4)	4 (3, 5)	31.3 (10.1)	30 (30, 35)	180.2 (79.3)	150 (150, 200)	2,239 (8.5%)	8.1 (4.7)	7 (5, 11)
Other	365	5.4 (3.7)	5 (3, 6)	28.7 (10.3)	30 (20, 30)	656.7 (240.7)	690 (460, 690)	25 (6.8%)	7.2 (5.7)	6 (3, 8)
<u>18-40</u>	30,177	4.5 (2.4)	4 (3, 5)	31.8 (10.6)	30 (30, 40)	209.9 (103.5)	200 (150, 225)	2,283 (7.6%)	7.6 (4.6)	6 (4, 10)
Schedule II	14,071	4.4 (2.5)	4 (3, 5)	32.4 (11.1)	30 (30, 40)	239.7 (101.2)	225 (180, 300)	878 (6.2%)	7.7 (4.6)	7 (4, 10)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	229	4.2 (2.1)	4 (3, 5)	31.4 (13.7)	30 (20, 40)	256.9 (113.8)	240 (160, 320)	29 (12.7%)	6.6 (4.3)	6 (3, 8)
Hydrocodone (after rescheduling)	2,555	4.7 (2.5)	4 (3, 5)	32.4 (11.4)	30 (30, 40)	185.9 (91.9)	150 (150, 200)	129 (5.0%)	7.8 (5.1)	7 (4, 10)
Oxycodone	11,237	4.4 (2.4)	4 (3, 5)	32.5 (11.0)	30 (30, 40)	250.7 (95.0)	225 (225, 300)	715 (6.4%)	7.7 (4.6)	6 (4, 10)
Morphine	2	8.0 (2.8)	8 (6, 10)	35.0 (7.1)	35 (30, 40)	525.0 (106.1)	525 (450, 600)	0 (0.0%)	-	-
Other	48	4.5 (1.8)	5 (3, 5)	29.1 (10.0)	30 (24, 30)	448.3 (384.7)	400 (150, 600)	5 (10.4%)	9.0 (6.6)	11 (2, 15)
Other Schedule	16,106	4.5 (2.4)	4 (3, 5)	31.2 (10.0)	30 (30, 32)	183.8 (98.3)	150 (150, 200)	1,405 (8.7%)	7.5 (4.6)	6 (4, 10)
Tramadol	415	6.0 (3.1)	5 (4, 7)	30.0 (11.1)	30 (20, 30)	147.3 (56.2)	150 (100, 150)	36 (8.7%)	6.3 (4.8)	5 (2, 9)
Codeine	778	4.5 (2.3)	4 (3, 5)	30.4 (9.8)	30 (25, 30)	141.4 (53.7)	135 (113, 135)	46 (5.9%)	7.3 (5.7)	6 (3, 10)
Hydrocodone (before rescheduling)	14,705	4.4 (2.3)	4 (3, 5)	31.3 (10.0)	30 (30, 35)	180.3 (77.4)	150 (150, 200)	1,307 (8.9%)	7.6 (4.5)	6 (4, 10)
Other	208	5.5 (3.5)	5 (4, 6)	28.8 (11.4)	30 (20, 30)	661.2 (264.2)	690 (460, 690)	16 (7.7%)	6.8 (5.5)	6 (3, 8)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Appendectomy (laparoscopic), continued										
<u>41-64</u>	17,286	4.5 (2.6)	4 (3, 5)	32.1 (10.7)	30 (30, 40)	212.5 (106.2)	200 (150, 225)	1,316 (7.6%)	8.7 (5.1)	7 (5, 12)
Schedule II	7,837	4.5 (2.6)	4 (3, 5)	32.8 (11.2)	30 (30, 40)	242.4 (104.5)	225 (188, 300)	513 (6.5%)	8.8 (5.3)	8 (5, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	183	4.5 (3.3)	4 (3, 5)	30.9 (14.5)	30 (20, 40)	264.9 (151.6)	240 (160, 320)	22 (12.0%)	9.5 (5.2)	9 (5, 14)
Hydrocodone (after rescheduling)	1,410	4.7 (2.3)	4 (3, 5)	32.7 (10.4)	30 (30, 40)	187.1 (87.5)	150 (150, 200)	75 (5.3%)	9.4 (4.6)	10 (6, 13)
Oxycodone	6,217	4.5 (2.6)	4 (3, 5)	32.8 (11.3)	30 (30, 40)	253.6 (99.2)	225 (225, 300)	414 (6.7%)	8.6 (5.4)	7 (5, 12)
Morphine	4	9.3 (13.8)	3 (2, 17)	33.8 (18.0)	28 (23, 45)	731.3 (715.1)	413 (338, 1,125)	1 (25.0%)	2.0 (.)	2 (2, 2)
Other	23	4.5 (1.4)	5 (3, 5)	29.1 (6.2)	30 (24, 30)	337.0 (265.3)	150 (150, 600)	1 (4.3%)	20.0 (.)	20 (20, 20)
Other Schedule	9,449	4.5 (2.6)	4 (3, 5)	31.5 (10.1)	30 (30, 35)	187.6 (101.1)	150 (150, 210)	803 (8.5%)	8.6 (5.0)	7 (5, 12)
Tramadol	345	6.9 (6.1)	5 (4, 8)	31.9 (14.9)	30 (25, 30)	156.9 (75.1)	150 (113, 150)	35 (10.1%)	8.2 (5.6)	8 (2, 11)
Codeine	422	4.4 (2.4)	4 (3, 5)	30.9 (10.3)	30 (30, 30)	143.0 (52.1)	135 (135, 135)	31 (7.3%)	7.6 (5.0)	7 (3, 10)
Hydrocodone (before rescheduling)	8,543	4.5 (2.3)	4 (3, 5)	31.5 (9.9)	30 (30, 36)	183.6 (82.1)	150 (150, 210)	729 (8.5%)	8.7 (4.9)	7 (5, 12)
Other	139	5.1 (4.1)	5 (3, 5)	28.4 (8.3)	30 (20, 30)	646.0 (197.8)	690 (460, 690)	8 (5.8%)	8.4 (6.7)	7 (4, 11)
<u>65+</u>	5,965	4.8 (2.9)	4 (3, 5)	30.6 (11.2)	30 (25, 30)	191.3 (94.2)	150 (150, 225)	340 (5.7%)	9.8 (5.0)	9 (6, 14)
Schedule II	2,472	4.8 (2.8)	4 (3, 5)	31.0 (11.0)	30 (25, 35)	221.9 (94.0)	225 (150, 240)	110 (4.4%)	10.0 (5.4)	9 (6, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	49	5.0 (2.1)	5 (3, 6)	32.5 (10.4)	30 (30, 40)	264.8 (89.0)	240 (240, 320)	2 (4.1%)	3.0 (1.4)	3 (2, 4)
Hydrocodone (after rescheduling)	698	5.1 (2.9)	5 (3, 6)	32.2 (11.9)	30 (30, 40)	182.9 (88.4)	150 (150, 210)	24 (3.4%)	11.8 (5.2)	12 (8, 16)
Oxycodone	1,721	4.6 (2.8)	4 (3, 5)	30.6 (10.6)	30 (25, 35)	236.4 (91.2)	225 (188, 300)	84 (4.9%)	9.6 (5.4)	8 (6, 14)
Morphine	1	5.0 (.)	5 (5, 5)	15.0 (.)	15 (15, 15)	225.0 (.)	225 (225, 225)	0 (0.0%)	-	-
Other	3	6.0 (3.6)	7 (2, 9)	24.0 (14.9)	30 (7, 35)	270.0 (294.2)	175 (35, 600)	0 (0.0%)	-	-
Other Schedule	3,493	4.8 (3.0)	4 (3, 5)	30.3 (11.3)	30 (24, 30)	169.7 (88.2)	150 (125, 200)	230 (6.6%)	9.6 (4.8)	9 (6, 13)
Tramadol	220	6.5 (4.1)	5 (4, 7)	30.7 (12.2)	30 (20, 30)	151.3 (61.8)	150 (100, 150)	18 (8.2%)	9.3 (4.0)	9 (7, 11)
Codeine	197	4.7 (2.7)	5 (3, 5)	28.3 (10.9)	30 (20, 30)	129.5 (52.2)	135 (90, 135)	8 (4.1%)	7.3 (4.7)	5 (4, 12)
Hydrocodone (before rescheduling)	3,058	4.7 (2.8)	4 (3, 5)	30.4 (11.2)	30 (25, 30)	170.6 (79.6)	150 (150, 200)	203 (6.6%)	9.8 (4.9)	9 (6, 14)
Other	18	6.1 (2.6)	5 (5, 7)	29.9 (11.6)	30 (20, 40)	687.4 (266.6)	690 (460, 920)	1 (5.6%)	4.0 (.)	4 (4, 4)

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Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Appendectomy (nonspecific)										
<u>All ages</u>	8,035	4.8 (2.8)	4 (3, 5)	32.2 (12.2)	30 (25, 40)	219.5 (124.9)	200 (150, 250)	1,186 (14.8%)	8.4 (4.4)	7 (5, 11)
Schedule II	3,577	4.8 (3.0)	4 (3, 5)	33.4 (13.0)	30 (30, 40)	255.3 (129.1)	225 (188, 300)	514 (14.4%)	8.3 (4.1)	8 (5, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	131	5.0 (3.2)	5 (3, 5)	36.6 (14.6)	30 (30, 48)	314.8 (158.2)	240 (240, 400)	27 (20.6%)	7.1 (3.5)	6 (4, 10)
Hydrocodone (after rescheduling)	415	5.2 (3.2)	5 (3, 6)	32.9 (13.0)	30 (28, 40)	188.3 (90.2)	150 (150, 225)	40 (9.6%)	9.3 (3.6)	9 (7, 12)
Oxycodone	3,017	4.8 (3.0)	4 (3, 5)	33.4 (12.9)	30 (30, 40)	261.1 (127.7)	225 (225, 300)	444 (14.7%)	8.3 (4.2)	7 (5, 11)
Morphine	6	7.3 (4.8)	5 (4, 13)	34.7 (16.4)	36 (30, 50)	520.0 (246.4)	540 (450, 750)	1 (16.7%)	12.0 (.)	12 (12, 12)
Other	8	5.0 (2.4)	5 (3, 6)	36.3 (13.0)	30 (30, 45)	368.8 (261.8)	275 (150, 600)	2 (25.0%)	7.5 (4.9)	8 (4, 11)
Other Schedule	4,458	4.9 (2.7)	5 (3, 5)	31.3 (11.4)	30 (25, 35)	190.8 (113.6)	150 (150, 225)	672 (15.1%)	8.4 (4.7)	7 (5, 11)
Tramadol	173	6.9 (4.3)	6 (4, 8)	32.2 (15.3)	30 (24, 30)	155.2 (75.9)	150 (113, 150)	25 (14.5%)	10.6 (8.5)	7 (4, 14)
Codeine	247	5.1 (3.3)	5 (3, 6)	28.7 (9.3)	30 (20, 30)	133.1 (53.4)	135 (90, 135)	32 (13.0%)	8.9 (5.5)	8 (4, 12)
Hydrocodone (before rescheduling)	3,944	4.8 (2.5)	4 (3, 5)	31.4 (11.4)	30 (25, 35)	184.9 (88.4)	150 (150, 225)	604 (15.3%)	8.3 (4.4)	7 (5, 11)
Other	94	5.3 (2.6)	5 (4, 6)	28.6 (8.6)	30 (20, 30)	655.4 (196.7)	690 (460, 690)	11 (11.7%)	7.1 (4.4)	7 (3, 8)
<u>18-40</u>	3,319	4.7 (2.5)	4 (3, 5)	32.2 (11.7)	30 (28, 40)	221.1 (130.3)	200 (150, 250)	474 (14.3%)	7.5 (4.0)	7 (4, 9)
Schedule II	1,495	4.7 (2.7)	4 (3, 5)	33.5 (12.9)	30 (30, 40)	257.2 (142.1)	225 (200, 300)	213 (14.2%)	7.4 (3.9)	7 (5, 10)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	47	4.6 (1.9)	4 (3, 5)	34.6 (11.7)	30 (28, 40)	289.5 (105.3)	240 (224, 320)	9 (19.1%)	5.8 (2.8)	6 (4, 7)
Hydrocodone (after rescheduling)	139	5.4 (2.5)	5 (4, 7)	35.2 (13.3)	30 (30, 40)	201.3 (92.1)	180 (150, 225)	12 (8.6%)	7.9 (2.6)	9 (6, 10)
Oxycodone	1,305	4.7 (2.7)	4 (3, 5)	33.3 (12.9)	30 (30, 40)	261.9 (146.2)	225 (225, 300)	191 (14.6%)	7.4 (4.0)	7 (4, 10)
Morphine	2	4.0 (1.4)	4 (3, 5)	19.0 (18.4)	19 (6, 32)	285.0 (275.8)	285 (90, 480)	1 (50.0%)	12.0 (.)	12 (12, 12)
Other	2	7.0 (4.2)	7 (4, 10)	55.0 (7.1)	55 (50, 60)	275.0 (35.4)	275 (250, 300)	0 (0.0%)	-	-
Other Schedule	1,824	4.6 (2.3)	4 (3, 5)	31.0 (10.5)	30 (25, 30)	191.4 (111.4)	150 (150, 225)	261 (14.3%)	7.6 (4.1)	7 (4, 9)
Tramadol	39	5.5 (2.6)	5 (3, 7)	28.9 (13.1)	30 (20, 36)	139.8 (66.7)	150 (100, 150)	6 (15.4%)	6.7 (6.2)	5 (3, 6)
Codeine	104	4.9 (3.4)	4 (3, 6)	29.7 (10.3)	30 (20, 30)	140.0 (64.7)	135 (90, 158)	8 (7.7%)	6.5 (2.9)	7 (4, 8)
Hydrocodone (before rescheduling)	1,635	4.6 (2.2)	4 (3, 5)	31.3 (10.5)	30 (28, 35)	183.6 (84.4)	150 (150, 210)	241 (14.7%)	7.7 (4.1)	7 (5, 9)
Other	46	4.8 (2.2)	5 (3, 5)	27.4 (6.7)	30 (20, 30)	629.5 (154.7)	690 (460, 690)	6 (13.0%)	6.2 (3.5)	6 (3, 8)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Appendectomy (nonspecific), continued										
<u>41-64</u>	3,043	4.8 (2.9)	4 (3, 5)	32.6 (12.2)	30 (30, 40)	227.0 (127.0)	200 (150, 300)	505 (16.6%)	8.6 (4.4)	8 (5, 11)
Schedule II	1,395	4.8 (3.1)	4 (3, 5)	34.1 (13.0)	30 (30, 40)	262.6 (120.2)	225 (210, 300)	219 (15.7%)	8.9 (4.1)	8 (6, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	57	5.0 (2.7)	5 (3, 5)	38.7 (17.2)	35 (30, 50)	344.3 (200.9)	320 (240, 400)	12 (21.1%)	7.5 (3.7)	8 (5, 10)
Hydrocodone (after rescheduling)	135	5.2 (4.2)	5 (3, 5)	31.9 (13.3)	30 (26, 35)	185.5 (90.6)	150 (150, 225)	11 (8.1%)	10.5 (4.1)	11 (8, 15)
Oxycodone	1,200	4.7 (2.9)	4 (3, 5)	34.1 (12.7)	30 (30, 40)	266.9 (112.6)	225 (225, 300)	196 (16.3%)	8.9 (4.1)	8 (6, 12)
Morphine	1	13.0 (.)	13 (13, 13)	50.0 (.)	50 (50, 50)	750.0 (.)	750 (750, 750)	0 (0.0%)	-	-
Other	2	6.0 (1.4)	6 (5, 7)	25.0 (7.1)	25 (20, 30)	350.0 (353.6)	350 (100, 600)	0 (0.0%)	-	-
Other Schedule	1,648	4.9 (2.7)	5 (3, 5)	31.4 (11.3)	30 (25, 35)	196.9 (124.7)	150 (150, 225)	286 (17.4%)	8.3 (4.7)	7 (5, 10)
Tramadol	63	7.5 (5.5)	6 (4, 10)	34.0 (19.0)	30 (25, 30)	163.3 (92.9)	150 (113, 150)	10 (15.9%)	11.3 (11.7)	7 (4, 14)
Codeine	85	5.2 (3.7)	5 (3, 5)	27.6 (8.8)	30 (20, 30)	127.8 (46.8)	135 (90, 135)	20 (23.5%)	10.1 (6.3)	9 (5, 16)
Hydrocodone (before rescheduling)	1,458	4.7 (2.3)	4 (3, 5)	31.6 (11.0)	30 (25, 36)	188.3 (90.5)	150 (150, 225)	251 (17.2%)	8.0 (4.0)	7 (5, 10)
Other	42	6.0 (3.0)	5 (4, 8)	30.2 (10.2)	30 (20, 35)	687.1 (236.4)	690 (460, 736)	5 (11.9%)	8.2 (5.4)	7 (7, 8)
<u>65+</u>	1,673	5.2 (3.3)	5 (3, 6)	31.6 (13.0)	30 (25, 36)	202.8 (107.6)	175 (150, 225)	207 (12.4%)	9.9 (4.9)	9 (6, 13)
Schedule II	687	5.1 (3.6)	4 (3, 5)	31.8 (13.0)	30 (24, 40)	236.3 (114.1)	225 (150, 300)	82 (11.9%)	9.1 (4.4)	9 (6, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	27	5.7 (5.4)	4 (3, 7)	35.6 (12.8)	30 (30, 50)	296.6 (123.4)	240 (240, 400)	6 (22.2%)	8.3 (3.9)	8 (5, 11)
Hydrocodone (after rescheduling)	141	5.0 (2.6)	5 (3, 6)	31.6 (12.4)	30 (24, 40)	178.2 (87.0)	150 (140, 210)	17 (12.1%)	9.5 (3.7)	9 (7, 12)
Oxycodone	512	5.1 (3.7)	4 (3, 5)	31.7 (13.2)	30 (24, 40)	245.5 (107.9)	225 (180, 300)	57 (11.1%)	9.2 (4.7)	7 (6, 11)
Morphine	3	7.7 (5.5)	5 (4, 14)	40.0 (10.0)	40 (30, 50)	600.0 (150.0)	600 (450, 750)	0 (0.0%)	-	-
Other	4	3.5 (1.0)	3 (3, 4)	32.5 (5.0)	30 (30, 35)	425.0 (327.9)	375 (150, 700)	2 (50.0%)	7.5 (4.9)	8 (4, 11)
Other Schedule	986	5.3 (3.1)	5 (3, 6)	31.4 (13.0)	30 (25, 35)	179.5 (96.3)	150 (135, 200)	125 (12.7%)	10.4 (5.1)	10 (6, 13)
Tramadol	71	7.1 (3.6)	6 (5, 10)	32.3 (12.5)	30 (30, 40)	156.4 (62.3)	150 (113, 200)	9 (12.7%)	12.4 (4.9)	13 (9, 15)
Codeine	58	5.1 (2.2)	5 (4, 7)	28.6 (8.2)	30 (25, 30)	128.7 (37.0)	135 (113, 135)	4 (6.9%)	8.0 (4.1)	8 (5, 12)
Hydrocodone (before rescheduling)	851	5.2 (3.1)	5 (3, 6)	31.5 (13.3)	30 (25, 35)	181.7 (92.1)	150 (150, 200)	112 (13.2%)	10.3 (5.1)	9 (6, 13)
Other	6	5.0 (1.1)	5 (4, 5)	27.5 (7.6)	28 (20, 30)	632.5 (174.4)	633 (460, 690)	0 (0.0%)	-	-

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Bunionectomy										
All ages	43,163	5.6 (3.1)	5 (4, 7)	37.8 (15.2)	30 (30, 40)	280.9 (174.2)	225 (150, 338)	9,554 (22.1%)	8.1 (5.0)	7 (4, 11)
Schedule II	20,184	5.6 (3.0)	5 (4, 7)	40.8 (16.3)	40 (30, 50)	337.0 (186.8)	300 (225, 450)	4,733 (23.4%)	8.0 (4.9)	7 (4, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	458	5.5 (3.8)	5 (3, 6)	42.6 (19.1)	40 (30, 50)	400.8 (238.9)	320 (240, 480)	127 (27.7%)	8.4 (6.2)	7 (4, 11)
Hydrocodone (after rescheduling)	3,478	5.9 (3.1)	5 (4, 7)	39.4 (15.6)	40 (30, 50)	265.5 (160.1)	225 (150, 300)	580 (16.7%)	8.9 (5.2)	8 (5, 13)
Oxycodone	15,313	5.5 (3.0)	5 (4, 6)	41.5 (16.3)	40 (30, 50)	350.7 (169.3)	300 (225, 450)	3,798 (24.8%)	7.8 (4.8)	7 (4, 11)
Morphine	18	9.7 (5.5)	10 (5, 15)	39.2 (22.7)	30 (21, 60)	587.5 (339.8)	450 (315, 900)	3 (16.7%)	7.7 (6.7)	6 (2, 15)
Other	917	5.3 (3.3)	5 (3, 6)	33.2 (14.0)	30 (24, 40)	342.1 (369.2)	150 (125, 400)	225 (24.5%)	8.1 (4.9)	7 (4, 11)
Other Schedule	22,979	5.6 (3.1)	5 (4, 7)	35.1 (13.7)	30 (30, 40)	231.7 (145.6)	200 (150, 300)	4,821 (21.0%)	8.2 (5.1)	7 (4, 11)
Tramadol	1,030	7.4 (4.9)	6 (5, 10)	36.2 (16.6)	30 (30, 40)	179.0 (88.4)	150 (125, 200)	167 (16.2%)	8.7 (5.8)	7 (4, 13)
Codeine	2,020	4.9 (3.3)	5 (3, 5)	30.6 (13.1)	30 (20, 30)	141.9 (67.7)	135 (90, 162)	302 (15.0%)	7.2 (4.8)	6 (3, 10)
Hydrocodone (before rescheduling)	19,521	5.5 (3.0)	5 (4, 7)	35.6 (13.5)	30 (30, 40)	233.7 (128.1)	200 (150, 300)	4,269 (21.9%)	8.3 (5.1)	7 (4, 12)
Other	408	5.7 (3.1)	5 (4, 7)	31.6 (12.8)	30 (24, 40)	714.1 (293.4)	690 (460, 920)	83 (20.3%)	7.0 (4.6)	7 (3, 9)
18-40	7,354	5.5 (3.0)	5 (4, 7)	38.0 (15.5)	30 (30, 42)	289.8 (178.3)	225 (150, 350)	2,260 (30.7%)	7.2 (4.6)	6 (4, 9)
Schedule II	3,538	5.6 (3.0)	5 (4, 7)	41.2 (16.8)	40 (30, 50)	345.7 (189.9)	300 (225, 450)	1,153 (32.6%)	7.2 (4.4)	6 (4, 9)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	65	5.2 (2.8)	5 (4, 6)	44.5 (21.2)	40 (30, 60)	403.1 (266.8)	320 (240, 480)	32 (49.2%)	7.4 (5.4)	6 (4, 10)
Hydrocodone (after rescheduling)	525	5.9 (3.2)	5 (4, 7)	39.7 (15.8)	40 (30, 50)	276.4 (163.4)	225 (150, 300)	124 (23.6%)	8.6 (5.2)	8 (5, 12)
Oxycodone	2,793	5.5 (3.0)	5 (4, 6)	41.9 (17.0)	40 (30, 50)	357.3 (173.3)	300 (225, 450)	941 (33.7%)	7.0 (4.3)	6 (4, 9)
Morphine	1	7.0 (.)	7 (7, 7)	75.0 (.)	75 (75, 75)	1,125.0 (.)	1,125 (1,125, 1,125)	0 (0.0%)	-	-
Other	154	5.3 (3.0)	5 (3, 6)	32.2 (12.1)	30 (25, 40)	341.9 (374.3)	150 (125, 400)	56 (36.4%)	7.1 (4.3)	6 (4, 9)
Other Schedule	3,816	5.4 (3.0)	5 (4, 6)	35.0 (13.5)	30 (30, 40)	238.0 (149.1)	200 (150, 300)	1,107 (29.0%)	7.2 (4.9)	6 (4, 9)
Tramadol	107	7.8 (5.7)	5 (4, 10)	37.8 (17.8)	30 (30, 50)	186.4 (86.7)	150 (125, 225)	21 (19.6%)	7.6 (5.6)	4 (4, 11)
Codeine	293	4.7 (2.8)	5 (3, 5)	29.0 (10.3)	30 (20, 30)	136.5 (60.4)	135 (90, 135)	59 (20.1%)	5.8 (3.7)	5 (3, 9)
Hydrocodone (before rescheduling)	3,339	5.4 (2.9)	5 (4, 7)	35.6 (13.5)	30 (30, 40)	238.3 (134.0)	200 (150, 300)	1,008 (30.2%)	7.3 (4.9)	6 (4, 9)
Other	77	5.2 (2.4)	5 (4, 6)	30.4 (10.3)	30 (20, 40)	686.6 (235.8)	690 (460, 920)	19 (24.7%)	7.7 (5.8)	7 (3, 13)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Bunionectomy, continued										
41-64	22,535	5.5 (2.9)	5 (4, 6)	38.2 (14.9)	35 (30, 45)	289.6 (180.3)	225 (150, 338)	5,057 (22.4%)	8.1 (5.0)	7 (4, 11)
Schedule II	11,029	5.5 (2.9)	5 (4, 6)	41.0 (15.9)	40 (30, 50)	341.5 (191.3)	300 (225, 450)	2,593 (23.5%)	8.0 (5.0)	7 (4, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	273	5.4 (3.4)	5 (3, 6)	43.6 (19.4)	40 (30, 50)	410.2 (250.6)	320 (240, 480)	72 (26.4%)	9.1 (7.0)	7 (4, 14)
Hydrocodone (after rescheduling)	1,601	5.8 (3.2)	5 (4, 7)	40.4 (15.8)	40 (30, 50)	277.3 (172.3)	225 (150, 300)	281 (17.6%)	8.7 (5.2)	8 (5, 12)
Oxycodone	8,552	5.4 (2.8)	5 (4, 6)	41.6 (15.7)	40 (30, 50)	350.1 (168.0)	300 (225, 450)	2,093 (24.5%)	7.9 (4.8)	7 (4, 11)
Morphine	11	8.0 (5.1)	8 (4, 10)	27.8 (16.0)	21 (20, 40)	417.3 (239.3)	315 (300, 600)	3 (27.3%)	7.7 (6.7)	6 (2, 15)
Other	592	5.2 (3.2)	5 (3, 6)	33.3 (13.8)	30 (24, 40)	357.8 (386.6)	175 (125, 433)	144 (24.3%)	8.2 (5.0)	7 (4, 12)
Other Schedule	11,506	5.5 (3.0)	5 (4, 7)	35.5 (13.5)	30 (30, 40)	239.8 (153.5)	200 (150, 300)	2,464 (21.4%)	8.2 (5.1)	7 (4, 11)
Tramadol	414	7.5 (5.0)	6 (5, 10)	36.3 (15.4)	30 (30, 40)	182.1 (87.9)	150 (150, 200)	82 (19.8%)	8.4 (6.0)	7 (3, 13)
Codeine	903	4.7 (3.0)	4 (3, 5)	30.9 (13.1)	30 (20, 30)	143.8 (69.4)	135 (90, 180)	151 (16.7%)	7.4 (5.0)	6 (3, 11)
Hydrocodone (before rescheduling)	9,925	5.5 (2.8)	5 (4, 7)	36.0 (13.3)	30 (30, 40)	238.2 (130.8)	200 (150, 300)	2,178 (21.9%)	8.3 (5.1)	7 (4, 12)
Other	264	5.6 (2.8)	5 (4, 7)	31.9 (12.8)	30 (25, 40)	722.1 (292.4)	690 (552, 920)	53 (20.1%)	6.5 (3.9)	6 (3, 8)
65+	13,274	5.7 (3.4)	5 (4, 7)	37.0 (15.4)	30 (30, 40)	261.3 (159.3)	225 (150, 300)	2,237 (16.9%)	9.0 (5.2)	8 (5, 13)
Schedule II	5,617	5.8 (3.3)	5 (4, 7)	40.2 (16.7)	40 (30, 50)	322.6 (174.8)	300 (225, 408)	987 (17.6%)	8.8 (5.1)	8 (5, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	120	5.8 (4.9)	5 (3, 7)	39.4 (16.8)	40 (30, 50)	378.1 (191.3)	320 (240, 480)	23 (19.2%)	7.7 (4.1)	7 (5, 9)
Hydrocodone (after rescheduling)	1,352	5.9 (3.0)	5 (4, 7)	38.2 (15.2)	30 (30, 45)	247.3 (141.2)	200 (150, 300)	175 (12.9%)	9.4 (5.3)	8 (5, 14)
Oxycodone	3,968	5.8 (3.3)	5 (4, 7)	41.2 (17.0)	40 (30, 50)	347.3 (168.9)	300 (225, 450)	764 (19.3%)	8.7 (5.0)	8 (5, 12)
Morphine	6	13.2 (5.3)	15 (9, 15)	54.0 (20.8)	60 (30, 60)	810.0 (311.8)	900 (450, 900)	0 (0.0%)	-	-
Other	171	5.6 (4.2)	5 (3, 6)	33.8 (16.3)	30 (24, 40)	288.2 (291.5)	150 (125, 300)	25 (14.6%)	9.8 (4.9)	9 (6, 13)
Other Schedule	7,657	5.7 (3.4)	5 (4, 7)	34.7 (14.0)	30 (30, 40)	216.4 (129.6)	188 (150, 250)	1,250 (16.3%)	9.1 (5.2)	8 (5, 13)
Tramadol	509	7.3 (4.7)	6 (5, 8)	35.7 (17.4)	30 (30, 40)	175.0 (89.0)	150 (125, 200)	64 (12.6%)	9.4 (5.6)	8 (5, 13)
Codeine	824	5.2 (3.8)	5 (3, 5)	30.9 (13.9)	30 (20, 36)	141.7 (68.3)	135 (90, 171)	92 (11.2%)	7.7 (5.0)	7 (4, 11)
Hydrocodone (before rescheduling)	6,257	5.6 (3.2)	5 (4, 7)	35.1 (13.7)	30 (30, 40)	224.3 (119.9)	200 (150, 300)	1,083 (17.3%)	9.2 (5.2)	8 (5, 13)
Other	67	6.4 (4.5)	5 (4, 7)	32.2 (15.5)	30 (20, 40)	714.5 (353.8)	690 (460, 920)	11 (16.4%)	8.5 (5.5)	8 (4, 14)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Coronary artery bypass graft										
<u>All ages</u>	33,289	7.2 (4.4)	6 (5, 8)	46.3 (20.3)	40 (30, 60)	306.4 (191.8)	250 (200, 375)	7,101 (21.3%)	11.7 (5.6)	11 (8, 15)
Schedule II	14,723	7.1 (4.2)	6 (5, 8)	48.8 (21.9)	45 (30, 60)	363.0 (189.4)	300 (225, 450)	2,804 (19.0%)	11.7 (5.3)	11 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	677	7.0 (4.5)	6 (5, 8)	46.5 (20.7)	40 (30, 60)	384.8 (178.1)	360 (240, 480)	136 (20.1%)	12.1 (5.9)	11 (8, 16)
Hydrocodone (after rescheduling)	2,191	7.9 (4.3)	7 (5, 10)	51.1 (22.6)	50 (30, 60)	294.5 (165.5)	250 (200, 350)	370 (16.9%)	13.1 (5.7)	12 (9, 17)
Oxycodone	11,830	6.9 (4.2)	6 (5, 8)	48.5 (21.8)	45 (30, 60)	373.9 (190.6)	338 (225, 450)	2,292 (19.4%)	11.4 (5.2)	11 (8, 15)
Morphine	14	10.1 (4.6)	10 (5, 15)	39.4 (12.6)	35 (30, 50)	590.4 (188.6)	525 (450, 750)	3 (21.4%)	6.0 (4.6)	5 (2, 11)
Other	11	6.2 (3.1)	6 (3, 10)	40.0 (14.1)	40 (30, 50)	550.0 (585.2)	200 (200, 800)	3 (27.3%)	10.3 (4.2)	9 (7, 15)
Other Schedule	18,566	7.2 (4.5)	6 (5, 8)	44.3 (18.7)	40 (30, 50)	261.6 (181.5)	225 (150, 300)	4,297 (23.1%)	11.8 (5.8)	11 (8, 15)
Tramadol	3,370	9.5 (5.7)	8 (6, 11)	45.3 (20.1)	40 (30, 50)	222.5 (101.3)	200 (150, 250)	615 (18.2%)	12.5 (6.9)	12 (8, 17)
Codeine	1,189	6.5 (4.1)	5 (4, 8)	42.6 (19.0)	40 (30, 50)	193.7 (91.8)	180 (135, 225)	198 (16.7%)	11.1 (6.3)	10 (6, 15)
Hydrocodone (before rescheduling)	13,487	6.7 (4.0)	5 (5, 8)	44.3 (18.4)	40 (30, 50)	250.0 (128.7)	225 (150, 300)	3,348 (24.8%)	11.7 (5.5)	11 (8, 15)
Other	520	7.7 (4.2)	7 (5, 10)	42.3 (15.7)	40 (30, 50)	971.5 (364.4)	920 (690, 1,150)	136 (26.2%)	11.4 (5.1)	11 (8, 15)
<u>18-40</u>	287	7.1 (4.6)	6 (5, 8)	48.4 (20.0)	48 (30, 60)	346.6 (208.1)	300 (225, 450)	122 (42.5%)	10.9 (5.6)	10 (7, 14)
Schedule II	148	7.2 (4.4)	6 (5, 8)	51.0 (20.6)	50 (30, 60)	416.9 (228.9)	375 (300, 450)	58 (39.2%)	11.0 (5.7)	10 (7, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	13	10.8 (8.8)	6 (5, 15)	63.8 (29.3)	60 (40, 90)	529.2 (220.4)	480 (400, 720)	6 (46.2%)	13.7 (10.8)	11 (5, 17)
Hydrocodone (after rescheduling)	8	7.5 (3.0)	8 (5, 8)	44.5 (13.6)	45 (30, 58)	238.1 (86.9)	240 (150, 300)	2 (25.0%)	14.0 (2.8)	14 (12, 16)
Oxycodone	125	6.8 (3.7)	6 (5, 8)	50.0 (19.7)	50 (30, 60)	400.1 (176.7)	375 (300, 450)	50 (40.0%)	10.6 (5.0)	10 (8, 14)
Morphine	1	10.0 (.)	10 (10, 10)	60.0 (.)	60 (60, 60)	900.0 (.)	900 (900, 900)	0 (0.0%)	-	-
Other	1	8.0 (.)	8 (8, 8)	50.0 (.)	50 (50, 50)	2,000.0 (.)	2,000 (2,000, 2,000)	0 (0.0%)	-	-
Other Schedule	139	7.0 (4.9)	5 (4, 8)	45.6 (19.1)	40 (30, 50)	271.9 (151.7)	250 (175, 300)	64 (46.0%)	10.8 (5.5)	11 (7, 14)
Tramadol	15	10.1 (6.0)	10 (7, 10)	53.7 (29.1)	50 (40, 60)	258.3 (124.5)	250 (200, 300)	3 (20.0%)	8.3 (4.7)	10 (3, 12)
Codeine	13	7.0 (6.4)	5 (3, 8)	42.3 (22.0)	30 (30, 50)	190.4 (99.2)	135 (135, 225)	4 (30.8%)	14.8 (15.0)	11 (4, 26)
Hydrocodone (before rescheduling)	108	6.5 (4.4)	5 (4, 7)	45.0 (17.1)	40 (30, 50)	265.6 (117.8)	250 (200, 300)	57 (52.8%)	10.7 (4.5)	11 (7, 13)
Other	3	8.0 (2.6)	9 (5, 10)	40.0 (0.0)	40 (40, 40)	920.0 (0.0)	920 (920, 920)	0 (0.0%)	-	-

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Coronary artery bypass graft, continued										
<u>41-64</u>	10,634	7.0 (4.2)	6 (5, 8)	47.8 (20.2)	45 (30, 60)	335.1 (212.8)	300 (200, 375)	3,086 (29.0%)	11.4 (5.4)	10 (7, 15)
Schedule II	5,075	7.1 (4.2)	6 (5, 8)	50.2 (21.5)	50 (40, 60)	383.6 (204.3)	360 (250, 450)	1,326 (26.1%)	11.5 (5.3)	11 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	254	7.1 (4.9)	6 (4, 8)	49.6 (22.7)	45 (30, 60)	417.8 (197.9)	400 (288, 480)	67 (26.4%)	11.6 (5.5)	10 (8, 16)
Hydrocodone (after rescheduling)	568	8.2 (4.6)	7 (5, 10)	52.5 (21.8)	50 (40, 60)	313.3 (171.9)	300 (200, 400)	123 (21.7%)	12.7 (5.8)	12 (8, 16)
Oxycodone	4,240	6.9 (4.1)	6 (5, 8)	50.0 (21.4)	50 (40, 60)	390.6 (206.6)	375 (300, 450)	1,132 (26.7%)	11.4 (5.2)	11 (7, 15)
Morphine	9	9.6 (4.8)	7 (5, 15)	37.8 (10.9)	30 (30, 40)	566.7 (163.9)	450 (450, 600)	2 (22.2%)	8.0 (4.2)	8 (5, 11)
Other	4	5.8 (3.3)	6 (4, 8)	42.5 (12.6)	40 (35, 50)	362.5 (298.3)	250 (175, 550)	2 (50.0%)	8.0 (1.4)	8 (7, 9)
Other Schedule	5,559	7.0 (4.1)	6 (5, 8)	45.7 (18.7)	40 (30, 50)	290.8 (210.7)	250 (175, 300)	1,760 (31.7%)	11.3 (5.5)	10 (7, 15)
Tramadol	720	9.4 (5.5)	8 (6, 10)	45.5 (21.5)	40 (30, 50)	223.6 (107.9)	200 (150, 250)	172 (23.9%)	12.4 (7.0)	12 (7, 17)
Codeine	350	6.4 (4.2)	5 (4, 8)	44.6 (19.2)	40 (30, 60)	201.8 (88.7)	180 (135, 270)	70 (20.0%)	10.2 (5.7)	9 (6, 14)
Hydrocodone (before rescheduling)	4,216	6.7 (3.7)	5 (5, 8)	46.1 (18.4)	40 (30, 50)	266.5 (131.7)	250 (200, 300)	1,423 (33.8%)	11.2 (5.3)	10 (7, 15)
Other	273	7.2 (3.7)	7 (5, 9)	41.6 (15.1)	40 (30, 45)	956.6 (348.1)	920 (690, 1,035)	95 (34.8%)	10.7 (4.5)	10 (7, 13)
<u>65+</u>	22,368	7.2 (4.5)	6 (5, 8)	45.5 (20.2)	40 (30, 50)	292.3 (179.0)	250 (200, 375)	3,893 (17.4%)	12.0 (5.8)	11 (8, 16)
Schedule II	9,500	7.1 (4.3)	6 (5, 8)	48.0 (22.0)	45 (30, 60)	351.1 (179.2)	300 (225, 450)	1,420 (14.9%)	11.8 (5.3)	11 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	410	6.8 (3.9)	6 (5, 8)	44.1 (18.5)	40 (30, 60)	359.7 (157.5)	320 (240, 480)	63 (15.4%)	12.5 (5.8)	12 (8, 17)
Hydrocodone (after rescheduling)	1,615	7.7 (4.3)	7 (5, 10)	50.6 (23.0)	50 (30, 60)	288.2 (163.0)	250 (200, 300)	245 (15.2%)	13.3 (5.7)	12 (9, 17)
Oxycodone	7,465	6.9 (4.3)	6 (5, 8)	47.6 (22.0)	40 (30, 60)	364.0 (180.4)	338 (225, 450)	1,110 (14.9%)	11.5 (5.2)	11 (8, 15)
Morphine	4	11.5 (5.2)	12 (8, 16)	37.8 (14.6)	40 (26, 50)	566.3 (219.2)	600 (383, 750)	1 (25.0%)	2.0 (.)	2 (2, 2)
Other	6	6.2 (3.4)	6 (3, 10)	36.7 (16.3)	40 (30, 40)	433.3 (408.2)	200 (200, 600)	1 (16.7%)	15.0 (.)	15 (15, 15)
Other Schedule	12,868	7.3 (4.6)	6 (5, 8)	43.7 (18.6)	40 (30, 50)	248.9 (166.0)	200 (150, 300)	2,473 (19.2%)	12.2 (6.0)	11 (8, 16)
Tramadol	2,635	9.5 (5.8)	8 (6, 11)	45.1 (19.6)	40 (30, 50)	222.0 (99.2)	200 (150, 250)	440 (16.7%)	12.6 (6.9)	12 (8, 17)
Codeine	826	6.5 (4.0)	5 (4, 8)	41.8 (18.8)	40 (30, 50)	190.4 (92.9)	180 (135, 225)	124 (15.0%)	11.5 (6.3)	11 (7, 15)
Hydrocodone (before rescheduling)	9,163	6.8 (4.1)	5 (5, 8)	43.5 (18.3)	40 (30, 50)	242.2 (126.6)	200 (150, 300)	1,868 (20.4%)	12.1 (5.7)	11 (8, 16)
Other	244	8.3 (4.7)	7 (5, 10)	43.2 (16.5)	40 (30, 50)	988.8 (383.9)	920 (690,1,150)	41 (16.8%)	13.2 (5.9)	13 (9, 17)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cesarean section										
<u>All ages</u>	248,281	4.7 (2.6)	5 (3, 5)	32.5 (9.6)	30 (30, 40)	234.5 (103.4)	225 (150, 300)	29,512 (11.9%)	8.0 (4.1)	7 (5, 10)
Schedule II	165,712	4.7 (2.6)	4 (3, 5)	32.8 (9.7)	30 (30, 40)	247.9 (86.5)	225 (225, 300)	17,578 (10.6%)	7.9 (4.0)	7 (5, 10)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	2,990	4.7 (2.7)	4 (3, 5)	32.5 (11.1)	30 (30, 40)	277.9 (119.9)	240 (240, 320)	355 (11.9%)	7.6 (4.1)	6 (5, 10)
Hydrocodone (after rescheduling)	11,162	5.2 (2.7)	5 (3, 6)	34.5 (10.1)	30 (30, 40)	206.9 (95.3)	200 (150, 225)	997 (8.9%)	9.1 (4.5)	8 (6, 12)
Oxycodone	150,885	4.6 (2.6)	4 (3, 5)	32.6 (9.7)	30 (30, 40)	250.3 (83.0)	225 (225, 300)	16,165 (10.7%)	7.8 (4.0)	7 (5, 10)
Morphine	181	6.0 (3.6)	5 (5, 7)	33.1 (8.7)	30 (30, 40)	507.8 (146.2)	450 (450, 600)	13 (7.2%)	7.5 (4.7)	6 (5, 7)
Other	494	5.2 (2.9)	5 (3, 6)	31.7 (11.3)	30 (25, 36)	191.1 (182.8)	150 (140, 200)	48 (9.7%)	8.2 (4.8)	6 (5, 10)
Other Schedule	82,569	4.9 (2.6)	5 (3, 5)	32.0 (9.3)	30 (30, 30)	207.7 (126.6)	150 (150, 225)	11,934 (14.5%)	8.3 (4.3)	7 (5, 11)
Tramadol	1,454	6.5 (3.9)	5 (5, 7)	34.2 (13.3)	30 (30, 40)	170.9 (72.6)	150 (150, 200)	198 (13.6%)	7.9 (4.2)	7 (5, 10)
Codeine	8,046	4.6 (2.6)	4 (3, 5)	30.8 (9.9)	30 (30, 30)	140.4 (50.4)	135 (135, 135)	834 (10.4%)	7.4 (4.2)	6 (5, 10)
Hydrocodone (before rescheduling)	70,853	4.9 (2.5)	5 (3, 5)	32.1 (9.2)	30 (30, 30)	200.6 (92.2)	150 (150, 225)	10,614 (15.0%)	8.3 (4.3)	7 (5, 11)
Other	2,216	5.3 (2.8)	5 (4, 6)	30.9 (9.5)	30 (30, 30)	701.6 (224.6)	690 (575, 690)	288 (13.0%)	7.8 (4.2)	7 (5, 10)
<u>18-40</u>	239,047	4.7 (2.6)	5 (3, 5)	32.5 (9.6)	30 (30, 40)	234.5 (103.4)	225 (150, 300)	28,371 (11.9%)	8.0 (4.1)	7 (5, 10)
Schedule II	159,619	4.7 (2.6)	4 (3, 5)	32.8 (9.7)	30 (30, 40)	247.9 (86.6)	225 (225, 300)	16,883 (10.6%)	7.9 (4.0)	7 (5, 10)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	2,843	4.7 (2.8)	4 (3, 5)	32.5 (11.0)	30 (30, 40)	278.4 (120.6)	240 (240, 320)	336 (11.8%)	7.6 (4.0)	6 (5, 10)
Hydrocodone (after rescheduling)	10,741	5.2 (2.7)	5 (3, 6)	34.5 (10.2)	30 (30, 40)	207.0 (95.6)	200 (150, 225)	957 (8.9%)	9.1 (4.5)	8 (6, 12)
Oxycodone	145,382	4.6 (2.6)	4 (3, 5)	32.6 (9.7)	30 (30, 40)	250.2 (83.1)	225 (225, 300)	15,532 (10.7%)	7.8 (4.0)	7 (5, 10)
Morphine	176	6.0 (3.6)	5 (5, 7)	33.1 (8.8)	30 (30, 40)	507.7 (147.7)	450 (450, 600)	13 (7.4%)	7.5 (4.7)	6 (5, 7)
Other	477	5.2 (2.9)	5 (3, 6)	31.6 (11.4)	30 (25, 35)	188.0 (179.0)	150 (140, 200)	45 (9.4%)	8.1 (4.6)	6 (5, 9)
Other Schedule	79,428	4.9 (2.6)	5 (3, 5)	31.9 (9.4)	30 (30, 30)	207.4 (126.4)	150 (150, 225)	11,488 (14.5%)	8.2 (4.3)	7 (5, 11)
Tramadol	1,378	6.6 (3.9)	5 (5, 7)	34.2 (13.4)	30 (30, 40)	170.8 (73.3)	150 (150, 200)	184 (13.4%)	7.9 (4.3)	7 (5, 10)
Codeine	7,706	4.6 (2.6)	4 (3, 5)	30.8 (9.9)	30 (30, 30)	140.4 (50.6)	135 (135, 135)	801 (10.4%)	7.4 (4.2)	6 (5, 10)
Hydrocodone (before rescheduling)	68,221	4.9 (2.5)	5 (3, 5)	32.1 (9.2)	30 (30, 30)	200.3 (92.0)	150 (150, 225)	10,230 (15.0%)	8.3 (4.3)	7 (5, 11)
Other	2,123	5.3 (2.8)	5 (4, 6)	30.9 (9.5)	30 (30, 30)	701.3 (225.7)	690 (575, 690)	273 (12.9%)	7.9 (4.3)	7 (5, 10)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cesarean section, continued										
<u>41-64</u>	9,234	4.8 (2.7)	5 (3, 5)	32.8 (9.4)	30 (30, 40)	237.0 (103.4)	225 (150, 300)	1,141 (12.4%)	8.1 (4.1)	7 (5, 11)
Schedule II	6,093	4.7 (2.7)	4 (3, 5)	32.9 (9.7)	30 (30, 40)	248.4 (83.2)	225 (225, 300)	695 (11.4%)	7.9 (4.0)	7 (5, 10)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	147	4.4 (1.8)	4 (3, 5)	31.4 (11.1)	30 (25, 40)	269.7 (106.7)	240 (240, 320)	19 (12.9%)	6.9 (4.6)	6 (4, 7)
Hydrocodone (after rescheduling)	421	5.4 (3.0)	5 (4, 6)	35.0 (9.8)	30 (30, 40)	205.8 (85.0)	200 (150, 225)	40 (9.5%)	8.9 (4.1)	8 (7, 11)
Oxycodone	5,503	4.7 (2.7)	4 (3, 5)	32.8 (9.6)	30 (30, 40)	250.7 (79.9)	225 (225, 300)	633 (11.5%)	7.9 (4.0)	7 (5, 10)
Morphine	5	5.2 (0.4)	5 (5, 5)	34.0 (5.5)	30 (30, 40)	510.0 (82.2)	450 (450, 600)	0 (0.0%)	-	-
Other	17	4.9 (3.3)	4 (3, 5)	34.4 (7.5)	30 (30, 40)	277.9 (260.7)	150 (150, 200)	3 (17.6%)	10.7 (7.6)	9 (4, 19)
Other Schedule	3,141	5.1 (2.5)	5 (4, 5)	32.4 (9.0)	30 (30, 30)	214.8 (131.3)	150 (150, 263)	446 (14.2%)	8.5 (4.3)	7 (5, 11)
Tramadol	76	6.4 (2.8)	5 (5, 7)	34.7 (11.7)	30 (30, 40)	173.2 (58.9)	150 (150, 200)	14 (18.4%)	7.6 (2.3)	8 (6, 9)
Codeine	340	4.7 (2.7)	4 (3, 5)	31.3 (9.3)	30 (30, 30)	141.5 (46.2)	135 (135, 135)	33 (9.7%)	8.1 (4.4)	6 (5, 12)
Hydrocodone (before rescheduling)	2,632	5.1 (2.5)	5 (4, 5)	32.6 (8.9)	30 (30, 30)	208.1 (97.3)	150 (150, 300)	384 (14.6%)	8.6 (4.4)	8 (5, 12)
Other	93	5.3 (3.2)	5 (4, 6)	30.8 (8.6)	30 (30, 30)	707.3 (198.6)	690 (690, 690)	15 (16.1%)	6.7 (2.8)	7 (4, 8)
<u>65+</u>	0	-	-	-	-	-	-	-	-	-
Schedule II	0	-	-	-	-	-	-	-	-	-
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	0	-	-	-	-	-	-	-	-	-
Hydrocodone (after rescheduling)	0	-	-	-	-	-	-	-	-	-
Oxycodone	0	-	-	-	-	-	-	-	-	-
Morphine	0	-	-	-	-	-	-	-	-	-
Other	0	-	-	-	-	-	-	-	-	-
Other Schedule	0	-	-	-	-	-	-	-	-	-
Tramadol	0	-	-	-	-	-	-	-	-	-
Codeine	0	-	-	-	-	-	-	-	-	-
Hydrocodone (before rescheduling)	0	-	-	-	-	-	-	-	-	-
Other	0	-	-	-	-	-	-	-	-	-

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cholecystectomy (laparoscopic)										
<u>All ages</u>	149,026	4.7 (2.7)	4 (3, 5)	31.6 (10.8)	30 (30, 40)	210.3 (112.9)	200 (150, 225)	10,691 (7.2%)	8.4 (5.0)	7 (5, 11)
Schedule II	63,618	4.7 (2.7)	4 (3, 5)	32.6 (11.4)	30 (30, 40)	243.9 (119.2)	225 (180, 300)	3,701 (5.8%)	8.3 (5.1)	7 (4, 11)
Oxymorphone	1	5.0 (.)	5 (5, 5)	20.0 (.)	20 (20, 20)	300.0 (.)	300 (300, 300)	0 (0.0%)	-	-
Hydromorphone	1,602	4.9 (3.1)	5 (3, 5)	32.2 (13.2)	30 (25, 40)	277.1 (154.3)	240 (200, 320)	142 (8.9%)	8.1 (5.4)	7 (3, 12)
Hydrocodone (after rescheduling)	13,496	4.9 (2.7)	5 (3, 5)	32.4 (11.3)	30 (30, 40)	190.8 (89.7)	150 (150, 225)	684 (5.1%)	9.0 (5.2)	8 (5, 12)
Oxycodone	48,027	4.6 (2.7)	4 (3, 5)	32.7 (11.3)	30 (30, 40)	256.7 (118.0)	225 (225, 300)	2,833 (5.9%)	8.2 (5.0)	7 (4, 11)
Morphine	48	6.7 (4.7)	5 (4, 8)	28.3 (11.1)	30 (20, 30)	454.7 (214.2)	450 (300, 450)	5 (10.4%)	8.0 (5.1)	8 (6, 8)
Other	444	5.0 (2.8)	5 (3, 5)	29.0 (9.5)	30 (20, 30)	325.3 (277.2)	150 (125, 600)	37 (8.3%)	7.4 (4.9)	6 (3, 11)
Other Schedule	85,408	4.8 (2.7)	4 (3, 5)	30.8 (10.3)	30 (25, 31)	185.2 (100.9)	150 (150, 205)	6,990 (8.2%)	8.4 (5.0)	7 (5, 12)
Tramadol	4,176	6.4 (4.0)	5 (4, 7)	30.8 (13.5)	30 (20, 30)	151.0 (68.9)	150 (100, 150)	358 (8.6%)	9.3 (6.0)	8 (4, 13)
Codeine	4,008	4.7 (2.8)	4 (3, 5)	29.9 (10.6)	30 (24, 30)	137.4 (54.0)	135 (95, 135)	294 (7.3%)	7.7 (5.7)	7 (3, 11)
Hydrocodone (before rescheduling)	75,891	4.7 (2.6)	4 (3, 5)	30.9 (10.1)	30 (25, 35)	181.4 (79.5)	150 (150, 225)	6,239 (8.2%)	8.4 (4.9)	7 (5, 11)
Other	1,333	5.1 (2.7)	5 (4, 5)	28.6 (8.6)	30 (20, 30)	652.4 (198.8)	690 (460, 690)	99 (7.4%)	8.0 (5.0)	7 (4, 11)
<u>18-40</u>	39,432	4.6 (2.6)	4 (3, 5)	32.2 (10.3)	30 (30, 40)	218.2 (109.7)	200 (150, 250)	3,584 (9.1%)	7.3 (4.5)	6 (4, 9)
Schedule II	17,284	4.6 (2.6)	4 (3, 5)	33.3 (11.0)	30 (30, 40)	251.3 (108.8)	225 (200, 300)	1,229 (7.1%)	7.3 (4.6)	6 (4, 10)
Oxymorphone	1	5.0 (.)	5 (5, 5)	20.0 (.)	20 (20, 20)	300.0 (.)	300 (300, 300)	0 (0.0%)	-	-
Hydromorphone	371	5.1 (3.6)	5 (3, 6)	34.2 (13.2)	30 (30, 40)	299.7 (169.3)	240 (240, 320)	38 (10.2%)	7.8 (5.9)	5 (3, 12)
Hydrocodone (after rescheduling)	3,182	4.9 (2.6)	5 (3, 5)	33.1 (11.0)	30 (30, 40)	197.1 (91.9)	150 (150, 225)	193 (6.1%)	7.9 (4.8)	7 (4, 11)
Oxycodone	13,603	4.6 (2.6)	4 (3, 5)	33.4 (10.9)	30 (30, 40)	261.4 (101.8)	225 (225, 300)	983 (7.2%)	7.2 (4.5)	6 (4, 9)
Morphine	3	6.3 (3.2)	5 (4, 10)	23.3 (5.8)	20 (20, 30)	350.0 (86.6)	300 (300, 450)	0 (0.0%)	-	-
Other	124	5.0 (3.0)	5 (3, 6)	30.4 (10.2)	30 (20, 36)	379.8 (316.5)	200 (150, 600)	15 (12.1%)	5.4 (3.7)	5 (2, 7)
Other Schedule	22,148	4.6 (2.5)	4 (3, 5)	31.4 (9.6)	30 (30, 36)	192.4 (103.4)	150 (150, 225)	2,355 (10.6%)	7.3 (4.4)	6 (4, 9)
Tramadol	697	6.1 (3.7)	5 (4, 7)	31.4 (12.9)	30 (25, 30)	153.9 (65.8)	150 (113, 150)	81 (11.6%)	6.6 (4.2)	6 (4, 9)
Codeine	932	4.5 (2.7)	4 (3, 5)	30.1 (9.5)	30 (25, 30)	138.9 (49.9)	135 (113, 135)	81 (8.7%)	6.3 (4.7)	5 (2, 9)
Hydrocodone (before rescheduling)	20,093	4.6 (2.5)	4 (3, 5)	31.5 (9.5)	30 (30, 40)	186.6 (78.1)	150 (150, 225)	2,161 (10.8%)	7.4 (4.4)	6 (4, 9)
Other	426	4.9 (2.3)	5 (3, 5)	28.4 (8.3)	30 (20, 30)	648.0 (194.2)	690 (460, 690)	32 (7.5%)	7.1 (5.0)	5 (3, 11)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cholecystectomy (laparoscopic), continued										
<u>41-64</u>	60,139	4.7 (2.6)	4 (3, 5)	32.1 (10.7)	30 (30, 40)	218.2 (124.1)	200 (150, 250)	4,406 (7.3%)	8.4 (5.0)	7 (5, 12)
Schedule II	26,567	4.7 (2.7)	4 (3, 5)	33.2 (11.4)	30 (30, 40)	251.0 (134.7)	225 (188, 300)	1,581 (6.0%)	8.3 (5.1)	7 (4, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	772	4.7 (3.0)	4 (3, 5)	32.2 (13.4)	30 (25, 40)	278.8 (158.2)	240 (200, 320)	68 (8.8%)	7.8 (5.4)	6 (3, 12)
Hydrocodone (after rescheduling)	4,859	4.9 (2.7)	5 (3, 5)	32.8 (10.9)	30 (30, 40)	194.0 (89.0)	150 (150, 225)	255 (5.2%)	8.6 (5.1)	7 (5, 12)
Oxycodone	20,675	4.6 (2.7)	4 (3, 5)	33.3 (11.5)	30 (30, 40)	262.2 (136.2)	225 (225, 300)	1,235 (6.0%)	8.2 (5.1)	7 (4, 11)
Morphine	13	5.2 (2.4)	5 (4, 5)	33.5 (13.4)	30 (30, 30)	565.4 (230.4)	450 (450, 750)	2 (15.4%)	12.0 (5.7)	12 (8, 16)
Other	248	5.0 (3.0)	5 (3, 5)	29.4 (9.6)	30 (22, 30)	330.9 (269.8)	180 (150, 600)	21 (8.5%)	9.0 (5.2)	7 (6, 14)
Other Schedule	33,572	4.7 (2.6)	4 (3, 5)	31.3 (10.0)	30 (30, 35)	192.2 (108.2)	150 (150, 225)	2,825 (8.4%)	8.5 (5.0)	7 (5, 12)
Tramadol	1,326	6.3 (3.9)	5 (4, 7)	31.7 (14.0)	30 (25, 40)	155.1 (72.0)	150 (113, 150)	115 (8.7%)	9.0 (5.9)	8 (4, 13)
Codeine	1,464	4.6 (2.4)	4 (3, 5)	30.3 (10.1)	30 (25, 30)	139.6 (52.4)	135 (113, 135)	127 (8.7%)	7.4 (4.9)	7 (3, 10)
Hydrocodone (before rescheduling)	30,073	4.6 (2.5)	4 (3, 5)	31.4 (9.8)	30 (30, 35)	185.5 (80.5)	150 (150, 225)	2,527 (8.4%)	8.5 (4.9)	7 (5, 12)
Other	709	5.1 (3.0)	5 (3, 5)	28.8 (8.8)	30 (20, 30)	654.6 (200.7)	690 (460, 690)	56 (7.9%)	8.0 (5.0)	7 (4, 11)
<u>65+</u>	49,455	4.9 (2.9)	5 (3, 5)	30.5 (11.2)	30 (24, 30)	194.3 (98.5)	150 (150, 225)	2,701 (5.5%)	9.7 (5.4)	9 (6, 13)
Schedule II	19,767	4.8 (2.8)	5 (3, 5)	31.3 (11.6)	30 (25, 40)	227.8 (103.2)	225 (150, 278)	891 (4.5%)	9.7 (5.5)	9 (6, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	459	4.9 (3.0)	5 (3, 5)	30.6 (12.7)	30 (20, 40)	256.0 (130.5)	240 (160, 320)	36 (7.8%)	9.1 (4.9)	8 (6, 13)
Hydrocodone (after rescheduling)	5,455	5.0 (2.9)	5 (3, 5)	31.5 (11.8)	30 (25, 40)	184.2 (88.7)	150 (150, 225)	236 (4.3%)	10.2 (5.5)	9 (7, 13)
Oxycodone	13,749	4.8 (2.8)	4 (3, 5)	31.2 (11.4)	30 (25, 40)	243.7 (101.2)	225 (188, 300)	615 (4.5%)	9.6 (5.5)	9 (6, 13)
Morphine	32	7.4 (5.4)	6 (5, 9)	26.7 (9.9)	30 (20, 30)	419.5 (202.6)	450 (300, 450)	3 (9.4%)	5.3 (3.1)	6 (2, 8)
Other	72	4.9 (1.4)	5 (5, 5)	25.5 (6.6)	30 (20, 30)	212.2 (185.8)	150 (100, 150)	1 (1.4%)	2.0 (.)	2 (2, 2)
Other Schedule	29,688	5.0 (3.0)	5 (3, 5)	29.9 (10.9)	30 (24, 30)	172.0 (88.4)	150 (125, 200)	1,810 (6.1%)	9.7 (5.4)	9 (6, 13)
Tramadol	2,153	6.6 (4.2)	5 (4, 8)	30.2 (13.4)	30 (20, 30)	147.6 (67.7)	150 (100, 150)	162 (7.5%)	10.9 (6.3)	10 (6, 15)
Codeine	1,612	5.0 (3.2)	5 (3, 5)	29.3 (11.5)	30 (20, 30)	134.5 (57.6)	135 (90, 135)	86 (5.3%)	9.4 (7.1)	8 (5, 13)
Hydrocodone (before rescheduling)	25,725	4.8 (2.8)	5 (3, 5)	29.9 (10.7)	30 (24, 30)	172.7 (78.7)	150 (140, 200)	1,551 (6.0%)	9.6 (5.2)	9 (6, 13)
Other	198	5.3 (2.2)	5 (4, 6)	28.7 (8.7)	30 (20, 30)	653.8 (202.2)	690 (460, 690)	11 (5.6%)	10.8 (4.2)	10 (8, 13)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cholecystectomy (nonspecific)										
<u>All ages</u>	4,873	5.4 (3.3)	5 (3, 6)	33.7 (15.4)	30 (25, 40)	232.3 (143.7)	210 (150, 300)	840 (17.2%)	9.8 (5.0)	9 (6, 13)
Schedule II	2,354	5.3 (3.3)	5 (3, 6)	35.4 (16.8)	30 (30, 40)	275.9 (160.5)	225 (188, 300)	382 (16.2%)	9.7 (4.8)	9 (6, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	151	5.5 (3.9)	5 (3, 7)	36.4 (16.4)	30 (30, 40)	326.3 (208.8)	240 (240, 360)	31 (20.5%)	10.1 (5.5)	10 (6, 15)
Hydrocodone (after rescheduling)	332	5.5 (2.9)	5 (4, 6)	33.9 (15.5)	30 (29, 40)	204.0 (106.1)	150 (150, 250)	41 (12.3%)	9.5 (4.7)	8 (7, 12)
Oxycodone	1,859	5.3 (3.4)	5 (3, 6)	35.7 (17.1)	30 (30, 40)	284.4 (159.5)	225 (225, 300)	310 (16.7%)	9.7 (4.8)	9 (6, 13)
Morphine	5	5.0 (1.7)	4 (4, 5)	30.0 (12.2)	30 (20, 30)	450.0 (183.7)	450 (300, 450)	0 (0.0%)	-	-
Other	7	6.3 (2.6)	6 (4, 8)	25.6 (10.5)	24 (16, 30)	224.3 (299.5)	120 (80, 150)	0 (0.0%)	-	-
Other Schedule	2,519	5.5 (3.3)	5 (3, 7)	32.0 (13.8)	30 (24, 40)	191.5 (111.5)	150 (135, 225)	458 (18.2%)	9.8 (5.2)	9 (6, 13)
Tramadol	186	7.7 (5.3)	7 (5, 10)	32.8 (21.2)	30 (20, 35)	159.5 (105.0)	150 (100, 175)	33 (17.7%)	12.5 (8.6)	11 (7, 16)
Codeine	123	5.3 (3.1)	5 (3, 7)	29.1 (13.4)	30 (20, 30)	130.9 (61.6)	135 (90, 135)	11 (8.9%)	9.6 (5.3)	10 (5, 15)
Hydrocodone (before rescheduling)	2,186	5.3 (3.0)	5 (3, 6)	32.2 (13.0)	30 (25, 40)	192.4 (99.5)	150 (150, 225)	409 (18.7%)	9.7 (4.8)	9 (6, 13)
Other	24	5.9 (2.0)	5 (5, 8)	30.3 (11.3)	30 (22, 30)	668.9 (214.6)	690 (506, 690)	5 (20.8%)	7.6 (3.0)	7 (6, 9)
<u>18-40</u>	469	5.3 (3.4)	5 (3, 6)	35.5 (21.4)	30 (30, 40)	255.3 (201.2)	225 (150, 300)	126 (26.9%)	9.3 (5.3)	8 (6, 12)
Schedule II	252	5.3 (3.7)	5 (3, 6)	38.0 (26.2)	30 (30, 40)	301.0 (236.5)	225 (225, 329)	68 (27.0%)	9.0 (4.5)	8 (6, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	17	5.6 (2.6)	5 (3, 7)	44.3 (19.6)	40 (30, 50)	354.4 (156.9)	320 (240, 400)	7 (41.2%)	8.3 (3.1)	8 (7, 11)
Hydrocodone (after rescheduling)	26	5.1 (2.0)	5 (4, 6)	34.0 (12.3)	30 (28, 40)	205.3 (99.8)	150 (140, 278)	8 (30.8%)	10.1 (4.5)	9 (7, 13)
Oxycodone	207	5.3 (3.9)	5 (3, 6)	38.0 (28.0)	30 (30, 40)	307.2 (250.1)	225 (225, 338)	53 (25.6%)	8.9 (4.7)	7 (6, 12)
Morphine	1	4.0 (.)	4 (4, 4)	50.0 (.)	50 (50, 50)	750.0 (.)	750 (750, 750)	0 (0.0%)	-	-
Other	1	7.0 (.)	7 (7, 7)	30.0 (.)	30 (30, 30)	150.0 (.)	150 (150, 150)	0 (0.0%)	-	-
Other Schedule	217	5.2 (3.0)	5 (3, 6)	32.5 (13.4)	30 (25, 40)	202.2 (132.1)	150 (135, 225)	58 (26.7%)	9.7 (6.2)	9 (5, 12)
Tramadol	5	7.6 (3.4)	7 (5, 10)	29.0 (13.4)	30 (20, 30)	145.0 (67.1)	150 (100, 150)	0 (0.0%)	-	-
Codeine	8	5.0 (2.3)	5 (4, 7)	27.1 (12.8)	30 (20, 36)	110.3 (51.4)	115 (90, 135)	1 (12.5%)	5.0 (.)	5 (5, 5)
Hydrocodone (before rescheduling)	202	5.2 (3.0)	5 (3, 6)	32.8 (13.5)	30 (25, 40)	201.3 (115.6)	150 (150, 225)	56 (27.7%)	9.9 (6.2)	9 (5, 13)
Other	2	6.5 (0.7)	7 (6, 7)	35.0 (21.2)	35 (20, 50)	805.0 (487.9)	805 (460,1,150)	1 (50.0%)	4.0 (.)	4 (4, 4)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cholecystectomy (nonspecific), continued										
<u>41-64</u>	1,677	5.3 (3.4)	5 (3, 6)	35.0 (14.8)	30 (30, 40)	250.4 (154.5)	225 (150, 300)	364 (21.7%)	9.9 (5.0)	9 (6, 14)
Schedule II	881	5.4 (3.5)	5 (3, 6)	37.2 (16.3)	30 (30, 40)	296.0 (170.2)	240 (225, 338)	171 (19.4%)	10.1 (5.0)	9 (6, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	64	5.5 (4.3)	5 (3, 7)	37.6 (17.3)	30 (30, 45)	354.3 (258.2)	300 (240, 400)	15 (23.4%)	9.4 (5.6)	7 (5, 15)
Hydrocodone (after rescheduling)	110	5.6 (2.2)	5 (4, 7)	34.2 (14.0)	30 (30, 40)	216.6 (98.4)	200 (150, 300)	12 (10.9%)	8.2 (3.8)	8 (6, 11)
Oxycodone	701	5.4 (3.6)	5 (3, 6)	37.7 (16.5)	30 (30, 42)	303.0 (163.7)	270 (225, 375)	144 (20.5%)	10.4 (5.0)	10 (7, 14)
Morphine	2	4.5 (0.7)	5 (4, 5)	25.0 (7.1)	25 (20, 30)	375.0 (106.1)	375 (300, 450)	0 (0.0%)	-	-
Other	4	6.3 (3.3)	5 (4, 9)	25.3 (13.7)	20 (16, 35)	295.0 (403.8)	100 (80, 510)	0 (0.0%)	-	-
Other Schedule	796	5.2 (3.2)	5 (3, 6)	32.6 (12.5)	30 (25, 40)	199.9 (115.8)	150 (150, 225)	193 (24.2%)	9.8 (5.0)	9 (6, 13)
Tramadol	44	7.7 (5.2)	6 (5, 10)	35.1 (18.2)	30 (23, 40)	170.6 (91.0)	150 (106, 200)	10 (22.7%)	12.8 (6.9)	11 (9, 16)
Codeine	37	4.6 (2.0)	5 (3, 5)	26.7 (8.3)	30 (20, 30)	122.8 (46.3)	135 (90, 135)	4 (10.8%)	8.5 (6.0)	8 (4, 13)
Hydrocodone (before rescheduling)	705	5.1 (3.0)	5 (3, 6)	32.8 (12.2)	30 (30, 40)	198.7 (98.6)	158 (150, 225)	179 (25.4%)	9.6 (4.8)	9 (6, 13)
Other	10	5.6 (2.1)	5 (4, 6)	30.4 (11.5)	30 (24, 30)	699.2 (263.8)	690 (552, 690)	0 (0.0%)	-	-
<u>65+</u>	2,727	5.5 (3.3)	5 (4, 7)	32.5 (14.5)	30 (25, 40)	217.2 (121.5)	200 (150, 250)	350 (12.8%)	9.7 (5.0)	9 (6, 13)
Schedule II	1,221	5.3 (3.1)	5 (3, 6)	33.6 (14.4)	30 (25, 40)	256.3 (128.3)	225 (175, 300)	143 (11.7%)	9.5 (4.8)	9 (6, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	70	5.4 (3.8)	5 (3, 6)	33.3 (13.9)	30 (22, 40)	293.9 (161.9)	240 (192, 320)	9 (12.9%)	12.8 (6.2)	12 (11, 16)
Hydrocodone (after rescheduling)	196	5.6 (3.4)	5 (4, 6)	33.8 (16.7)	30 (27, 40)	196.8 (110.8)	150 (150, 225)	21 (10.7%)	10.0 (5.2)	9 (7, 12)
Oxycodone	951	5.2 (3.0)	5 (3, 6)	33.7 (13.9)	30 (28, 40)	265.8 (125.3)	225 (225, 300)	113 (11.9%)	9.1 (4.5)	9 (5, 12)
Morphine	2	6.0 (2.8)	6 (4, 8)	25.0 (7.1)	25 (20, 30)	375.0 (106.1)	375 (300, 450)	0 (0.0%)	-	-
Other	2	6.0 (2.8)	6 (4, 8)	24.0 (8.5)	24 (18, 30)	120.0 (42.4)	120 (90, 150)	0 (0.0%)	-	-
Other Schedule	1,506	5.6 (3.4)	5 (4, 7)	31.6 (14.5)	30 (24, 40)	185.6 (105.5)	150 (125, 225)	207 (13.7%)	9.9 (5.2)	9 (6, 13)
Tramadol	137	7.7 (5.4)	7 (4, 8)	32.2 (22.4)	30 (20, 30)	156.5 (110.4)	150 (100, 150)	23 (16.8%)	12.4 (9.3)	11 (5, 20)
Codeine	78	5.7 (3.6)	5 (3, 7)	30.4 (15.2)	30 (20, 30)	136.8 (68.3)	135 (90, 135)	6 (7.7%)	11.2 (5.1)	13 (8, 15)
Hydrocodone (before rescheduling)	1,279	5.4 (3.0)	5 (4, 6)	31.7 (13.4)	30 (24, 40)	187.6 (97.0)	150 (150, 225)	174 (13.6%)	9.6 (4.3)	9 (6, 13)
Other	12	6.0 (2.1)	5 (5, 8)	29.5 (10.6)	30 (22, 30)	621.0 (104.7)	690 (506, 690)	4 (33.3%)	8.5 (2.6)	8 (7, 11)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hip fracture treatment										
<u>All ages</u>	11,939	7.8 (5.4)	6 (5, 10)	49.7 (28.4)	40 (30, 60)	355.3 (258.1)	300 (175, 450)	4,481 (37.5%)	10.8 (6.0)	10 (7, 14)
Schedule II	5,757	7.6 (5.1)	6 (5, 10)	53.3 (30.3)	50 (30, 60)	427.3 (285.0)	375 (225, 560)	2,294 (39.8%)	10.6 (5.5)	10 (7, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	198	7.4 (4.8)	6 (5, 10)	55.2 (30.2)	50 (30, 70)	505.1 (314.7)	480 (240, 720)	100 (50.5%)	10.7 (5.2)	11 (7, 14)
Hydrocodone (after rescheduling)	947	7.7 (4.9)	6 (5, 10)	47.5 (27.6)	40 (30, 60)	297.9 (217.5)	225 (150, 400)	325 (34.3%)	11.3 (5.6)	11 (7, 15)
Oxycodone	4,565	7.5 (5.1)	6 (5, 10)	54.5 (30.8)	50 (30, 60)	449.0 (287.1)	375 (225, 600)	1,845 (40.4%)	10.5 (5.5)	10 (7, 14)
Morphine	35	9.4 (5.3)	9 (5, 15)	41.0 (26.7)	30 (30, 50)	615.0 (399.8)	450 (450, 750)	17 (48.6%)	8.6 (7.2)	7 (4, 9)
Other	12	9.8 (7.8)	8 (5, 13)	41.1 (21.7)	35 (23, 55)	571.7 (291.2)	475 (380, 700)	7 (58.3%)	11.3 (4.8)	12 (6, 15)
Other Schedule	6,182	8.1 (5.7)	7 (5, 10)	46.3 (26.1)	40 (30, 60)	288.2 (209.0)	225 (150, 360)	2,187 (35.4%)	11.0 (6.4)	10 (6, 15)
Tramadol	883	10.7 (7.2)	8 (5, 13)	46.8 (29.5)	40 (30, 60)	231.6 (148.0)	200 (150, 300)	250 (28.3%)	12.5 (8.4)	11 (6, 17)
Codeine	284	7.7 (5.5)	6 (5, 10)	44.0 (28.6)	30 (30, 60)	204.0 (145.7)	135 (135, 270)	76 (26.8%)	10.4 (6.1)	9 (6, 15)
Hydrocodone (before rescheduling)	4,985	7.6 (5.3)	6 (5, 10)	46.3 (25.2)	40 (30, 60)	298.5 (205.1)	250 (150, 400)	1,854 (37.2%)	10.8 (6.1)	10 (6, 14)
Other	30	8.7 (6.2)	7 (6, 10)	46.4 (27.9)	40 (30, 50)	1,042.9 (655.7)	920 (690,1,150)	7 (23.3%)	11.6 (3.3)	10 (9, 15)
<u>18-40</u>	1,597	7.9 (4.9)	7 (5, 10)	63.1 (32.4)	60 (40, 80)	520.0 (325.7)	450 (300, 675)	820 (51.3%)	10.2 (5.4)	9 (6, 14)
Schedule II	1,056	8.1 (5.0)	7 (5, 10)	68.3 (35.1)	60 (45, 90)	587.7 (348.3)	450 (375, 720)	534 (50.6%)	10.3 (5.1)	9 (7, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	53	7.5 (5.2)	6 (5, 8)	65.4 (35.2)	56 (40, 90)	589.9 (362.6)	480 (320, 800)	36 (67.9%)	9.9 (5.1)	9 (7, 13)
Hydrocodone (after rescheduling)	78	8.6 (5.4)	7 (5, 10)	67.2 (41.9)	60 (40, 90)	478.8 (309.3)	450 (225, 600)	39 (50.0%)	9.8 (4.7)	10 (6, 14)
Oxycodone	914	8.0 (5.0)	7 (5, 10)	68.8 (34.5)	60 (50, 90)	595.7 (348.9)	450 (375, 743)	454 (49.7%)	10.4 (5.1)	9 (7, 14)
Morphine	10	13.6 (3.1)	14 (10, 15)	47.3 (27.4)	30 (30, 60)	709.5 (410.4)	450 (450, 900)	5 (50.0%)	13.2 (11.4)	7 (4, 23)
Other	1	4.0 (.)	4 (4, 4)	25.0 (.)	25 (25, 25)	500.0 (.)	500 (500, 500)	0 (0.0%)	-	-
Other Schedule	541	7.6 (4.6)	7 (5, 10)	53.0 (23.2)	50 (40, 60)	387.9 (223.9)	338 (225, 500)	286 (52.9%)	10.0 (5.8)	9 (6, 13)
Tramadol	33	11.0 (7.7)	9 (5, 12)	55.9 (28.5)	50 (30, 60)	278.0 (143.5)	250 (150, 300)	11 (33.3%)	10.5 (8.2)	8 (5, 14)
Codeine	21	6.3 (3.7)	5 (3, 8)	45.2 (26.4)	40 (30, 60)	222.6 (173.4)	180 (135, 270)	8 (38.1%)	10.1 (5.2)	11 (6, 15)
Hydrocodone (before rescheduling)	487	7.4 (4.3)	6 (5, 9)	53.2 (22.6)	50 (40, 60)	402.4 (225.6)	375 (225, 500)	267 (54.8%)	10.0 (5.8)	9 (6, 13)
Other	0	-	-	-	-	-	-	-	-	-

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hip fracture treatment, continued										
<u>41-64</u>	2,975	7.5 (4.9)	6 (5, 10)	54.0 (28.5)	50 (30, 60)	412.8 (265.3)	375 (225, 500)	1,304 (43.8%)	10.5 (5.6)	9 (7, 14)
Schedule II	1,690	7.4 (4.8)	6 (5, 9)	56.8 (29.1)	50 (40, 70)	465.7 (277.0)	450 (300, 600)	757 (44.8%)	10.3 (5.2)	9 (7, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	72	7.3 (4.0)	7 (5, 10)	57.6 (26.7)	60 (40, 65)	558.4 (304.7)	480 (360, 720)	37 (51.4%)	11.9 (5.2)	12 (9, 15)
Hydrocodone (after rescheduling)	205	7.8 (4.6)	7 (5, 10)	51.3 (26.1)	45 (30, 60)	344.1 (226.9)	300 (150, 450)	83 (40.5%)	10.8 (5.2)	10 (7, 13)
Oxycodone	1,400	7.3 (4.8)	6 (5, 8)	57.7 (29.6)	50 (40, 75)	477.8 (276.5)	450 (300, 600)	632 (45.1%)	10.1 (5.2)	9 (7, 13)
Morphine	9	9.1 (6.1)	8 (5, 13)	37.9 (23.1)	30 (30, 50)	568.3 (347.0)	450 (450, 750)	3 (33.3%)	8.3 (6.0)	9 (2, 14)
Other	4	16.5 (9.4)	13 (10, 23)	65.0 (17.3)	60 (55, 75)	550.0 (441.6)	375 (275, 825)	2 (50.0%)	16.0 (2.8)	16 (14, 18)
Other Schedule	1,285	7.7 (5.0)	6 (5, 10)	50.4 (27.2)	45 (30, 60)	343.2 (231.5)	300 (200, 450)	547 (42.6%)	10.9 (6.2)	10 (7, 14)
Tramadol	109	10.7 (6.6)	10 (5, 15)	54.3 (34.7)	45 (30, 60)	270.4 (174.3)	225 (150, 300)	37 (33.9%)	14.0 (9.1)	12 (8, 19)
Codeine	50	7.3 (5.6)	6 (4, 8)	48.9 (35.9)	40 (30, 60)	231.0 (176.3)	203 (135, 270)	14 (28.0%)	10.7 (5.5)	8 (6, 16)
Hydrocodone (before rescheduling)	1,117	7.4 (4.7)	6 (5, 10)	50.1 (26.0)	45 (30, 60)	350.4 (228.8)	300 (200, 450)	493 (44.1%)	10.6 (5.9)	9 (6, 13)
Other	9	6.4 (2.9)	5 (5, 7)	41.9 (14.3)	40 (30, 40)	963.4 (329.0)	920 (690, 920)	3 (33.3%)	11.0 (3.6)	10 (8, 15)
<u>65+</u>	7,367	7.9 (5.7)	6 (5, 10)	45.0 (26.2)	40 (30, 60)	296.4 (214.1)	225 (150, 375)	2,357 (32.0%)	11.1 (6.3)	10 (6, 15)
Schedule II	3,011	7.5 (5.2)	6 (5, 10)	46.0 (26.7)	40 (30, 60)	349.5 (232.0)	300 (210, 450)	1,003 (33.3%)	10.9 (5.9)	10 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	73	7.3 (5.2)	6 (4, 8)	45.3 (26.9)	40 (30, 60)	390.9 (251.1)	320 (240, 480)	27 (37.0%)	9.9 (5.1)	9 (6, 14)
Hydrocodone (after rescheduling)	664	7.5 (5.0)	6 (5, 10)	44.0 (24.7)	40 (30, 60)	262.4 (186.4)	200 (150, 300)	203 (30.6%)	11.7 (5.9)	11 (7, 16)
Oxycodone	2,251	7.5 (5.3)	6 (5, 10)	46.8 (27.2)	40 (30, 60)	371.5 (234.5)	300 (225, 450)	759 (33.7%)	10.8 (6.0)	10 (7, 14)
Morphine	16	6.9 (4.4)	6 (5, 8)	38.8 (28.9)	30 (28, 33)	582.2 (434.2)	450 (420, 495)	9 (56.3%)	6.2 (3.1)	7 (4, 7)
Other	7	6.7 (4.4)	5 (3, 12)	29.7 (11.9)	30 (20, 40)	594.3 (237.1)	600 (400, 800)	5 (71.4%)	9.4 (4.2)	9 (6, 12)
Other Schedule	4,356	8.2 (6.0)	7 (5, 10)	44.2 (25.8)	40 (30, 60)	259.6 (192.4)	200 (150, 300)	1,354 (31.1%)	11.2 (6.6)	10 (6, 15)
Tramadol	741	10.6 (7.3)	8 (5, 13)	45.3 (28.5)	35 (30, 60)	223.8 (142.9)	165 (150, 300)	202 (27.3%)	12.3 (8.3)	11 (6, 16)
Codeine	213	7.9 (5.7)	6 (5, 10)	42.7 (26.9)	30 (30, 60)	195.8 (134.3)	135 (135, 270)	54 (25.4%)	10.3 (6.5)	9 (5, 14)
Hydrocodone (before rescheduling)	3,381	7.7 (5.6)	6 (5, 10)	44.1 (25.0)	40 (30, 60)	266.4 (184.2)	200 (150, 300)	1,094 (32.4%)	11.0 (6.2)	10 (6, 15)
Other	21	9.7 (7.0)	7 (6, 10)	48.3 (32.1)	40 (30, 50)	1,076.9 (759.0)	920 (690,1,150)	4 (19.0%)	12.0 (3.6)	11 (10, 15)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hip replacement										
All ages	42,788	8.1 (4.8)	7 (5, 10)	64.0 (27.3)	60 (40, 80)	473.5 (265.8)	450 (300, 600)	13,142 (30.7%)	11.2 (5.4)	11 (7, 14)
Schedule II	23,040	8.1 (4.8)	7 (5, 10)	68.4 (28.6)	60 (50, 90)	542.5 (269.8)	450 (375, 675)	6,593 (28.6%)	11.3 (5.3)	11 (7, 14)
Oxymorphone	1	7.0 (.)	7 (7, 7)	14.0 (.)	14 (14, 14)	420.0 (.)	420 (420, 420)	0 (0.0%)	-	-
Hydromorphone	1,253	7.4 (5.0)	7 (5, 9)	68.1 (26.0)	60 (50, 90)	576.7 (259.7)	480 (400, 720)	381 (30.4%)	10.4 (5.0)	10 (7, 13)
Hydrocodone (after rescheduling)	3,584	9.4 (5.2)	8 (5, 10)	72.5 (33.1)	60 (50, 90)	507.5 (317.1)	450 (300, 600)	854 (23.8%)	12.8 (5.6)	13 (9, 16)
Oxycodone	18,018	7.8 (4.6)	7 (5, 10)	67.7 (27.6)	60 (50, 90)	541.7 (246.2)	450 (375, 675)	5,297 (29.4%)	11.1 (5.2)	11 (7, 14)
Morphine	75	11.7 (7.8)	9 (7, 15)	55.2 (35.8)	50 (21, 90)	894.0 (623.0)	840 (360,1,350)	24 (32.0%)	9.2 (7.0)	7 (3, 14)
Other	109	9.4 (5.1)	8 (6, 10)	62.1 (23.3)	60 (45, 80)	1,188.4 (684.5)	1,200 (800,1,600)	37 (33.9%)	10.6 (5.5)	10 (7, 13)
Other Schedule	19,748	8.2 (4.7)	7 (5, 10)	58.8 (24.7)	60 (40, 75)	392.9 (236.9)	300 (240, 500)	6,549 (33.2%)	11.1 (5.4)	10 (7, 14)
Tramadol	3,522	10.7 (5.9)	10 (7, 13)	58.8 (24.6)	60 (40, 70)	290.9 (121.8)	300 (200, 315)	888 (25.2%)	11.2 (6.5)	10 (6, 15)
Codeine	500	7.2 (4.3)	6 (5, 9)	54.7 (25.5)	50 (40, 60)	254.9 (134.6)	225 (180, 270)	134 (26.8%)	10.1 (5.8)	9 (6, 14)
Hydrocodone (before rescheduling)	15,578	7.6 (4.2)	7 (5, 10)	59.0 (24.7)	60 (40, 75)	412.9 (236.1)	375 (250, 500)	5,482 (35.2%)	11.1 (5.2)	10 (7, 14)
Other	148	9.1 (4.5)	8 (6, 10)	52.6 (21.4)	50 (40, 60)	1,183.9 (475.1)	1,150 (920,1,380)	45 (30.4%)	10.1 (5.1)	9 (7, 13)
<u>18-40</u>	776	8.3 (4.6)	7 (5, 10)	70.3 (30.3)	60 (50, 90)	547.2 (295.2)	450 (338, 675)	304 (39.2%)	10.9 (5.9)	10 (7, 14)
Schedule II	471	8.2 (4.4)	7 (5, 10)	74.7 (31.3)	75 (60, 90)	610.8 (302.7)	600 (450, 675)	170 (36.1%)	10.5 (5.9)	9 (7, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	22	7.5 (3.4)	7 (5, 10)	73.0 (31.3)	80 (50, 90)	631.6 (319.7)	640 (480, 720)	8 (36.4%)	8.6 (3.7)	8 (6, 11)
Hydrocodone (after rescheduling)	37	10.0 (4.6)	9 (7, 15)	83.4 (43.7)	80 (50, 100)	613.6 (438.6)	450 (300, 900)	9 (24.3%)	11.6 (7.1)	10 (7, 13)
Oxycodone	406	8.0 (4.4)	7 (5, 10)	73.8 (29.9)	75 (60, 90)	606.0 (282.8)	600 (450, 675)	151 (37.2%)	10.5 (5.9)	9 (7, 13)
Morphine	3	12.3 (7.5)	12 (5, 20)	83.3 (20.8)	90 (60, 100)	1,250.0 (312.2)	1,350 (900,1,500)	1 (33.3%)	12.0 (.)	12 (12, 12)
Other	3	11.3 (7.6)	8 (6, 20)	86.7 (41.6)	100 (40, 120)	433.3 (208.2)	500 (200, 600)	1 (33.3%)	7.0 (.)	7 (7, 7)
Other Schedule	305	8.4 (4.8)	7 (5, 10)	63.7 (27.4)	60 (40, 80)	448.9 (253.9)	400 (300, 600)	134 (43.9%)	11.4 (5.9)	11 (7, 15)
Tramadol	39	10.4 (5.2)	10 (7, 12)	59.3 (21.1)	60 (40, 80)	282.6 (91.6)	300 (200, 338)	14 (35.9%)	11.9 (7.8)	11 (7, 20)
Codeine	7	4.9 (2.0)	5 (3, 6)	37.9 (11.5)	40 (30, 40)	170.4 (51.7)	180 (135, 180)	2 (28.6%)	11.5 (4.9)	12 (8, 15)
Hydrocodone (before rescheduling)	255	8.2 (4.7)	7 (5, 10)	65.4 (28.2)	60 (45, 80)	474.6 (253.1)	450 (300, 600)	115 (45.1%)	11.4 (5.7)	11 (7, 15)
Other	4	7.3 (2.1)	7 (6, 9)	40.0 (14.1)	35 (30, 50)	920.0 (325.3)	805 (690,1,150)	3 (75.0%)	9.0 (6.1)	12 (2, 13)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hip replacement, continued										
41-64	15,047	8.0 (4.5)	7 (5, 10)	68.7 (27.5)	60 (50, 90)	531.2 (282.9)	450 (315, 675)	5,124 (34.1%)	10.8 (5.3)	10 (7, 14)
Schedule II	9,072	7.9 (4.5)	7 (5, 10)	71.9 (28.6)	60 (50, 90)	581.6 (284.7)	525 (450, 675)	2,903 (32.0%)	10.8 (5.2)	10 (7, 14)
Oxymorphone	1	7.0 (.)	7 (7, 7)	14.0 (.)	14 (14, 14)	420.0 (.)	420 (420, 420)	0 (0.0%)	-	-
Hydromorphone	577	6.9 (3.9)	6 (5, 8)	72.0 (25.9)	65 (60, 90)	612.4 (268.0)	560 (480, 800)	179 (31.0%)	9.8 (4.8)	9 (6, 13)
Hydrocodone (after rescheduling)	893	10.1 (5.5)	9 (7, 12)	80.0 (36.4)	80 (60, 100)	582.4 (360.8)	450 (300, 750)	217 (24.3%)	12.8 (6.1)	12 (8, 16)
Oxycodone	7,508	7.6 (4.3)	7 (5, 9)	71.0 (27.5)	60 (50, 90)	570.3 (252.3)	563 (450, 675)	2,472 (32.9%)	10.7 (5.1)	10 (7, 14)
Morphine	31	13.8 (9.4)	10 (7, 20)	68.4 (39.6)	60 (30, 100)	1,166.1 (739.3)	900 (450,1,800)	9 (29.0%)	10.3 (8.8)	6 (3, 16)
Other	62	9.1 (4.4)	8 (6, 10)	65.7 (22.6)	60 (50, 80)	1,361.8 (742.4)	1,200 (800,1,800)	26 (41.9%)	11.3 (5.9)	11 (8, 16)
Other Schedule	5,975	8.2 (4.4)	7 (5, 10)	63.7 (24.9)	60 (45, 80)	454.8 (262.4)	400 (300, 600)	2,221 (37.2%)	10.8 (5.4)	10 (7, 14)
Tramadol	764	10.6 (5.4)	10 (7, 13)	61.9 (22.6)	60 (50, 80)	304.9 (111.5)	300 (225, 375)	208 (27.2%)	10.1 (5.9)	9 (6, 14)
Codeine	128	7.6 (4.5)	6 (5, 10)	60.4 (28.7)	60 (40, 80)	291.3 (164.4)	270 (180, 405)	41 (32.0%)	9.2 (5.3)	8 (5, 13)
Hydrocodone (before rescheduling)	5,012	7.9 (4.1)	7 (5, 10)	64.2 (25.2)	60 (48, 80)	471.3 (254.2)	450 (300, 600)	1,948 (38.9%)	10.9 (5.3)	10 (7, 14)
Other	71	8.8 (4.2)	8 (6, 10)	53.7 (20.3)	50 (40, 60)	1,200.5 (430.2)	1,150 (920,1,380)	24 (33.8%)	9.7 (5.5)	9 (6, 13)
65+	26,965	8.2 (4.9)	7 (5, 10)	61.2 (26.7)	60 (40, 80)	439.1 (248.4)	400 (270, 600)	7,714 (28.6%)	11.4 (5.4)	11 (7, 15)
Schedule II	13,497	8.2 (5.0)	7 (5, 10)	65.8 (28.1)	60 (50, 90)	513.8 (254.1)	450 (338, 675)	3,520 (26.1%)	11.7 (5.3)	12 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	654	7.7 (5.9)	7 (5, 10)	64.5 (25.3)	60 (50, 80)	543.3 (245.6)	480 (400, 720)	194 (29.7%)	11.0 (5.2)	11 (7, 14)
Hydrocodone (after rescheduling)	2,654	9.2 (5.2)	8 (5, 10)	69.8 (31.4)	60 (50, 90)	480.8 (294.4)	450 (300, 600)	628 (23.7%)	12.9 (5.3)	13 (9, 16)
Oxycodone	10,104	7.9 (4.8)	7 (5, 10)	65.0 (27.3)	60 (50, 80)	517.9 (237.2)	450 (375, 675)	2,674 (26.5%)	11.5 (5.3)	11 (8, 14)
Morphine	41	10.1 (6.0)	8 (7, 12)	43.2 (28.9)	30 (20, 60)	662.2 (425.8)	600 (315, 900)	14 (34.1%)	8.3 (6.2)	7 (3, 11)
Other	44	9.6 (6.0)	10 (5, 10)	55.3 (21.1)	60 (40, 60)	995.7 (521.2)	1,110 (600,1,380)	10 (22.7%)	8.9 (4.0)	10 (5, 11)
Other Schedule	13,468	8.2 (4.8)	7 (5, 10)	56.5 (24.2)	50 (40, 60)	364.2 (218.4)	300 (200, 450)	4,194 (31.1%)	11.2 (5.4)	11 (7, 14)
Tramadol	2,719	10.8 (6.0)	10 (7, 13)	57.9 (25.1)	60 (40, 60)	287.1 (124.7)	300 (200, 300)	666 (24.5%)	11.5 (6.6)	11 (7, 15)
Codeine	365	7.1 (4.2)	6 (5, 9)	53.1 (24.2)	50 (32, 60)	243.7 (121.0)	225 (144, 270)	91 (24.9%)	10.4 (6.0)	9 (6, 14)
Hydrocodone (before rescheduling)	10,311	7.5 (4.2)	7 (5, 10)	56.3 (24.0)	50 (40, 60)	383.0 (220.4)	300 (225, 500)	3,419 (33.2%)	11.2 (5.1)	11 (7, 14)
Other	73	9.5 (4.9)	9 (6, 10)	52.3 (22.6)	45 (40, 60)	1,182.3 (522.0)	966 (740,1,380)	18 (24.7%)	10.8 (4.8)	11 (7, 12)

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Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hysterectomy (non-laparoscopic)										
<u>All ages</u>	11,600	4.9 (2.7)	5 (3, 5)	32.1 (11.6)	30 (30, 40)	227.6 (130.2)	225 (150, 263)	1,488 (12.8%)	8.7 (4.9)	7 (5, 12)
Schedule II	6,609	4.7 (2.7)	4 (3, 5)	32.6 (12.1)	30 (30, 40)	250.4 (123.0)	225 (192, 300)	769 (11.6%)	8.5 (4.8)	7 (5, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	273	5.2 (3.5)	5 (3, 6)	36.5 (21.0)	30 (30, 40)	331.6 (311.8)	240 (240, 400)	46 (16.8%)	9.1 (5.0)	8 (6, 11)
Hydrocodone (after rescheduling)	532	5.0 (2.4)	5 (3, 6)	32.0 (10.1)	30 (30, 40)	185.6 (88.5)	150 (150, 200)	38 (7.1%)	8.9 (5.1)	8 (5, 12)
Oxycodone	5,736	4.7 (2.6)	4 (3, 5)	32.5 (11.7)	30 (30, 40)	251.9 (101.1)	225 (225, 300)	675 (11.8%)	8.5 (4.8)	7 (5, 12)
Morphine	5	5.2 (1.8)	5 (5, 5)	28.0 (4.5)	30 (30, 30)	420.0 (67.1)	450 (450, 450)	2 (40.0%)	2.0 (0.0)	2 (2, 2)
Other	63	5.4 (3.0)	5 (3, 7)	31.5 (10.5)	30 (30, 30)	291.1 (322.6)	150 (150, 225)	8 (12.7%)	5.0 (2.7)	5 (3, 7)
Other Schedule	4,991	5.0 (2.7)	5 (3, 5)	31.3 (10.8)	30 (30, 30)	197.4 (133.3)	150 (140, 225)	719 (14.4%)	8.9 (4.9)	8 (5, 12)
Tramadol	256	6.8 (3.9)	6 (5, 8)	34.1 (17.9)	30 (28, 40)	167.8 (91.1)	150 (120, 200)	27 (10.5%)	11.0 (6.1)	11 (5, 15)
Codeine	532	4.9 (2.9)	5 (3, 5)	30.8 (11.2)	30 (24, 30)	139.9 (54.0)	135 (108, 135)	52 (9.8%)	8.5 (5.5)	8 (5, 11)
Hydrocodone (before rescheduling)	4,014	4.9 (2.5)	5 (3, 5)	31.3 (10.1)	30 (30, 30)	183.8 (83.7)	150 (150, 225)	619 (15.4%)	8.8 (4.8)	8 (5, 12)
Other	189	5.4 (2.8)	5 (4, 5)	30.4 (9.1)	30 (25, 30)	688.0 (213.7)	690 (552, 690)	21 (11.1%)	9.9 (6.5)	8 (5, 12)
<u>18-40</u>	2,652	4.7 (2.5)	4 (3, 5)	32.8 (12.2)	30 (30, 40)	244.2 (155.2)	225 (150, 300)	524 (19.8%)	8.4 (4.5)	7 (5, 11)
Schedule II	1,591	4.6 (2.5)	4 (3, 5)	33.4 (13.5)	30 (30, 40)	264.2 (159.1)	225 (225, 300)	292 (18.4%)	8.2 (4.4)	7 (5, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	68	5.0 (4.1)	4 (3, 5)	40.5 (34.7)	30 (30, 40)	400.9 (564.8)	304 (240, 400)	14 (20.6%)	7.4 (2.3)	8 (6, 9)
Hydrocodone (after rescheduling)	82	4.7 (1.7)	5 (3, 6)	31.6 (8.2)	30 (30, 40)	194.5 (94.6)	150 (150, 225)	14 (17.1%)	8.1 (5.1)	6 (5, 13)
Oxycodone	1,414	4.6 (2.4)	4 (3, 5)	33.2 (11.8)	30 (30, 40)	261.6 (103.1)	225 (225, 300)	261 (18.5%)	8.3 (4.4)	7 (5, 11)
Morphine	4	5.3 (2.1)	5 (4, 7)	27.5 (5.0)	30 (25, 30)	412.5 (75.0)	450 (375, 450)	1 (25.0%)	2.0 (.)	2 (2, 2)
Other	23	4.9 (2.7)	4 (3, 6)	32.8 (10.8)	30 (30, 40)	244.3 (246.9)	150 (150, 200)	2 (8.7%)	4.0 (0.0)	4 (4, 4)
Other Schedule	1,061	4.8 (2.5)	5 (3, 5)	31.8 (9.7)	30 (30, 35)	214.1 (144.2)	150 (150, 225)	232 (21.9%)	8.7 (4.6)	8 (5, 12)
Tramadol	31	6.3 (2.9)	6 (4, 8)	36.0 (14.3)	30 (25, 50)	184.2 (82.9)	150 (125, 250)	7 (22.6%)	10.0 (4.7)	10 (5, 14)
Codeine	70	4.9 (3.1)	5 (3, 5)	33.0 (12.4)	30 (30, 35)	153.2 (64.7)	135 (135, 162)	10 (14.3%)	7.1 (5.1)	6 (2, 13)
Hydrocodone (before rescheduling)	905	4.8 (2.4)	5 (3, 5)	31.6 (9.4)	30 (30, 35)	190.7 (84.3)	150 (150, 225)	206 (22.8%)	8.7 (4.6)	8 (5, 11)
Other	55	5.1 (2.3)	5 (4, 5)	31.1 (7.9)	30 (30, 30)	694.6 (173.9)	690 (644, 690)	9 (16.4%)	9.3 (5.7)	8 (5, 12)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hysterectomy (non-laparoscopic), continued										
<u>41-64</u>	4,880	4.8 (2.7)	5 (3, 5)	32.8 (11.2)	30 (30, 40)	238.6 (131.1)	225 (150, 300)	671 (13.8%)	8.8 (4.9)	7 (5, 12)
Schedule II	2,824	4.7 (2.7)	4 (3, 5)	33.2 (11.5)	30 (30, 40)	257.0 (111.9)	225 (225, 300)	344 (12.2%)	8.8 (4.9)	7 (5, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	120	5.0 (3.1)	5 (3, 6)	36.1 (14.7)	30 (30, 46)	323.1 (163.0)	300 (240, 400)	23 (19.2%)	9.2 (6.1)	7 (5, 12)
Hydrocodone (after rescheduling)	172	5.1 (2.5)	5 (3, 7)	32.8 (10.8)	30 (30, 40)	199.1 (98.8)	150 (150, 225)	14 (8.1%)	8.2 (3.6)	8 (6, 9)
Oxycodone	2,497	4.7 (2.7)	4 (3, 5)	33.1 (11.3)	30 (30, 40)	257.2 (100.8)	225 (225, 300)	300 (12.0%)	8.9 (4.8)	7 (5, 12)
Morphine	1	5.0 (.)	5 (5, 5)	30.0 (.)	30 (30, 30)	450.0 (.)	450 (450, 450)	1 (100.0%)	2.0 (.)	2 (2, 2)
Other	34	5.8 (3.2)	5 (3, 7)	32.0 (10.2)	30 (30, 30)	292.2 (347.8)	150 (150, 200)	6 (17.6%)	5.3 (3.1)	6 (2, 7)
Other Schedule	2,056	5.0 (2.6)	5 (3, 6)	32.2 (10.8)	30 (30, 36)	213.3 (150.0)	150 (150, 225)	327 (15.9%)	8.9 (4.9)	8 (5, 12)
Tramadol	67	7.3 (4.8)	6 (4, 9)	36.3 (15.7)	30 (30, 40)	176.6 (79.8)	150 (150, 200)	5 (7.5%)	11.2 (4.9)	12 (9, 15)
Codeine	179	4.7 (3.0)	4 (3, 5)	31.2 (11.6)	30 (25, 30)	141.8 (54.2)	135 (113, 135)	26 (14.5%)	7.8 (4.3)	8 (5, 10)
Hydrocodone (before rescheduling)	1,700	4.9 (2.4)	5 (3, 5)	32.3 (10.4)	30 (30, 40)	192.0 (89.1)	150 (150, 225)	286 (16.8%)	8.8 (4.8)	8 (5, 12)
Other	110	5.4 (3.2)	5 (4, 5)	29.9 (9.9)	30 (20, 30)	681.3 (233.6)	690 (460, 690)	10 (9.1%)	10.8 (7.8)	8 (5, 18)
<u>65+</u>	4,068	5.0 (2.8)	5 (3, 5)	30.7 (11.5)	30 (24, 30)	203.6 (105.4)	188 (150, 225)	293 (7.2%)	9.0 (5.5)	8 (5, 12)
Schedule II	2,194	4.9 (2.8)	5 (3, 5)	31.2 (11.8)	30 (25, 35)	231.8 (102.9)	225 (150, 263)	133 (6.1%)	8.6 (5.4)	7 (5, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	85	5.8 (3.5)	5 (4, 7)	33.8 (11.8)	30 (30, 40)	288.0 (129.6)	240 (240, 320)	9 (10.6%)	11.3 (4.4)	11 (8, 14)
Hydrocodone (after rescheduling)	278	5.1 (2.5)	5 (3, 6)	31.7 (10.2)	30 (30, 30)	174.6 (78.3)	150 (150, 200)	10 (3.6%)	10.9 (6.7)	9 (6, 13)
Oxycodone	1,825	4.8 (2.8)	4 (3, 5)	31.0 (12.0)	30 (25, 35)	237.2 (98.4)	225 (188, 300)	114 (6.2%)	8.1 (5.3)	7 (5, 11)
Morphine	0	-	-	-	-	-	-	-	-	-
Other	6	5.5 (2.5)	6 (5, 7)	23.8 (9.0)	29 (15, 30)	464.2 (421.7)	380 (150, 600)	0 (0.0%)	-	-
Other Schedule	1,874	5.1 (2.9)	5 (3, 6)	30.2 (11.2)	30 (24, 30)	170.5 (98.5)	150 (125, 200)	160 (8.5%)	9.4 (5.5)	8 (5, 12)
Tramadol	158	6.7 (3.6)	5 (5, 8)	32.7 (19.3)	30 (24, 40)	160.8 (96.7)	150 (113, 169)	15 (9.5%)	11.5 (7.2)	11 (5, 18)
Codeine	283	4.9 (2.9)	5 (3, 5)	30.0 (10.5)	30 (24, 30)	135.4 (50.4)	135 (90, 135)	16 (5.7%)	10.5 (7.0)	8 (7, 14)
Hydrocodone (before rescheduling)	1,409	4.9 (2.7)	5 (3, 5)	29.9 (10.1)	30 (24, 30)	169.6 (74.4)	150 (140, 200)	127 (9.0%)	9.1 (5.0)	8 (5, 12)
Other	24	5.8 (2.0)	5 (5, 7)	31.2 (8.4)	30 (30, 30)	703.4 (207.8)	690 (633, 690)	2 (8.3%)	8.0 (4.2)	8 (5, 11)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hysterectomy (laparoscopic)										
<u>All ages</u>	11,675	4.8 (2.6)	4 (3, 5)	32.0 (10.2)	30 (30, 40)	229.8 (114.1)	225 (150, 263)	1,397 (12.0%)	8.8 (4.9)	8 (5, 12)
Schedule II	7,382	4.6 (2.4)	4 (3, 5)	32.6 (10.5)	30 (30, 40)	251.7 (104.8)	225 (225, 300)	806 (10.9%)	8.7 (4.8)	8 (5, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	303	5.0 (2.6)	5 (3, 6)	35.3 (13.6)	30 (30, 40)	310.5 (158.3)	240 (240, 360)	46 (15.2%)	7.5 (3.9)	7 (5, 10)
Hydrocodone (after rescheduling)	605	5.1 (2.5)	5 (3, 6)	33.4 (10.4)	30 (30, 40)	192.5 (84.0)	150 (150, 225)	54 (8.9%)	10.4 (5.3)	10 (6, 14)
Oxycodone	6,362	4.6 (2.4)	4 (3, 5)	32.5 (10.3)	30 (30, 40)	252.8 (92.5)	225 (225, 300)	690 (10.8%)	8.7 (4.8)	8 (5, 12)
Morphine	9	8.2 (3.0)	7 (6, 10)	45.6 (40.0)	40 (30, 40)	716.7 (584.7)	600 (450, 600)	1 (11.1%)	8.0 (.)	8 (8, 8)
Other	103	4.6 (2.1)	4 (3, 5)	28.2 (9.4)	30 (20, 30)	315.9 (252.7)	200 (150, 400)	15 (14.6%)	6.7 (4.4)	5 (3, 11)
Other Schedule	4,293	5.0 (2.7)	5 (3, 5)	30.9 (9.4)	30 (30, 30)	192.2 (119.7)	150 (150, 210)	591 (13.8%)	8.9 (5.1)	8 (5, 12)
Tramadol	226	6.8 (4.5)	5 (4, 8)	32.2 (11.4)	30 (30, 30)	159.6 (57.4)	150 (150, 150)	24 (10.6%)	10.9 (5.4)	11 (6, 16)
Codeine	323	4.6 (2.6)	4 (3, 5)	30.8 (10.7)	30 (25, 30)	139.6 (50.7)	135 (113, 135)	31 (9.6%)	7.3 (4.8)	5 (4, 10)
Hydrocodone (before rescheduling)	3,605	4.9 (2.6)	5 (3, 5)	30.8 (9.1)	30 (30, 30)	180.4 (74.5)	150 (150, 200)	514 (14.3%)	8.9 (5.1)	8 (5, 12)
Other	139	5.0 (2.9)	5 (3, 5)	29.8 (8.6)	30 (25, 30)	674.7 (207.1)	690 (555, 690)	22 (15.8%)	8.8 (4.8)	9 (5, 13)
<u>18-40</u>	4,337	4.7 (2.5)	4 (3, 5)	32.0 (10.4)	30 (30, 40)	233.6 (118.2)	225 (150, 270)	668 (15.4%)	8.5 (4.8)	8 (5, 12)
Schedule II	2,787	4.6 (2.4)	4 (3, 5)	32.6 (11.0)	30 (30, 40)	255.6 (113.2)	225 (225, 300)	401 (14.4%)	8.3 (4.4)	7 (5, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	92	4.8 (2.2)	5 (3, 5)	35.0 (12.2)	30 (30, 40)	302.7 (139.1)	248 (240, 320)	23 (25.0%)	7.8 (3.3)	7 (6, 10)
Hydrocodone (after rescheduling)	195	5.0 (2.4)	5 (3, 6)	32.6 (8.9)	30 (30, 40)	189.4 (79.8)	150 (150, 225)	19 (9.7%)	9.2 (4.5)	10 (5, 13)
Oxycodone	2,439	4.6 (2.4)	4 (3, 5)	32.7 (11.1)	30 (30, 40)	257.0 (103.7)	225 (225, 300)	349 (14.3%)	8.4 (4.4)	7 (5, 11)
Morphine	4	9.0 (3.9)	9 (6, 12)	32.5 (9.6)	35 (25, 40)	562.5 (75.0)	600 (525, 600)	0 (0.0%)	-	-
Other	57	4.6 (2.0)	4 (3, 5)	28.3 (9.7)	30 (20, 30)	328.3 (291.8)	200 (150, 400)	10 (17.5%)	5.7 (4.3)	4 (3, 8)
Other Schedule	1,550	4.9 (2.7)	5 (3, 5)	30.8 (9.2)	30 (30, 30)	194.0 (116.7)	150 (150, 225)	267 (17.2%)	8.9 (5.3)	8 (5, 13)
Tramadol	73	6.8 (4.5)	5 (4, 8)	32.5 (11.1)	30 (30, 30)	161.6 (54.6)	150 (150, 150)	9 (12.3%)	10.4 (5.4)	10 (6, 15)
Codeine	105	4.2 (1.9)	4 (3, 5)	30.0 (9.3)	30 (24, 30)	137.8 (44.5)	135 (113, 158)	14 (13.3%)	6.9 (4.9)	5 (3, 10)
Hydrocodone (before rescheduling)	1,321	4.8 (2.6)	5 (3, 5)	30.9 (9.2)	30 (30, 30)	182.1 (74.6)	150 (150, 225)	234 (17.7%)	9.1 (5.3)	8 (5, 13)
Other	51	4.8 (1.7)	5 (3, 5)	29.1 (7.5)	30 (25, 30)	663.1 (174.4)	690 (555, 690)	10 (19.6%)	5.2 (3.2)	5 (2, 8)

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Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hysterectomy (laparoscopic), continued										
<u>41-64</u>	5,727	4.7 (2.6)	4 (3, 5)	32.2 (9.9)	30 (30, 40)	232.1 (114.6)	225 (150, 280)	629 (11.0%)	9.0 (5.1)	8 (5, 12)
Schedule II	3,640	4.6 (2.4)	4 (3, 5)	32.8 (10.2)	30 (30, 40)	251.9 (100.3)	225 (225, 300)	356 (9.8%)	9.1 (5.1)	8 (5, 12)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	172	5.0 (2.8)	5 (3, 6)	35.4 (13.7)	30 (30, 40)	307.3 (158.1)	240 (240, 360)	21 (12.2%)	7.1 (4.7)	6 (4, 10)
Hydrocodone (after rescheduling)	295	5.1 (2.7)	5 (3, 6)	34.1 (11.2)	30 (30, 40)	199.8 (87.1)	150 (150, 225)	27 (9.2%)	10.2 (4.7)	10 (7, 13)
Oxycodone	3,128	4.5 (2.4)	4 (3, 5)	32.5 (9.6)	30 (30, 40)	252.3 (85.7)	225 (225, 300)	303 (9.7%)	9.1 (5.2)	8 (5, 13)
Morphine	5	7.6 (2.3)	7 (6, 10)	56.0 (53.2)	40 (30, 40)	840.0 (798.0)	600 (450, 600)	1 (20.0%)	8.0 (.)	8 (8, 8)
Other	40	4.7 (2.3)	4 (3, 5)	28.4 (9.6)	30 (20, 30)	288.9 (193.8)	200 (150, 400)	4 (10.0%)	9.8 (4.3)	10 (7, 13)
Other Schedule	2,087	5.0 (2.7)	5 (3, 5)	31.1 (9.4)	30 (30, 30)	197.6 (129.0)	150 (150, 225)	273 (13.1%)	9.0 (5.0)	8 (5, 12)
Tramadol	102	6.9 (4.7)	5 (4, 8)	33.6 (12.3)	30 (30, 40)	166.3 (62.6)	150 (150, 200)	12 (11.8%)	10.5 (5.3)	10 (7, 16)
Codeine	153	4.6 (2.6)	4 (3, 5)	30.4 (10.3)	30 (24, 30)	137.5 (50.0)	135 (108, 135)	9 (5.9%)	7.3 (5.8)	6 (4, 8)
Hydrocodone (before rescheduling)	1,751	4.9 (2.5)	5 (3, 5)	31.1 (9.0)	30 (30, 30)	182.3 (73.8)	150 (150, 225)	240 (13.7%)	8.8 (5.0)	8 (5, 12)
Other	81	5.2 (3.5)	5 (3, 5)	30.4 (9.4)	30 (25, 30)	683.3 (230.2)	690 (552, 690)	12 (14.8%)	11.8 (3.8)	13 (10, 14)
<u>65+</u>	1,611	4.9 (2.6)	5 (3, 5)	31.1 (10.3)	30 (30, 30)	211.5 (98.5)	200 (150, 225)	100 (6.2%)	9.3 (5.0)	9 (5, 14)
Schedule II	955	4.8 (2.4)	5 (3, 5)	31.9 (10.6)	30 (30, 40)	239.4 (94.4)	225 (188, 300)	49 (5.1%)	9.8 (5.5)	9 (5, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	39	5.1 (2.5)	5 (3, 7)	35.3 (16.6)	30 (30, 47)	343.0 (197.4)	240 (240, 480)	2 (5.1%)	7.0 (2.8)	7 (5, 9)
Hydrocodone (after rescheduling)	115	5.0 (2.0)	5 (3, 6)	32.7 (10.8)	30 (30, 40)	179.3 (81.6)	150 (150, 200)	8 (7.0%)	14.0 (7.5)	19 (8, 19)
Oxycodone	795	4.7 (2.4)	5 (3, 5)	31.7 (10.2)	30 (28, 40)	241.9 (80.1)	225 (225, 300)	38 (4.8%)	9.2 (4.7)	9 (5, 14)
Morphine	0	-	-	-	-	-	-	-	-	-
Other	6	3.8 (1.2)	4 (3, 5)	25.7 (5.0)	27 (20, 30)	378.3 (208.8)	400 (150, 600)	1 (16.7%)	5.0 (.)	5 (5, 5)
Other Schedule	656	5.1 (2.8)	5 (3, 6)	30.0 (9.7)	30 (30, 30)	170.8 (89.9)	150 (135, 200)	51 (7.8%)	8.7 (4.6)	8 (5, 11)
Tramadol	51	6.5 (4.1)	6 (4, 8)	29.1 (9.3)	30 (30, 30)	143.5 (47.1)	150 (113, 150)	3 (5.9%)	13.7 (7.5)	18 (5, 18)
Codeine	65	5.5 (3.1)	5 (3, 7)	33.0 (13.3)	30 (30, 30)	147.3 (60.8)	135 (135, 135)	8 (12.3%)	8.0 (3.7)	8 (5, 11)
Hydrocodone (before rescheduling)	533	5.0 (2.6)	5 (3, 6)	29.8 (9.2)	30 (30, 30)	169.9 (75.7)	150 (150, 200)	40 (7.5%)	8.5 (4.5)	8 (5, 11)
Other	7	4.7 (1.7)	5 (3, 6)	28.7 (6.7)	30 (21, 30)	660.4 (154.1)	690 (483, 690)	0 (0.0%)	-	-

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Knee arthroplasty										
<u>All ages</u>	92,819	8.1 (4.7)	7 (5, 10)	63.6 (27.6)	60 (40, 80)	493.5 (281.0)	450 (300, 600)	56,986 (61.4%)	10.9 (5.2)	10 (7, 14)
Schedule II	52,336	8.2 (4.8)	7 (5, 10)	69.0 (29.3)	60 (50, 90)	570.8 (294.1)	450 (375, 675)	31,647 (60.5%)	11.1 (5.2)	11 (7, 14)
Oxymorphone	10	16.4 (8.4)	14 (10, 20)	37.9 (21.0)	35 (20, 60)	958.5 (816.8)	788 (300,1,200)	6 (60.0%)	9.0 (4.2)	8 (6, 12)
Hydromorphone	3,548	7.7 (4.4)	7 (5, 10)	71.6 (30.3)	60 (50, 90)	617.4 (301.6)	568 (400, 720)	2,258 (63.6%)	10.4 (5.0)	10 (7, 13)
Hydrocodone (after rescheduling)	7,236	9.3 (5.1)	8 (5, 10)	72.6 (32.2)	60 (50, 90)	535.1 (318.9)	450 (300, 630)	3,936 (54.4%)	12.4 (5.4)	12 (8, 15)
Oxycodone	40,948	8.0 (4.7)	7 (5, 10)	68.3 (28.5)	60 (50, 90)	567.4 (275.0)	450 (375, 675)	25,096 (61.3%)	11.0 (5.1)	10 (7, 14)
Morphine	203	12.6 (7.5)	10 (7, 15)	48.6 (33.4)	40 (20, 70)	765.8 (521.3)	600 (360,1,050)	108 (53.2%)	9.5 (5.9)	9 (5, 13)
Other	391	8.7 (4.9)	8 (5, 10)	58.6 (24.8)	60 (40, 80)	1,053.4 (702.2)	1,000 (450,1,600)	243 (62.1%)	10.0 (5.5)	9 (6, 13)
Other Schedule	40,483	7.9 (4.6)	7 (5, 10)	56.7 (23.6)	50 (40, 60)	393.6 (227.0)	300 (250, 500)	25,339 (62.6%)	10.7 (5.2)	10 (7, 14)
Tramadol	6,203	10.6 (6.1)	9 (7, 13)	58.8 (25.4)	60 (40, 60)	291.8 (127.6)	300 (200, 300)	3,065 (49.4%)	11.3 (6.3)	10 (7, 15)
Codeine	1,042	7.0 (4.3)	5 (5, 8)	53.0 (26.0)	50 (40, 60)	251.7 (136.3)	225 (180, 270)	589 (56.5%)	10.3 (5.2)	9 (6, 13)
Hydrocodone (before rescheduling)	32,932	7.4 (4.0)	7 (5, 9)	56.5 (23.1)	50 (40, 60)	410.6 (223.3)	375 (250, 500)	21,486 (65.2%)	10.6 (5.0)	10 (7, 13)
Other	306	8.5 (4.9)	7 (5, 10)	50.2 (20.3)	43 (40, 60)	1,117.4 (476.3)	920 (740,1,380)	199 (65.0%)	9.9 (5.5)	9 (6, 13)
<u>18-40</u>	331	7.8 (4.4)	7 (5, 10)	61.3 (29.7)	60 (40, 80)	508.0 (320.6)	450 (300, 600)	187 (56.5%)	9.7 (4.7)	9 (6, 13)
Schedule II	206	8.1 (4.4)	7 (5, 10)	66.8 (30.4)	60 (50, 80)	592.7 (344.4)	450 (375, 675)	125 (60.7%)	9.7 (4.5)	9 (6, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	18	6.9 (3.6)	6 (4, 8)	77.2 (25.2)	80 (60, 100)	706.7 (379.5)	640 (480, 800)	12 (66.7%)	8.2 (3.1)	7 (6, 11)
Hydrocodone (after rescheduling)	20	10.0 (5.8)	10 (7, 12)	67.4 (33.7)	60 (40, 90)	494.5 (366.9)	450 (250, 563)	8 (40.0%)	11.4 (4.6)	11 (9, 13)
Oxycodone	164	8.1 (4.3)	7 (5, 10)	66.1 (29.2)	60 (50, 80)	586.6 (311.9)	450 (375, 675)	102 (62.2%)	9.7 (4.4)	9 (7, 13)
Morphine	4	6.5 (2.4)	6 (5, 8)	47.5 (68.4)	15 (13, 83)	825.0 (966.3)	413 (225,1,425)	3 (75.0%)	10.7 (9.0)	6 (5, 21)
Other	0	-	-	-	-	-	-	-	-	-
Other Schedule	125	7.2 (4.4)	7 (5, 9)	52.2 (26.1)	50 (40, 60)	368.4 (214.1)	338 (200, 500)	62 (49.6%)	9.8 (5.2)	9 (6, 13)
Tramadol	17	11.6 (7.9)	10 (7, 15)	61.8 (46.1)	50 (30, 80)	308.8 (230.6)	250 (150, 400)	8 (47.1%)	8.0 (6.3)	6 (3, 12)
Codeine	4	4.0 (1.8)	4 (3, 6)	35.0 (10.0)	40 (30, 40)	157.5 (45.0)	180 (135, 180)	2 (50.0%)	6.0 (2.8)	6 (4, 8)
Hydrocodone (before rescheduling)	104	6.6 (3.0)	6 (5, 8)	51.2 (21.4)	50 (40, 60)	386.3 (210.3)	375 (213, 500)	52 (50.0%)	10.2 (5.1)	9 (6, 14)
Other	0	-	-	-	-	-	-	-	-	-

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Knee arthroplasty, continued										
41-64	24,716	7.9 (4.6)	7 (5, 10)	66.8 (28.8)	60 (50, 90)	546.0 (305.0)	450 (320, 675)	17,127 (69.3%)	10.4 (5.1)	9 (7, 13)
Schedule II	15,712	8.0 (4.6)	7 (5, 10)	71.2 (30.3)	60 (50, 90)	605.3 (314.9)	563 (400, 750)	10,708 (68.2%)	10.5 (5.1)	10 (7, 13)
Oxymorphone	3	26.7 (5.8)	30 (20, 30)	53.3 (11.5)	60 (40, 60)	1,900.0 (755.0)	1,800 (1,200,2,700)	2 (66.7%)	5.5 (0.7)	6 (5, 6)
Hydromorphone	1,343	7.2 (4.0)	6 (5, 9)	75.3 (31.0)	70 (60, 90)	654.2 (308.0)	640 (480, 800)	937 (69.8%)	9.9 (4.9)	9 (6, 12)
Hydrocodone (after rescheduling)	1,318	9.9 (5.7)	9 (6, 12)	78.2 (37.2)	70 (50, 100)	610.4 (380.0)	500 (300, 800)	827 (62.7%)	12.0 (5.8)	11 (8, 15)
Oxycodone	12,799	7.8 (4.5)	7 (5, 10)	70.3 (29.2)	60 (50, 90)	591.9 (288.7)	525 (450, 750)	8,769 (68.5%)	10.5 (5.0)	10 (7, 13)
Morphine	75	12.7 (7.5)	10 (7, 15)	53.2 (39.2)	31 (22, 80)	850.4 (624.6)	600 (420,1,200)	47 (62.7%)	9.8 (5.7)	10 (5, 13)
Other	174	9.0 (5.2)	8 (5, 10)	61.5 (25.7)	60 (40, 80)	1,050.6 (737.7)	1,000 (300,1,600)	126 (72.4%)	10.0 (5.6)	9 (6, 13)
Other Schedule	9,004	7.8 (4.4)	7 (5, 10)	59.1 (24.3)	60 (40, 70)	442.6 (255.8)	400 (270, 600)	6,419 (71.3%)	10.1 (5.1)	9 (6, 13)
Tramadol	840	11.0 (6.3)	10 (7, 14)	62.9 (27.8)	60 (40, 80)	312.7 (140.5)	300 (200, 400)	482 (57.4%)	10.9 (6.5)	10 (6, 15)
Codeine	177	6.9 (4.3)	5 (4, 8)	54.7 (27.5)	50 (40, 60)	274.3 (171.0)	225 (180, 324)	115 (65.0%)	10.0 (5.4)	9 (6, 12)
Hydrocodone (before rescheduling)	7,852	7.5 (4.0)	7 (5, 9)	59.0 (23.9)	60 (40, 70)	448.1 (240.4)	400 (300, 600)	5,723 (72.9%)	10.1 (5.0)	9 (6, 13)
Other	135	8.6 (5.3)	7 (5, 10)	50.7 (19.2)	45 (40, 60)	1,147.5 (450.6)	1,035 (920,1,380)	99 (73.3%)	10.1 (5.8)	9 (6, 13)
65+	67,772	8.1 (4.7)	7 (5, 10)	62.5 (27.1)	60 (40, 80)	474.3 (269.0)	450 (300, 600)	39,672 (58.5%)	11.2 (5.2)	11 (7, 14)
Schedule II	36,418	8.2 (4.8)	7 (5, 10)	68.0 (28.8)	60 (50, 90)	555.8 (283.0)	450 (375, 675)	20,814 (57.2%)	11.4 (5.2)	11 (8, 14)
Oxymorphone	7	12.0 (4.3)	10 (10, 15)	31.3 (21.1)	20 (20, 40)	555.0 (421.5)	300 (300,1,125)	4 (57.1%)	10.8 (4.1)	10 (8, 14)
Hydromorphone	2,187	8.0 (4.6)	7 (5, 10)	69.2 (29.7)	60 (50, 90)	594.1 (294.5)	480 (400, 720)	1,309 (59.9%)	10.9 (5.1)	10 (7, 14)
Hydrocodone (after rescheduling)	5,898	9.2 (5.0)	8 (5, 10)	71.4 (30.9)	60 (50, 90)	518.3 (300.9)	450 (300, 600)	3,101 (52.6%)	12.5 (5.3)	12 (8, 15)
Oxycodone	27,985	8.0 (4.7)	7 (5, 10)	67.4 (28.2)	60 (50, 90)	556.1 (267.5)	450 (375, 675)	16,225 (58.0%)	11.3 (5.1)	11 (8, 14)
Morphine	124	12.7 (7.6)	10 (7, 15)	45.8 (27.8)	40 (21, 60)	712.7 (426.0)	600 (338, 900)	58 (46.8%)	9.2 (5.9)	9 (4, 12)
Other	217	8.5 (4.6)	8 (5, 10)	56.3 (23.8)	50 (40, 60)	1,055.7 (674.1)	1,000 (600,1,460)	117 (53.9%)	10.0 (5.5)	9 (6, 13)
Other Schedule	31,354	8.0 (4.6)	7 (5, 10)	56.1 (23.3)	50 (40, 60)	379.7 (216.1)	300 (225, 450)	18,858 (60.1%)	10.9 (5.2)	10 (7, 14)
Tramadol	5,346	10.5 (6.0)	9 (7, 13)	58.1 (24.9)	60 (40, 60)	288.5 (124.7)	300 (200, 300)	2,575 (48.2%)	11.4 (6.3)	11 (7, 15)
Codeine	861	7.1 (4.3)	5 (5, 8)	52.7 (25.7)	50 (40, 60)	247.5 (127.8)	225 (180, 270)	472 (54.8%)	10.4 (5.2)	10 (6, 14)
Hydrocodone (before rescheduling)	24,976	7.4 (4.1)	7 (5, 9)	55.8 (22.9)	50 (40, 60)	398.9 (216.4)	300 (250, 500)	15,711 (62.9%)	10.8 (5.0)	10 (7, 14)
Other	171	8.4 (4.6)	7 (5, 10)	49.9 (21.2)	40 (35, 60)	1,093.6 (495.6)	920 (690,1,380)	100 (58.5%)	9.7 (5.2)	8 (6, 13)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Laminectomy/discectomy										
<u>All ages</u>	13,935	8.2 (4.7)	7 (5, 10)	60.2 (25.5)	60 (40, 75)	459.2 (264.2)	450 (300, 600)	2,396 (17.2%)	10.9 (6.0)	10 (6, 15)
Schedule II	7,578	8.1 (4.6)	7 (5, 10)	63.4 (25.9)	60 (45, 80)	516.3 (269.2)	450 (338, 675)	1,223 (16.1%)	10.9 (5.8)	10 (6, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	236	7.7 (4.7)	7 (5, 10)	61.5 (28.3)	60 (40, 84)	572.3 (381.5)	480 (320, 720)	60 (25.4%)	9.5 (6.0)	8 (5, 13)
Hydrocodone (after rescheduling)	1,150	9.8 (5.6)	8 (5, 12)	65.9 (28.5)	60 (45, 90)	466.9 (262.8)	400 (300, 600)	185 (16.1%)	11.6 (6.2)	11 (7, 16)
Oxycodone	6,150	7.7 (4.3)	7 (5, 10)	63.0 (25.3)	60 (45, 80)	521.8 (260.7)	450 (375, 675)	966 (15.7%)	10.9 (5.6)	10 (6, 15)
Morphine	19	13.7 (8.0)	14 (7, 20)	57.5 (21.1)	60 (40, 60)	910.3 (383.0)	900 (600,1,200)	7 (36.8%)	12.4 (6.8)	16 (3, 18)
Other	23	9.7 (5.1)	10 (5, 14)	51.1 (25.4)	50 (30, 60)	643.0 (588.9)	450 (175,1,000)	5 (21.7%)	17.0 (7.6)	19 (10, 24)
Other Schedule	6,357	8.3 (4.8)	7 (5, 10)	56.4 (24.4)	60 (40, 60)	391.0 (241.1)	300 (225, 500)	1,173 (18.5%)	10.9 (6.3)	10 (6, 15)
Tramadol	460	10.4 (6.5)	8 (6, 12)	53.3 (24.6)	50 (30, 60)	264.5 (126.6)	250 (150, 300)	95 (20.7%)	10.2 (6.1)	10 (5, 14)
Codeine	221	7.4 (4.4)	7 (5, 10)	53.1 (26.2)	50 (30, 60)	251.6 (139.6)	225 (135, 270)	39 (17.6%)	10.6 (6.3)	8 (6, 15)
Hydrocodone (before rescheduling)	5,614	8.2 (4.7)	7 (5, 10)	56.8 (24.3)	60 (40, 60)	398.8 (230.3)	300 (240, 500)	1,026 (18.3%)	11.0 (6.3)	10 (6, 15)
Other	62	8.9 (5.5)	7 (5, 10)	49.3 (21.3)	45 (30, 60)	1,119.5 (498.6)	980 (690,1,380)	13 (21.0%)	10.7 (6.1)	9 (7, 14)
<u>18-40</u>	3,194	8.1 (4.6)	7 (5, 10)	61.3 (25.6)	60 (40, 80)	477.2 (279.4)	450 (300, 600)	537 (16.8%)	10.6 (5.6)	10 (6, 14)
Schedule II	1,828	8.0 (4.6)	7 (5, 10)	64.3 (25.9)	60 (50, 80)	531.2 (283.4)	450 (375, 675)	294 (16.1%)	10.7 (5.3)	10 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	56	7.5 (4.4)	5 (5, 8)	65.6 (23.7)	60 (50, 90)	621.6 (498.6)	480 (400, 720)	12 (21.4%)	8.5 (5.8)	7 (5, 12)
Hydrocodone (after rescheduling)	244	10.2 (6.0)	9 (6, 14)	66.2 (28.5)	60 (48, 90)	490.0 (286.3)	450 (300, 600)	38 (15.6%)	9.3 (5.2)	8 (5, 14)
Oxycodone	1,522	7.7 (4.3)	7 (5, 10)	64.0 (25.6)	60 (50, 80)	534.2 (270.7)	450 (375, 675)	243 (16.0%)	11.1 (5.3)	11 (7, 15)
Morphine	2	6.0 (1.4)	6 (5, 7)	54.0 (36.8)	54 (28, 80)	810.0 (551.5)	810 (420,1,200)	0 (0.0%)	-	-
Other	4	8.0 (2.4)	9 (6, 10)	40.0 (14.1)	35 (30, 50)	462.5 (292.6)	450 (225, 700)	1 (25.0%)	10.0 (.)	10 (10, 10)
Other Schedule	1,366	8.2 (4.6)	7 (5, 10)	57.2 (24.6)	60 (40, 60)	405.1 (256.9)	300 (225, 500)	243 (17.8%)	10.4 (6.0)	9 (6, 14)
Tramadol	64	10.2 (5.6)	8 (7, 12)	51.7 (21.6)	50 (30, 60)	255.3 (108.4)	245 (150, 300)	13 (20.3%)	7.5 (4.6)	6 (3, 11)
Codeine	38	6.2 (3.7)	5 (3, 8)	47.6 (24.8)	40 (30, 60)	221.4 (110.8)	180 (135, 270)	8 (21.1%)	8.4 (4.9)	9 (4, 12)
Hydrocodone (before rescheduling)	1,251	8.1 (4.4)	7 (5, 10)	57.7 (24.6)	60 (40, 60)	407.6 (228.5)	300 (250, 500)	220 (17.6%)	10.6 (6.0)	9 (6, 15)
Other	13	11.8 (7.8)	10 (6, 13)	62.7 (33.1)	60 (30, 75)	1,441.9 (760.8)	1,380 (690,1,725)	2 (15.4%)	13.0 (0.0)	13 (13, 13)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Laminectomy/ discectomy, continued										
<u>41-64</u>	5,948	8.1 (4.7)	7 (5, 10)	61.3 (25.6)	60 (40, 80)	476.9 (270.0)	450 (300, 600)	1,013 (17.0%)	10.9 (6.0)	10 (6, 15)
Schedule II	3,364	8.0 (4.5)	7 (5, 10)	64.5 (25.7)	60 (50, 80)	529.7 (270.5)	450 (375, 675)	548 (16.3%)	11.1 (6.0)	10 (6, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	106	7.9 (4.9)	7 (5, 10)	65.7 (29.5)	60 (40, 90)	618.6 (370.6)	480 (320, 720)	24 (22.6%)	10.4 (6.3)	10 (5, 16)
Hydrocodone (after rescheduling)	408	9.8 (5.3)	8 (6, 12)	68.4 (28.1)	60 (50, 90)	480.9 (255.2)	450 (300, 600)	66 (16.2%)	12.9 (6.6)	13 (7, 18)
Oxycodone	2,832	7.7 (4.3)	7 (5, 10)	64.0 (25.1)	60 (50, 80)	532.8 (266.2)	450 (375, 675)	453 (16.0%)	10.8 (5.8)	10 (6, 15)
Morphine	8	12.9 (6.0)	15 (9, 16)	50.8 (21.5)	53 (35, 60)	761.3 (322.3)	795 (525, 900)	3 (37.5%)	12.7 (8.4)	17 (3, 18)
Other	10	8.6 (4.5)	7 (5, 12)	54.5 (23.6)	60 (35, 60)	527.5 (418.1)	375 (200, 900)	2 (20.0%)	16.0 (11.3)	16 (8, 24)
Other Schedule	2,584	8.3 (5.0)	7 (5, 10)	57.1 (24.9)	60 (40, 60)	408.2 (253.3)	300 (225, 500)	465 (18.0%)	10.8 (6.0)	10 (6, 15)
Tramadol	151	10.4 (6.8)	8 (5, 13)	53.6 (25.8)	50 (30, 60)	269.1 (144.1)	250 (150, 300)	28 (18.5%)	9.5 (5.3)	10 (5, 13)
Codeine	82	7.4 (3.7)	7 (5, 10)	56.1 (30.3)	50 (40, 60)	260.6 (140.1)	248 (180, 270)	12 (14.6%)	11.5 (6.4)	8 (6, 18)
Hydrocodone (before rescheduling)	2,311	8.3 (4.9)	7 (5, 10)	57.5 (24.7)	60 (40, 60)	411.4 (241.0)	300 (250, 500)	416 (18.0%)	10.9 (6.0)	10 (6, 15)
Other	40	7.8 (3.6)	7 (5, 10)	46.5 (16.4)	43 (30, 50)	1,045.3 (387.9)	920 (690,1,150)	9 (22.5%)	10.0 (7.2)	8 (4, 15)
<u>65+</u>	4,793	8.3 (4.8)	7 (5, 10)	58.0 (25.0)	60 (40, 65)	425.1 (242.5)	375 (250, 525)	846 (17.7%)	11.1 (6.3)	10 (6, 15)
Schedule II	2,386	8.2 (4.8)	7 (5, 10)	61.0 (26.1)	60 (40, 80)	486.1 (253.3)	450 (300, 600)	381 (16.0%)	11.0 (5.8)	10 (6, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	74	7.6 (4.7)	7 (4, 10)	52.6 (27.9)	50 (30, 60)	468.8 (260.3)	480 (320, 640)	24 (32.4%)	9.2 (6.1)	8 (5, 12)
Hydrocodone (after rescheduling)	498	9.7 (5.6)	8 (5, 12)	63.7 (28.8)	60 (40, 80)	444.1 (255.7)	400 (250, 600)	81 (16.3%)	11.7 (6.1)	12 (7, 16)
Oxycodone	1,796	7.8 (4.3)	7 (5, 10)	60.6 (25.1)	60 (40, 80)	493.8 (240.7)	450 (338, 600)	270 (15.0%)	10.8 (5.6)	10 (6, 15)
Morphine	9	16.2 (9.4)	15 (9, 20)	64.3 (18.1)	60 (60, 60)	1,065.0 (386.5)	900 (900,1,260)	4 (44.4%)	12.3 (6.7)	14 (8, 17)
Other	9	11.6 (6.4)	13 (7, 14)	52.3 (31.5)	50 (30, 50)	851.7 (802.0)	1,000 (150,1,000)	2 (22.2%)	21.5 (3.5)	22 (19, 24)
Other Schedule	2,407	8.4 (4.9)	7 (5, 10)	55.1 (23.6)	50 (40, 60)	364.5 (214.8)	300 (225, 450)	465 (19.3%)	11.3 (6.7)	11 (6, 15)
Tramadol	245	10.4 (6.5)	8 (6, 13)	53.5 (24.7)	50 (30, 60)	264.1 (119.8)	250 (150, 300)	54 (22.0%)	11.2 (6.6)	11 (5, 16)
Codeine	101	8.0 (4.9)	7 (5, 10)	52.7 (22.9)	50 (30, 60)	255.7 (148.4)	225 (144, 270)	19 (18.8%)	10.9 (6.9)	8 (7, 14)
Hydrocodone (before rescheduling)	2,052	8.2 (4.6)	7 (5, 10)	55.4 (23.5)	50 (40, 60)	379.1 (217.6)	300 (225, 450)	390 (19.0%)	11.3 (6.7)	11 (6, 15)
Other	9	10.1 (7.8)	8 (5, 10)	42.8 (12.0)	40 (30, 50)	983.9 (276.4)	920 (690,1,150)	2 (22.2%)	11.5 (3.5)	12 (9, 14)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (all levels)										
<u>All ages</u>	29,292	9.1 (5.4)	8 (5, 10)	66.9 (29.7)	60 (50, 90)	539.0 (360.6)	450 (300, 675)	9,734 (33.2%)	11.9 (6.1)	11 (7, 15)
Schedule II	16,939	9.2 (5.5)	8 (5, 10)	71.4 (30.8)	60 (50, 90)	619.6 (395.5)	525 (400, 750)	5,632 (33.2%)	12.0 (6.1)	11 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	977	8.9 (5.1)	8 (5, 10)	73.7 (33.4)	60 (50, 90)	657.7 (363.9)	600 (400, 800)	391 (40.0%)	11.4 (5.9)	11 (7, 15)
Hydrocodone (after rescheduling)	2,319	10.5 (5.9)	10 (7, 14)	71.7 (31.2)	60 (50, 90)	532.3 (303.2)	450 (300, 675)	630 (27.2%)	13.3 (6.9)	13 (8, 16)
Oxycodone	13,432	8.9 (5.3)	8 (5, 10)	71.4 (30.5)	60 (50, 90)	624.5 (379.2)	563 (450, 750)	4,521 (33.7%)	11.9 (5.9)	11 (8, 15)
Morphine	116	16.0 (8.9)	15 (10, 24)	60.9 (34.9)	60 (30, 80)	1,233.1(1,420.1)	900 (600,1,350)	54 (46.6%)	11.1 (8.5)	9 (5, 15)
Other	95	10.8 (6.1)	10 (6, 15)	61.9 (27.1)	60 (40, 80)	908.2 (877.7)	450 (300,1,200)	36 (37.9%)	11.8 (6.5)	12 (7, 15)
Other Schedule	12,353	9.0 (5.4)	8 (5, 10)	60.7 (27.1)	60 (40, 80)	428.5 (269.8)	375 (250, 500)	4,102 (33.2%)	11.7 (6.3)	11 (7, 15)
Tramadol	1,295	11.6 (6.7)	10 (7, 15)	61.0 (31.0)	60 (40, 80)	302.4 (156.8)	300 (200, 400)	387 (29.9%)	12.2 (8.2)	11 (6, 17)
Codeine	434	8.0 (4.7)	7 (5, 10)	56.3 (25.2)	55 (40, 60)	273.6 (138.5)	270 (180, 360)	129 (29.7%)	11.0 (6.5)	10 (6, 15)
Hydrocodone (before rescheduling)	10,500	8.7 (5.1)	8 (5, 10)	60.9 (26.6)	60 (40, 80)	441.1 (258.4)	400 (296, 600)	3,545 (33.8%)	11.7 (6.0)	11 (7, 15)
Other	124	9.7 (6.0)	8 (5, 11)	54.7 (26.8)	50 (40, 60)	1,222.1 (619.4)	1,110 (740,1,380)	41 (33.1%)	11.8 (6.4)	12 (7, 15)
<u>18-40</u>	2,810	8.9 (5.3)	8 (5, 10)	67.8 (32.7)	60 (45, 90)	561.5 (364.4)	450 (300, 675)	1,088 (38.7%)	11.5 (6.2)	11 (7, 15)
Schedule II	1,750	9.0 (5.3)	8 (5, 10)	73.0 (34.8)	60 (50, 90)	642.8 (387.9)	600 (450, 750)	695 (39.7%)	11.7 (6.2)	11 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	104	9.7 (5.6)	8 (6, 12)	78.1 (39.8)	70 (50, 90)	716.8 (376.7)	640 (480, 844)	54 (51.9%)	10.7 (6.3)	11 (7, 13)
Hydrocodone (after rescheduling)	146	10.7 (5.7)	10 (7, 12)	72.1 (33.4)	60 (50, 90)	513.4 (288.2)	450 (300, 675)	50 (34.2%)	12.2 (6.9)	11 (8, 15)
Oxycodone	1,479	8.7 (5.2)	7 (5, 10)	73.0 (34.7)	60 (50, 90)	649.4 (394.5)	600 (450, 750)	582 (39.4%)	11.8 (6.2)	11 (7, 15)
Morphine	10	15.7 (6.8)	15 (10, 20)	51.7 (22.7)	55 (30, 60)	805.5 (305.5)	825 (600, 900)	3 (30.0%)	4.3 (4.0)	2 (2, 9)
Other	11	8.5 (4.3)	7 (5, 10)	57.3 (28.7)	60 (30, 60)	613.6 (486.4)	450 (150,1,200)	6 (54.5%)	11.3 (5.7)	13 (7, 15)
Other Schedule	1,060	8.7 (5.2)	7 (5, 10)	59.3 (26.8)	60 (40, 75)	427.4 (273.4)	308 (225, 533)	393 (37.1%)	11.1 (6.3)	10 (6, 15)
Tramadol	69	11.5 (6.1)	10 (7, 15)	58.5 (25.1)	60 (40, 60)	289.1 (127.6)	250 (200, 300)	20 (29.0%)	11.6 (5.3)	11 (9, 13)
Codeine	35	6.6 (3.8)	5 (4, 9)	50.9 (24.7)	50 (30, 60)	229.0 (111.0)	225 (135, 270)	12 (34.3%)	8.4 (6.4)	6 (5, 11)
Hydrocodone (before rescheduling)	944	8.5 (5.1)	7 (5, 10)	59.8 (27.0)	60 (40, 80)	435.6 (263.7)	375 (250, 600)	359 (38.0%)	11.2 (6.3)	10 (6, 15)
Other	12	7.7 (2.9)	8 (6, 9)	52.1 (22.3)	50 (35, 60)	1,156.7 (515.4)	1,130 (805,1,380)	2 (16.7%)	11.0 (5.7)	11 (7, 15)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (all levels), continued										
<u>41-64</u>	13,141	8.9 (5.3)	8 (5, 10)	67.4 (29.7)	60 (50, 90)	556.2 (383.2)	450 (300, 675)	4,322 (32.9%)	11.9 (6.2)	11 (7, 15)
Schedule II	7,808	9.0 (5.4)	8 (5, 10)	71.7 (30.2)	60 (50, 90)	631.9 (418.7)	525 (450, 750)	2,576 (33.0%)	11.9 (5.9)	11 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	486	8.5 (5.1)	7 (5, 10)	74.5 (33.1)	60 (50, 90)	668.5 (388.5)	640 (400, 800)	184 (37.9%)	11.1 (5.3)	10 (7, 15)
Hydrocodone (after rescheduling)	909	10.5 (5.6)	10 (7, 14)	72.3 (30.7)	60 (50, 90)	542.4 (302.5)	450 (300, 675)	244 (26.8%)	13.2 (6.3)	13 (8, 17)
Oxycodone	6,304	8.7 (5.2)	7 (5, 10)	71.5 (29.9)	60 (50, 90)	633.0 (394.9)	563 (450, 750)	2,106 (33.4%)	11.9 (5.9)	11 (7, 15)
Morphine	55	16.0 (8.9)	15 (10, 25)	63.7 (32.0)	60 (40, 90)	1,311.2 (1,606.8)	900 (675, 1,350)	26 (47.3%)	12.3 (9.3)	10 (5, 17)
Other	54	11.6 (6.5)	10 (7, 15)	66.9 (26.9)	60 (50, 90)	991.4 (966.7)	510 (300, 1,600)	16 (29.6%)	10.4 (4.3)	11 (7, 13)
Other Schedule	5,333	8.8 (5.3)	8 (5, 10)	61.0 (27.8)	60 (40, 80)	445.4 (290.7)	375 (250, 600)	1,746 (32.7%)	11.8 (6.5)	11 (7, 15)
Tramadol	440	11.0 (6.3)	10 (7, 15)	61.1 (32.3)	60 (40, 80)	303.0 (164.9)	300 (200, 400)	123 (28.0%)	11.8 (8.8)	9 (5, 17)
Codeine	167	7.9 (5.0)	7 (5, 10)	56.1 (26.9)	50 (40, 60)	269.3 (138.9)	270 (180, 360)	49 (29.3%)	11.0 (6.5)	11 (7, 16)
Hydrocodone (before rescheduling)	4,642	8.6 (5.1)	7 (5, 10)	61.3 (27.4)	60 (40, 80)	451.0 (269.6)	400 (300, 600)	1,544 (33.3%)	11.9 (6.3)	11 (7, 15)
Other	84	9.6 (5.9)	8 (6, 12)	54.6 (27.1)	48 (40, 60)	1,232.1 (620.6)	1,073 (851, 1,380)	30 (35.7%)	11.1 (5.7)	12 (7, 15)
<u>65+</u>	13,341	9.3 (5.6)	8 (5, 10)	66.2 (29.1)	60 (48, 90)	517.3 (334.7)	450 (300, 675)	4,324 (32.4%)	12.0 (6.1)	11 (8, 15)
Schedule II	7,381	9.4 (5.6)	8 (5, 11)	70.7 (30.3)	60 (50, 90)	601.0 (370.4)	480 (375, 675)	2,361 (32.0%)	12.1 (6.1)	12 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	387	9.2 (5.1)	8 (5, 10)	71.5 (31.7)	60 (50, 90)	628.4 (324.6)	560 (400, 800)	153 (39.5%)	12.0 (6.3)	11 (8, 15)
Hydrocodone (after rescheduling)	1,264	10.5 (6.2)	9 (6, 14)	71.3 (31.3)	60 (50, 90)	527.3 (305.4)	450 (300, 675)	336 (26.6%)	13.5 (7.3)	13 (9, 16)
Oxycodone	5,649	9.2 (5.4)	8 (5, 10)	70.8 (29.9)	60 (50, 90)	608.5 (355.9)	525 (450, 675)	1,833 (32.4%)	11.9 (5.8)	11 (8, 15)
Morphine	51	16.1 (9.4)	15 (8, 30)	59.7 (39.8)	60 (30, 84)	1,232.6 (1,338.0)	900 (450, 1,350)	25 (49.0%)	10.8 (7.9)	9 (6, 11)
Other	30	10.0 (5.8)	10 (5, 15)	54.7 (25.8)	60 (30, 80)	866.3 (812.2)	465 (250, 1,200)	14 (46.7%)	13.7 (8.6)	13 (8, 15)
Other Schedule	5,960	9.2 (5.5)	8 (5, 10)	60.6 (26.4)	60 (40, 75)	413.6 (247.9)	325 (250, 500)	1,963 (32.9%)	11.7 (6.1)	11 (7, 15)
Tramadol	786	11.9 (7.0)	10 (8, 15)	61.2 (30.8)	60 (40, 80)	303.3 (154.6)	300 (200, 400)	244 (31.0%)	12.4 (8.1)	11 (6, 17)
Codeine	232	8.3 (4.7)	7 (5, 10)	57.2 (24.1)	60 (40, 60)	283.5 (140.9)	270 (180, 369)	68 (29.3%)	11.5 (6.6)	10 (7, 15)
Hydrocodone (before rescheduling)	4,914	8.8 (5.1)	8 (5, 10)	60.7 (25.7)	60 (40, 75)	432.8 (245.9)	400 (300, 600)	1,642 (33.4%)	11.6 (5.7)	11 (7, 15)
Other	28	10.8 (7.2)	10 (5, 14)	56.1 (28.2)	50 (35, 80)	1,220.1 (673.2)	1,015 (715, 1,725)	9 (32.1%)	14.0 (8.7)	13 (9, 14)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (1-3 levels)										
<u>All ages</u>	20,908	9.0 (5.3)	8 (5, 10)	66.2 (28.9)	60 (46, 90)	526.6 (349.3)	450 (300, 675)	6,349 (30.4%)	11.9 (6.2)	11 (7, 15)
Schedule II	11,949	9.1 (5.4)	8 (5, 10)	70.7 (30.0)	60 (50, 90)	605.9 (384.5)	488 (375, 675)	3,592 (30.1%)	12.1 (6.2)	12 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	639	8.7 (5.0)	8 (5, 10)	72.6 (32.1)	60 (50, 90)	638.1 (334.8)	576 (400, 800)	230 (36.0%)	11.4 (6.1)	11 (7, 15)
Hydrocodone (after rescheduling)	1,708	10.4 (5.9)	9 (6, 13)	71.2 (30.5)	60 (50, 90)	527.1 (294.1)	450 (300, 675)	442 (25.9%)	13.2 (7.2)	13 (8, 16)
Oxycodone	9,460	8.8 (5.2)	8 (5, 10)	70.7 (29.7)	60 (50, 90)	611.0 (371.5)	506 (450, 675)	2,864 (30.3%)	12.0 (6.0)	11 (8, 15)
Morphine	74	15.9 (8.5)	15 (10, 20)	59.2 (30.8)	60 (30, 90)	1,234.0 (1,449.5)	900 (450, 1,350)	32 (43.2%)	10.8 (7.8)	9 (6, 15)
Other	68	10.8 (6.1)	10 (6, 15)	62.6 (28.0)	60 (40, 89)	883.9 (795.5)	450 (250, 1,200)	24 (35.3%)	11.2 (7.1)	11 (7, 15)
Other Schedule	8,959	8.9 (5.3)	8 (5, 10)	60.2 (26.1)	60 (40, 75)	420.9 (260.7)	338 (250, 500)	2,757 (30.8%)	11.7 (6.2)	11 (7, 15)
Tramadol	933	11.3 (6.2)	10 (7, 15)	60.3 (26.4)	60 (40, 75)	297.8 (133.3)	300 (200, 375)	260 (27.9%)	12.4 (8.3)	11 (6, 17)
Codeine	320	8.0 (4.5)	7 (5, 10)	56.8 (24.7)	60 (40, 60)	276.7 (139.8)	270 (180, 360)	94 (29.4%)	11.4 (6.6)	10 (7, 15)
Hydrocodone (before rescheduling)	7,618	8.6 (5.1)	8 (5, 10)	60.3 (26.1)	60 (40, 75)	432.7 (249.9)	400 (263, 563)	2,380 (31.2%)	11.6 (5.9)	11 (7, 15)
Other	88	9.9 (5.6)	9 (6, 12)	55.3 (25.9)	50 (37, 63)	1,227.7 (599.4)	1,110 (740, 1,380)	23 (26.1%)	10.2 (5.8)	10 (6, 14)
<u>18-40</u>	1,767	8.9 (5.2)	8 (5, 10)	68.0 (31.9)	60 (45, 90)	554.1 (349.4)	450 (300, 675)	599 (33.9%)	12.2 (6.7)	11 (7, 16)
Schedule II	1,071	9.0 (5.3)	8 (5, 10)	73.5 (34.5)	60 (50, 90)	632.4 (373.2)	600 (450, 750)	365 (34.1%)	12.5 (6.7)	12 (8, 16)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	60	9.1 (5.6)	8 (5, 11)	76.8 (38.0)	73 (50, 90)	692.8 (332.9)	640 (480, 800)	27 (45.0%)	10.4 (7.8)	10 (4, 13)
Hydrocodone (after rescheduling)	102	10.7 (5.9)	9 (7, 12)	72.9 (35.8)	60 (50, 90)	519.8 (298.8)	450 (300, 675)	30 (29.4%)	11.2 (6.0)	10 (7, 14)
Oxycodone	897	8.8 (5.2)	8 (5, 10)	73.5 (34.2)	60 (50, 90)	641.3 (381.7)	600 (450, 750)	303 (33.8%)	12.9 (6.5)	13 (8, 17)
Morphine	5	16.8 (8.2)	15 (13, 15)	41.4 (16.6)	45 (30, 50)	681.0 (178.0)	675 (600, 750)	2 (40.0%)	2.0 (0.0)	2 (2, 2)
Other	7	9.6 (4.9)	8 (7, 10)	65.7 (30.5)	60 (40, 90)	585.7 (446.0)	450 (200, 1,200)	3 (42.9%)	9.3 (6.0)	10 (3, 15)
Other Schedule	696	8.7 (5.1)	8 (5, 10)	59.7 (25.2)	60 (40, 80)	433.7 (267.8)	375 (250, 544)	234 (33.6%)	11.7 (6.6)	11 (7, 16)
Tramadol	38	10.3 (5.6)	9 (6, 13)	55.0 (21.2)	50 (40, 60)	272.4 (108.7)	250 (200, 300)	8 (21.1%)	11.9 (5.6)	12 (10, 15)
Codeine	16	7.4 (4.6)	5 (5, 10)	51.6 (14.3)	50 (40, 60)	232.0 (64.5)	225 (180, 270)	5 (31.3%)	5.0 (2.8)	6 (2, 7)
Hydrocodone (before rescheduling)	633	8.7 (5.1)	8 (5, 10)	60.2 (25.7)	60 (40, 80)	435.8 (247.6)	400 (270, 600)	220 (34.8%)	11.8 (6.7)	11 (7, 16)
Other	9	8.6 (2.5)	8 (7, 9)	58.9 (20.3)	60 (50, 60)	1,324.4 (473.1)	1,150 (1,110, 1,380)	1 (11.1%)	7.0 (.)	7 (7, 7)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (1-3 levels), continued										
<u>41-64</u>	9,373	8.8 (5.2)	8 (5, 10)	66.8 (28.9)	60 (50, 90)	543.8 (376.7)	450 (300, 675)	2,765 (29.5%)	11.9 (6.1)	11 (7, 15)
Schedule II	5,531	8.8 (5.2)	8 (5, 10)	71.1 (29.4)	60 (50, 90)	618.7 (414.2)	500 (400, 720)	1,629 (29.5%)	12.0 (6.0)	12 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	316	8.1 (4.5)	7 (5, 10)	73.5 (31.7)	60 (50, 90)	642.9 (341.8)	600 (400, 720)	106 (33.5%)	11.3 (5.3)	11 (7, 15)
Hydrocodone (after rescheduling)	667	10.4 (5.5)	10 (7, 13)	72.5 (29.8)	60 (50, 90)	539.4 (295.1)	450 (300, 675)	168 (25.2%)	13.2 (6.4)	14 (8, 17)
Oxycodone	4,476	8.6 (5.1)	7 (5, 10)	70.8 (29.2)	60 (50, 90)	618.8 (383.3)	506 (450, 675)	1,328 (29.7%)	12.0 (6.0)	11 (8, 15)
Morphine	34	16.5 (8.8)	15 (10, 25)	63.2 (29.4)	60 (45, 90)	1,511.8 (1,985.6)	900 (720, 1,350)	17 (50.0%)	11.7 (7.4)	9 (6, 17)
Other	38	11.5 (6.7)	10 (6, 15)	67.1 (28.3)	60 (40, 90)	995.9 (890.2)	585 (300, 1,600)	10 (26.3%)	9.3 (4.2)	9 (7, 12)
Other Schedule	3,842	8.7 (5.2)	8 (5, 10)	60.7 (27.1)	60 (40, 80)	436.0 (282.1)	375 (250, 525)	1,136 (29.6%)	11.7 (6.3)	11 (7, 15)
Tramadol	313	10.8 (5.9)	10 (7, 15)	60.2 (27.4)	60 (40, 70)	296.2 (139.9)	300 (200, 350)	82 (26.2%)	10.9 (8.0)	9 (5, 15)
Codeine	123	8.2 (5.2)	7 (5, 10)	58.4 (27.2)	60 (40, 80)	280.1 (142.9)	270 (180, 360)	33 (26.8%)	11.7 (6.4)	11 (7, 16)
Hydrocodone (before rescheduling)	3,349	8.5 (5.0)	7 (5, 10)	60.9 (27.1)	60 (40, 80)	440.8 (260.7)	400 (270, 600)	1,004 (30.0%)	11.8 (6.1)	11 (7, 15)
Other	57	10.1 (5.7)	9 (6, 12)	56.0 (27.3)	50 (34, 65)	1,258.4 (622.0)	1,110 (740, 1,380)	17 (29.8%)	10.2 (6.3)	10 (5, 14)
<u>65+</u>	9,768	9.2 (5.5)	8 (5, 10)	65.3 (28.2)	60 (45, 90)	505.2 (319.4)	450 (300, 675)	2,985 (30.6%)	12.0 (6.2)	11 (8, 15)
Schedule II	5,347	9.4 (5.6)	8 (5, 11)	69.8 (29.5)	60 (50, 90)	587.3 (352.7)	450 (375, 675)	1,598 (29.9%)	12.2 (6.3)	11 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	263	9.3 (5.2)	8 (5, 10)	70.5 (31.1)	60 (50, 90)	619.9 (326.4)	480 (400, 800)	97 (36.9%)	11.9 (6.3)	11 (7, 16)
Hydrocodone (after rescheduling)	939	10.4 (6.2)	9 (5, 14)	70.1 (30.4)	60 (50, 90)	519.1 (292.9)	450 (300, 675)	244 (26.0%)	13.4 (7.7)	13 (8, 16)
Oxycodone	4,087	9.1 (5.4)	8 (5, 10)	69.9 (29.2)	60 (50, 90)	595.8 (355.1)	450 (450, 675)	1,233 (30.2%)	11.9 (5.8)	11 (8, 15)
Morphine	35	15.1 (8.5)	15 (8, 20)	57.8 (33.2)	60 (30, 90)	1,043.1 (721.7)	900 (450, 1,350)	13 (37.1%)	10.8 (8.3)	9 (6, 11)
Other	23	10.1 (5.5)	10 (5, 15)	54.3 (26.1)	60 (30, 80)	789.6 (693.6)	400 (200, 1,200)	11 (47.8%)	13.4 (9.2)	13 (6, 15)
Other Schedule	4,421	9.0 (5.4)	8 (5, 10)	59.8 (25.3)	60 (40, 75)	405.8 (238.6)	300 (250, 500)	1,387 (31.4%)	11.7 (6.0)	11 (7, 15)
Tramadol	582	11.7 (6.4)	10 (8, 15)	60.7 (26.1)	60 (40, 80)	300.4 (131.0)	300 (200, 400)	170 (29.2%)	13.1 (8.5)	11 (6, 19)
Codeine	181	7.8 (3.9)	7 (5, 10)	56.2 (23.5)	60 (40, 60)	278.3 (142.4)	270 (180, 360)	56 (30.9%)	11.8 (6.8)	10 (7, 16)
Hydrocodone (before rescheduling)	3,636	8.7 (5.1)	8 (5, 10)	59.8 (25.3)	60 (40, 75)	424.8 (239.8)	375 (250, 500)	1,156 (31.8%)	11.5 (5.5)	11 (7, 15)
Other	22	9.7 (6.2)	10 (5, 10)	52.1 (24.9)	40 (30, 60)	1,108.6 (591.6)	920 (690, 1,380)	5 (22.7%)	11.0 (4.8)	11 (7, 13)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (4+ levels)										
<u>All ages</u>	7,193	9.5 (5.7)	8 (5, 11)	70.1 (32.1)	60 (50, 90)	583.0 (376.8)	450 (300, 675)	3,036 (42.2%)	11.7 (6.1)	11 (7, 15)
Schedule II	4,360	9.5 (5.6)	8 (5, 11)	74.2 (32.8)	60 (60, 90)	661.6 (403.7)	600 (450, 750)	1,852 (42.5%)	11.7 (5.8)	11 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	299	9.6 (5.5)	8 (6, 12)	77.8 (36.0)	75 (50, 90)	714.6 (419.9)	640 (480, 800)	146 (48.8%)	11.2 (5.7)	10 (7, 14)
Hydrocodone (after rescheduling)	514	11.2 (6.2)	10 (7, 15)	75.2 (33.8)	60 (60, 90)	563.3 (335.3)	450 (300, 683)	174 (33.9%)	13.4 (6.4)	13 (9, 17)
Oxycodone	3,489	9.2 (5.4)	8 (5, 10)	73.9 (32.3)	60 (60, 90)	666.0 (395.5)	600 (450, 750)	1,502 (43.0%)	11.6 (5.7)	11 (7, 15)
Morphine	35	16.0 (9.3)	15 (8, 30)	61.3 (41.9)	60 (30, 60)	991.3 (648.4)	900 (480, 900)	19 (54.3%)	12.7 (9.9)	10 (5, 18)
Other	23	11.0 (6.1)	10 (7, 15)	61.4 (23.9)	60 (42, 80)	990.9 (1,127.5)	450 (300,1,200)	11 (47.8%)	13.5 (5.0)	13 (9, 18)
Other Schedule	2,833	9.5 (5.8)	8 (5, 11)	63.8 (29.8)	60 (40, 80)	462.1 (292.7)	400 (300, 600)	1,184 (41.8%)	11.7 (6.4)	11 (7, 15)
Tramadol	301	12.6 (8.0)	10 (7, 15)	64.7 (42.5)	60 (40, 80)	323.9 (214.4)	300 (200, 400)	106 (35.2%)	11.3 (7.8)	10 (5, 15)
Codeine	90	8.3 (5.1)	7 (5, 10)	55.5 (26.5)	50 (30, 75)	263.2 (125.1)	270 (180, 360)	29 (32.2%)	9.6 (5.9)	10 (6, 13)
Hydrocodone (before rescheduling)	2,417	9.2 (5.4)	8 (5, 10)	64.1 (27.9)	60 (40, 80)	478.7 (281.3)	450 (300, 600)	1,034 (42.8%)	11.8 (6.3)	11 (7, 15)
Other	25	9.1 (6.2)	8 (5, 10)	54.7 (29.2)	50 (40, 60)	1,243.2 (677.4)	1,110 (920,1,380)	15 (60.0%)	12.0 (4.4)	13 (10, 14)
<u>18-40</u>	875	9.0 (5.3)	8 (5, 10)	70.3 (34.8)	60 (50, 90)	605.5 (396.4)	500 (300, 750)	447 (51.1%)	10.6 (5.5)	10 (7, 13)
Schedule II	598	9.1 (5.4)	8 (5, 10)	73.9 (36.4)	60 (50, 90)	678.3 (419.1)	600 (450, 900)	303 (50.7%)	10.8 (5.4)	10 (7, 14)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	39	10.8 (6.0)	10 (8, 12)	82.8 (44.3)	78 (60, 90)	787.1 (444.4)	672 (480, 960)	25 (64.1%)	10.4 (3.9)	11 (8, 13)
Hydrocodone (after rescheduling)	39	11.2 (5.4)	10 (7, 14)	72.1 (27.4)	60 (60, 90)	526.7 (266.0)	450 (300, 600)	19 (48.7%)	13.5 (8.2)	11 (8, 19)
Oxycodone	511	8.8 (5.2)	8 (5, 10)	73.7 (36.4)	60 (50, 90)	679.2 (423.0)	600 (450, 900)	255 (49.9%)	10.6 (5.3)	10 (7, 13)
Morphine	5	14.6 (5.9)	16 (10, 20)	62.0 (24.9)	60 (60, 60)	930.0 (373.5)	900 (900, 900)	1 (20.0%)	9.0 (.)	9 (9, 9)
Other	4	6.8 (2.4)	6 (5, 9)	42.5 (20.6)	45 (25, 60)	662.5 (621.0)	675 (125,1,200)	3 (75.0%)	13.3 (5.7)	15 (7, 18)
Other Schedule	277	8.9 (5.3)	8 (5, 10)	62.6 (29.4)	60 (40, 80)	448.3 (285.6)	338 (250, 600)	144 (52.0%)	10.1 (5.6)	9 (6, 13)
Tramadol	24	13.2 (6.2)	13 (10, 15)	65.0 (29.6)	60 (45, 75)	319.8 (151.6)	275 (213, 375)	10 (41.7%)	11.5 (5.9)	11 (9, 12)
Codeine	14	6.4 (3.0)	6 (5, 7)	52.6 (27.4)	50 (30, 72)	236.6 (123.4)	225 (135, 324)	6 (42.9%)	11.7 (7.7)	10 (6, 18)
Hydrocodone (before rescheduling)	238	8.7 (5.1)	8 (5, 10)	63.1 (29.5)	60 (40, 80)	473.2 (294.8)	400 (250, 600)	127 (53.4%)	9.9 (5.5)	9 (6, 13)
Other	1	4.0 (.)	4 (4, 4)	25.0 (.)	25 (25, 25)	575.0 (.)	575 (575, 575)	1 (100.0%)	15.0 (.)	15 (15, 15)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (4+ levels), continued										
<u>41-64</u>	3,261	9.4 (5.6)	8 (5, 11)	70.4 (31.8)	60 (50, 90)	602.5 (397.5)	500 (360, 750)	1,413 (43.3%)	11.9 (6.3)	11 (7, 15)
Schedule II	2,004	9.5 (5.7)	8 (5, 11)	74.5 (32.2)	60 (60, 90)	674.6 (424.9)	600 (450, 800)	868 (43.3%)	11.8 (5.9)	11 (7, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	149	9.5 (5.9)	8 (5, 10)	78.5 (36.0)	80 (50, 100)	733.0 (470.9)	640 (480, 800)	70 (47.0%)	10.7 (5.4)	9 (7, 13)
Hydrocodone (after rescheduling)	200	11.4 (6.1)	10 (7, 15)	74.7 (34.1)	70 (50, 90)	576.4 (334.8)	500 (300, 775)	70 (35.0%)	13.4 (6.2)	13 (10, 16)
Oxycodone	1,624	9.2 (5.4)	8 (5, 10)	74.3 (31.6)	60 (60, 90)	676.3 (414.8)	600 (450, 750)	715 (44.0%)	11.7 (5.8)	11 (7, 15)
Morphine	17	15.8 (8.7)	15 (10, 15)	60.4 (33.8)	60 (30, 60)	931.8 (493.8)	900 (600, 900)	7 (41.2%)	16.4 (12.6)	14 (8, 21)
Other	14	11.8 (6.6)	10 (7, 15)	64.4 (24.3)	60 (50, 80)	956.4 (1,199.2)	425 (300,1,200)	6 (42.9%)	12.2 (4.2)	12 (9, 14)
Other Schedule	1,257	9.3 (5.6)	8 (5, 10)	63.9 (29.9)	60 (40, 80)	487.6 (317.0)	405 (300, 600)	545 (43.4%)	12.0 (6.9)	11 (7, 15)
Tramadol	103	11.8 (7.0)	10 (7, 15)	66.3 (42.5)	60 (40, 90)	335.6 (216.5)	300 (200, 450)	34 (33.0%)	13.1 (9.9)	11 (6, 21)
Codeine	34	7.2 (4.2)	5 (5, 8)	52.1 (26.0)	40 (30, 60)	248.6 (127.7)	225 (135, 270)	14 (41.2%)	9.1 (6.2)	10 (2, 14)
Hydrocodone (before rescheduling)	1,100	9.1 (5.4)	8 (5, 10)	64.1 (28.5)	60 (41, 80)	494.8 (294.1)	450 (300, 600)	486 (44.2%)	12.0 (6.7)	11 (7, 15)
Other	20	9.3 (6.5)	8 (6, 10)	56.4 (29.7)	48 (40, 70)	1,278.1 (689.2)	1,073 (920,1,610)	11 (55.0%)	11.7 (5.0)	12 (10, 14)
<u>65+</u>	3,057	9.7 (5.9)	8 (5, 12)	69.8 (31.6)	60 (50, 90)	555.8 (345.6)	450 (300, 675)	1,176 (38.5%)	12.0 (6.0)	11 (8, 15)
Schedule II	1,758	9.7 (5.7)	8 (5, 12)	74.0 (32.3)	60 (60, 90)	641.0 (371.5)	600 (450, 750)	681 (38.7%)	12.1 (5.9)	12 (8, 15)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	111	9.3 (4.8)	8 (5, 13)	75.2 (32.8)	75 (50, 90)	664.6 (325.9)	600 (480, 800)	51 (45.9%)	12.3 (6.7)	11 (8, 15)
Hydrocodone (after rescheduling)	275	11.0 (6.5)	10 (7, 14)	76.0 (34.6)	68 (60, 90)	558.9 (344.8)	450 (300, 675)	85 (30.9%)	13.4 (6.2)	12 (9, 17)
Oxycodone	1,354	9.4 (5.5)	8 (5, 11)	73.6 (31.5)	60 (60, 90)	648.8 (359.1)	600 (450, 750)	532 (39.3%)	11.8 (5.7)	11 (8, 15)
Morphine	13	16.7 (11.4)	14 (6, 30)	62.4 (56.8)	60 (30, 60)	1,092.7 (895.4)	900 (480,1,200)	11 (84.6%)	10.6 (8.2)	9 (4, 18)
Other	5	12.4 (6.4)	10 (10, 15)	68.0 (21.7)	60 (60, 90)	1,350.0(1,324.8)	1,200 (450,1,200)	2 (40.0%)	18.0 (7.1)	18 (13, 23)
Other Schedule	1,299	9.8 (6.0)	8 (5, 12)	64.0 (29.8)	60 (40, 80)	440.4 (266.7)	400 (270, 600)	495 (38.1%)	11.8 (6.1)	11 (7, 15)
Tramadol	174	12.9 (8.8)	10 (8, 15)	63.8 (44.1)	60 (40, 80)	317.6 (221.2)	300 (200, 400)	62 (35.6%)	10.3 (6.6)	9 (5, 14)
Codeine	42	9.8 (6.0)	8 (5, 11)	59.3 (26.7)	55 (40, 90)	283.9 (123.0)	270 (180, 405)	9 (21.4%)	9.0 (4.2)	10 (6, 11)
Hydrocodone (before rescheduling)	1,079	9.3 (5.3)	8 (5, 10)	64.3 (26.9)	60 (40, 80)	463.4 (263.7)	400 (300, 600)	421 (39.0%)	12.1 (6.1)	11 (8, 15)
Other	4	9.5 (4.9)	10 (7, 13)	53.8 (30.9)	55 (33, 75)	1,236.3 (711.2)	1,265 (748,1,725)	3 (75.0%)	12.0 (2.6)	13 (9, 14)

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Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Tooth extraction										
<u>All ages</u>	181,300	3.5 (1.7)	3 (2, 4)	19.7 (6.5)	20 (15, 20)	129.1 (65.0)	113 (90, 150)	14,976 (8.3%)	6.9 (3.7)	6 (4, 8)
Schedule II	60,018	3.6 (1.7)	3 (3, 4)	21.0 (6.8)	20 (16, 24)	155.5 (70.6)	150 (113, 188)	4,201 (7.0%)	7.0 (3.7)	6 (5, 8)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	103	3.9 (2.0)	4 (2, 5)	25.9 (17.3)	20 (18, 30)	261.6 (229.9)	240 (160, 256)	16 (15.5%)	8.0 (3.8)	7 (5, 11)
Hydrocodone (after rescheduling)	19,925	3.6 (1.7)	3 (3, 4)	20.1 (6.7)	20 (15, 24)	120.0 (51.5)	100 (85, 150)	1,078 (5.4%)	7.5 (3.8)	7 (5, 9)
Oxycodone	39,249	3.6 (1.7)	3 (3, 4)	21.4 (6.8)	20 (18, 25)	174.0 (70.5)	150 (150, 225)	3,020 (7.7%)	6.9 (3.6)	6 (4, 8)
Morphine	5	4.4 (3.4)	3 (2, 5)	16.4 (5.0)	20 (12, 20)	226.0 (69.9)	200 (180, 300)	2 (40.0%)	10.5 (3.5)	11 (8, 13)
Other	736	3.4 (1.6)	3 (2, 4)	20.1 (6.2)	20 (16, 20)	111.6 (76.6)	100 (80, 120)	85 (11.5%)	5.7 (3.4)	5 (4, 7)
Other Schedule	121,282	3.4 (1.6)	3 (2, 4)	19.0 (6.2)	20 (15, 20)	116.1 (57.8)	100 (80, 150)	10,775 (8.9%)	6.8 (3.7)	6 (4, 8)
Tramadol	1,619	4.2 (3.0)	3 (3, 5)	21.8 (10.2)	20 (16, 25)	103.7 (50.7)	100 (75, 120)	119 (7.4%)	6.8 (4.3)	6 (4, 9)
Codeine	13,626	3.3 (1.8)	3 (2, 4)	17.9 (5.9)	18 (15, 20)	81.2 (29.0)	81 (68, 90)	781 (5.7%)	7.4 (4.4)	6 (4, 10)
Hydrocodone (before rescheduling)	105,088	3.4 (1.6)	3 (2, 4)	19.1 (6.1)	20 (15, 20)	118.1 (50.5)	100 (85, 150)	9,805 (9.3%)	6.7 (3.6)	6 (4, 8)
Other	949	3.4 (2.0)	3 (2, 4)	18.3 (6.1)	20 (15, 20)	416.7 (139.0)	460 (345, 460)	70 (7.4%)	7.1 (3.8)	6 (4, 9)
<u>18-40</u>	131,837	3.5 (1.6)	3 (3, 4)	20.2 (6.2)	20 (16, 21)	134.0 (63.0)	120 (100, 150)	12,023 (9.1%)	6.5 (3.4)	6 (4, 8)
Schedule II	48,858	3.6 (1.7)	3 (3, 4)	21.3 (6.6)	20 (18, 25)	158.7 (68.7)	150 (113, 188)	3,528 (7.2%)	6.7 (3.4)	6 (4, 8)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	71	3.9 (1.9)	4 (3, 5)	27.7 (19.1)	22 (20, 30)	285.4 (263.6)	240 (160, 288)	10 (14.1%)	6.4 (2.3)	7 (5, 8)
Hydrocodone (after rescheduling)	14,862	3.6 (1.7)	3 (3, 4)	20.7 (6.6)	20 (16, 24)	123.5 (51.7)	100 (90, 150)	842 (5.7%)	7.1 (3.5)	6 (5, 8)
Oxycodone	33,316	3.7 (1.7)	3 (3, 4)	21.6 (6.5)	20 (20, 25)	175.1 (67.8)	150 (150, 225)	2,601 (7.8%)	6.7 (3.4)	6 (4, 8)
Morphine	1	2.0 (.)	2 (2, 2)	12.0 (.)	12 (12, 12)	180.0 (.)	180 (180, 180)	0 (0.0%)	-	-
Other	608	3.4 (1.4)	3 (2, 4)	20.1 (6.0)	20 (16, 20)	109.5 (66.8)	100 (80, 100)	75 (12.3%)	5.4 (2.8)	5 (4, 7)
Other Schedule	82,979	3.5 (1.6)	3 (2, 4)	19.5 (5.9)	20 (16, 20)	119.4 (54.5)	100 (90, 150)	8,495 (10.2%)	6.4 (3.4)	6 (4, 8)
Tramadol	796	4.3 (2.8)	4 (3, 5)	22.0 (8.0)	20 (16, 30)	105.4 (41.9)	100 (75, 125)	72 (9.0%)	6.1 (3.3)	5 (4, 8)
Codeine	6,778	3.3 (1.8)	3 (2, 4)	18.3 (6.2)	20 (15, 20)	83.3 (30.4)	90 (68, 90)	462 (6.8%)	6.7 (4.1)	6 (4, 8)
Hydrocodone (before rescheduling)	74,987	3.5 (1.6)	3 (2, 4)	19.6 (5.8)	20 (16, 20)	121.1 (49.3)	100 (90, 150)	7,922 (10.6%)	6.4 (3.3)	6 (4, 8)
Other	418	3.5 (1.8)	3 (3, 4)	19.0 (5.0)	20 (16, 20)	432.7 (117.6)	460 (368, 460)	39 (9.3%)	6.6 (3.4)	5 (4, 9)

Table 2. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Age Group (years)	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Tooth extraction, continued										
41-64	44,372	3.4 (1.7)	3 (2, 4)	18.2 (6.8)	20 (15, 20)	116.7 (68.4)	100 (75, 150)	2,702 (6.1%)	8.3 (4.4)	7 (5, 11)
Schedule II	10,119	3.5 (1.8)	3 (2, 4)	19.3 (7.4)	20 (15, 20)	141.5 (76.9)	135 (90, 158)	632 (6.2%)	8.6 (4.4)	8 (5, 11)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	27	3.5 (1.9)	3 (2, 5)	20.6 (9.8)	20 (12, 25)	197.0 (93.4)	160 (144, 240)	4 (14.8%)	9.0 (4.5)	8 (6, 13)
Hydrocodone (after rescheduling)	4,523	3.4 (1.6)	3 (2, 4)	18.2 (6.4)	18 (15, 20)	109.9 (49.8)	100 (75, 140)	214 (4.7%)	9.0 (4.3)	8 (6, 12)
Oxycodone	5,444	3.6 (2.0)	3 (2, 4)	20.1 (8.0)	20 (15, 24)	167.9 (84.0)	150 (120, 225)	402 (7.4%)	8.4 (4.5)	8 (5, 10)
Morphine	4	5.0 (3.6)	4 (3, 8)	17.5 (5.0)	20 (15, 20)	237.5 (75.0)	250 (175, 300)	2 (50.0%)	10.5 (3.5)	11 (8, 13)
Other	121	3.4 (2.2)	3 (2, 4)	19.7 (7.3)	20 (16, 20)	122.6 (114.7)	100 (80, 125)	10 (8.3%)	8.3 (5.9)	7 (4, 9)
Other Schedule	34,253	3.3 (1.7)	3 (2, 4)	17.9 (6.6)	18 (15, 20)	109.4 (63.9)	100 (75, 126)	2,070 (6.0%)	8.2 (4.4)	7 (5, 11)
Tramadol	681	4.0 (2.9)	3 (3, 5)	21.4 (11.1)	20 (16, 24)	100.5 (53.3)	100 (75, 105)	38 (5.6%)	7.4 (4.5)	7 (4, 10)
Codeine	5,845	3.2 (1.8)	3 (2, 4)	17.4 (5.4)	16 (12, 20)	79.4 (27.3)	72 (54, 90)	282 (4.8%)	8.6 (4.8)	8 (5, 12)
Hydrocodone (before rescheduling)	27,276	3.3 (1.6)	3 (2, 4)	17.9 (6.6)	18 (15, 20)	111.1 (53.0)	100 (80, 150)	1,726 (6.3%)	8.1 (4.3)	7 (5, 10)
Other	451	3.3 (1.9)	3 (2, 4)	18.0 (7.0)	18 (15, 20)	407.8 (159.1)	368 (345, 460)	24 (5.3%)	7.5 (4.5)	7 (4, 10)
65+	5,091	3.5 (2.0)	3 (2, 4)	18.3 (7.7)	18 (12, 20)	112.3 (67.8)	100 (75, 135)	251 (4.9%)	8.7 (4.6)	8 (5, 11)
Schedule II	1,041	3.8 (2.2)	3 (3, 5)	20.1 (9.0)	20 (15, 24)	138.8 (75.0)	120 (90, 150)	41 (3.9%)	9.1 (6.0)	8 (5, 13)
Oxymorphone	0	-	-	-	-	-	-	-	-	-
Hydromorphone	5	6.0 (2.6)	5 (5, 7)	28.0 (19.2)	20 (20, 30)	272.0 (192.7)	160 (160, 480)	2 (40.0%)	14.0 (2.8)	14 (12, 16)
Hydrocodone (after rescheduling)	540	3.6 (2.2)	3 (2, 4)	18.6 (7.2)	20 (15, 20)	110.4 (48.5)	100 (80, 135)	22 (4.1%)	9.5 (7.2)	7 (5, 13)
Oxycodone	489	3.9 (2.2)	3 (3, 5)	21.6 (10.4)	20 (15, 25)	169.4 (83.9)	150 (120, 225)	17 (3.5%)	8.0 (4.0)	8 (6, 9)
Morphine	0	-	-	-	-	-	-	-	-	-
Other	7	4.0 (1.4)	4 (3, 5)	21.3 (7.7)	24 (12, 28)	106.4 (38.6)	120 (60, 140)	0 (0.0%)	-	-
Other Schedule	4,050	3.4 (1.9)	3 (2, 4)	17.9 (7.2)	16 (12, 20)	105.5 (64.0)	90 (68, 120)	210 (5.2%)	8.6 (4.3)	8 (5, 11)
Tramadol	142	4.7 (4.2)	3 (3, 5)	22.8 (15.3)	20 (15, 25)	109.3 (76.4)	100 (60, 120)	9 (6.3%)	10.1 (8.4)	10 (3, 12)
Codeine	1,003	3.2 (1.6)	3 (2, 4)	17.2 (5.8)	16 (12, 20)	77.7 (28.7)	72 (54, 90)	37 (3.7%)	7.5 (3.9)	7 (5, 8)
Hydrocodone (before rescheduling)	2,825	3.4 (1.8)	3 (2, 4)	17.9 (7.0)	16 (12, 20)	107.2 (50.0)	100 (75, 128)	157 (5.6%)	8.9 (4.2)	8 (6, 11)
Other	80	3.6 (3.0)	3 (2, 4)	16.8 (4.4)	16 (13, 20)	383.5 (108.1)	368 (299, 460)	7 (8.8%)	8.1 (3.1)	7 (7, 9)

*All surgeries population excluded patients with any prior surgery before index

Table 3. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Year

Surgery	Year	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
All surgeries*											
Total		935,443	5.3 (3.6)	5 (3, 6)	36.8 (21.5)	30 (24, 40)	264.2 (203.6)	225 (150, 300)	167,423 (17.9%)	9.7 (5.3)	9 (6, 13)
2009		31,999	4.9 (3.1)	4 (3, 5)	33.3 (17.3)	30 (20, 40)	257.1 (201.3)	225 (150, 300)	5,506 (17.2%)	8.6 (4.8)	7 (5, 12)
2010		134,072	4.8 (3.1)	4 (3, 5)	33.3 (17.7)	30 (20, 40)	253.4 (196.3)	225 (150, 300)	22,211 (16.6%)	8.7 (4.9)	8 (5, 11)
2011		162,624	5.2 (3.4)	5 (3, 6)	35.9 (19.8)	30 (24, 40)	252.8 (184.6)	225 (150, 300)	30,388 (18.7%)	9.5 (5.1)	8 (6, 13)
2012		156,469	5.3 (3.5)	5 (3, 6)	36.7 (20.9)	30 (25, 40)	259.5 (192.7)	225 (150, 300)	29,384 (18.8%)	9.6 (5.2)	8 (6, 13)
2013		159,142	5.4 (3.6)	5 (3, 6)	36.9 (21.6)	30 (24, 40)	261.4 (197.0)	225 (150, 300)	29,587 (18.6%)	9.8 (5.3)	9 (6, 13)
2014		162,790	5.6 (3.8)	5 (3, 7)	38.4 (23.1)	30 (24, 45)	273.9 (217.3)	225 (150, 300)	29,477 (18.1%)	10.1 (5.4)	9 (6, 13)
2015		128,347	5.9 (4.0)	5 (3, 7)	40.3 (25.4)	30 (25, 50)	288.8 (232.8)	225 (150, 338)	20,870 (16.3%)	10.8 (5.6)	10 (7, 14)
Appendectomy (laparoscopic)											
Total		53,428	4.5 (2.5)	4 (3, 5)	31.7 (10.7)	30 (30, 40)	208.6 (103.6)	200 (150, 225)	3,939 (7.4%)	8.1 (4.9)	7 (5, 11)
2009		1,775	4.6 (2.7)	4 (3, 5)	31.8 (10.4)	30 (30, 40)	224.3 (135.8)	200 (150, 250)	165 (9.3%)	7.8 (4.4)	7 (4, 11)
2010		7,992	4.4 (2.5)	4 (3, 5)	31.9 (10.3)	30 (30, 40)	222.9 (130.3)	200 (150, 250)	670 (8.4%)	7.8 (4.6)	7 (4, 10)
2011		9,126	4.4 (2.5)	4 (3, 5)	31.5 (9.8)	30 (30, 36)	203.8 (91.2)	200 (150, 225)	747 (8.2%)	8.1 (4.7)	7 (5, 11)
2012		8,920	4.4 (2.4)	4 (3, 5)	31.9 (11.1)	30 (30, 40)	206.4 (95.5)	200 (150, 225)	657 (7.4%)	8.2 (5.0)	7 (5, 11)
2013		8,899	4.5 (2.7)	4 (3, 5)	31.6 (10.9)	30 (30, 40)	204.9 (100.8)	200 (150, 225)	680 (7.6%)	8.2 (5.0)	7 (5, 11)
2014		9,191	4.6 (2.6)	4 (3, 5)	31.7 (11.1)	30 (30, 40)	204.6 (96.1)	200 (150, 225)	596 (6.5%)	8.0 (4.9)	7 (4, 11)
2015		7,525	4.8 (2.5)	4 (3, 5)	32.0 (10.9)	30 (30, 40)	207.7 (96.1)	200 (150, 225)	424 (5.6%)	8.8 (5.2)	8 (5, 12)
Appendectomy (nonspecific)											
Total		8,035	4.8 (2.8)	4 (3, 5)	32.2 (12.2)	30 (25, 40)	219.5 (124.9)	200 (150, 250)	1,186 (14.8%)	8.4 (4.4)	7 (5, 11)
2009		403	4.4 (2.2)	4 (3, 5)	31.3 (9.7)	30 (28, 35)	229.8 (133.5)	200 (150, 250)	58 (14.4%)	6.6 (2.9)	6 (4, 8)
2010		1,562	4.6 (2.7)	4 (3, 5)	32.0 (11.6)	30 (25, 40)	233.9 (148.0)	200 (150, 300)	243 (15.6%)	8.0 (3.9)	7 (5, 10)
2011		1,784	4.8 (2.8)	5 (3, 5)	32.4 (12.3)	30 (30, 40)	215.4 (109.1)	200 (150, 250)	271 (15.2%)	8.6 (4.9)	8 (5, 11)
2012		1,368	4.8 (2.7)	4 (3, 5)	31.8 (11.4)	30 (25, 40)	209.4 (134.5)	188 (150, 225)	205 (15.0%)	8.4 (4.5)	8 (5, 11)
2013		1,128	4.9 (3.0)	4 (3, 5)	32.3 (12.8)	30 (25, 40)	215.1 (110.6)	200 (150, 250)	168 (14.9%)	8.6 (4.8)	7 (5, 12)
2014		1,079	5.1 (3.1)	5 (3, 6)	32.3 (13.1)	30 (25, 40)	215.7 (109.6)	200 (150, 250)	154 (14.3%)	8.5 (4.0)	8 (5, 11)
2015		711	5.2 (2.9)	5 (3, 6)	33.4 (13.5)	30 (28, 40)	224.8 (123.1)	200 (150, 270)	87 (12.2%)	9.2 (4.7)	9 (6, 11)

Table 3. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Year

Surgery	Year	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Bunionectomy											
Total		43,163	5.6 (3.1)	5 (4, 7)	37.8 (15.2)	30 (30, 40)	280.9 (174.2)	225 (150, 338)	9,554 (22.1%)	8.1 (5.0)	7 (4, 11)
2009		1,661	5.3 (2.9)	5 (4, 6)	35.7 (13.7)	30 (30, 40)	289.0 (194.6)	225 (150, 338)	414 (24.9%)	7.1 (4.8)	6 (3, 9)
2010		5,813	5.3 (2.8)	5 (4, 6)	36.2 (13.5)	30 (30, 40)	285.2 (187.9)	225 (150, 320)	1,433 (24.7%)	7.7 (4.7)	7 (4, 10)
2011		7,661	5.4 (3.1)	5 (4, 6)	36.6 (14.7)	30 (30, 40)	264.7 (162.9)	225 (150, 300)	1,760 (23.0%)	8.2 (5.1)	7 (4, 11)
2012		7,650	5.5 (3.2)	5 (4, 7)	37.6 (14.8)	30 (30, 40)	274.4 (167.8)	225 (150, 300)	1,676 (21.9%)	7.9 (4.9)	7 (4, 11)
2013		7,650	5.7 (3.1)	5 (4, 7)	38.2 (15.4)	30 (30, 45)	281.8 (172.0)	225 (150, 338)	1,671 (21.8%)	8.2 (5.1)	7 (4, 11)
2014		7,631	5.7 (3.1)	5 (4, 7)	38.9 (16.5)	35 (30, 50)	286.8 (175.7)	225 (150, 375)	1,638 (21.5%)	8.4 (5.2)	7 (4, 12)
2015		5,097	5.9 (3.2)	5 (4, 7)	40.2 (16.1)	40 (30, 50)	297.7 (175.9)	250 (180, 375)	962 (18.9%)	8.6 (5.0)	8 (5, 12)
Coronary artery bypassgraft											
Total		33,289	7.2 (4.4)	6 (5, 8)	46.3 (20.3)	40 (30, 60)	306.4 (191.8)	250 (200, 375)	7,101 (21.3%)	11.7 (5.6)	11 (8, 15)
2009		832	6.8 (4.1)	6 (5, 8)	46.3 (17.5)	40 (30, 50)	401.0 (319.1)	300 (225, 450)	228 (27.4%)	10.6 (5.1)	10 (7, 14)
2010		3,467	6.8 (4.6)	6 (5, 8)	46.8 (21.1)	40 (30, 60)	384.7 (294.4)	300 (210, 450)	951 (27.4%)	11.3 (5.2)	11 (7, 15)
2011		6,477	6.8 (4.1)	6 (5, 8)	45.6 (18.7)	40 (30, 50)	288.6 (155.1)	250 (200, 375)	1,496 (23.1%)	11.5 (5.8)	11 (8, 15)
2012		6,019	7.0 (4.3)	6 (5, 8)	45.6 (19.5)	40 (30, 55)	287.4 (162.1)	250 (200, 375)	1,270 (21.1%)	11.7 (5.5)	11 (7, 15)
2013		5,903	7.2 (4.4)	6 (5, 8)	45.7 (20.0)	40 (30, 50)	291.8 (163.0)	250 (200, 375)	1,245 (21.1%)	12.0 (5.9)	11 (8, 16)
2014		6,009	7.4 (4.4)	6 (5, 10)	46.3 (21.2)	40 (30, 60)	295.0 (174.6)	250 (200, 375)	1,145 (19.1%)	11.9 (5.5)	11 (8, 15)
2015		4,582	7.9 (4.5)	7 (5, 10)	48.6 (22.1)	45 (30, 60)	314.0 (180.9)	300 (200, 375)	766 (16.7%)	12.3 (5.8)	12 (8, 16)
Cesarean section											
Total		248,281	4.7 (2.6)	5 (3, 5)	32.5 (9.6)	30 (30, 40)	234.5 (103.4)	225 (150, 300)	29,512 (11.9%)	8.0 (4.1)	7 (5, 10)
2009		10,925	4.7 (2.6)	5 (3, 5)	32.1 (9.1)	30 (30, 40)	245.4 (135.6)	225 (150, 300)	1,444 (13.2%)	7.7 (4.0)	6 (5, 10)
2010		45,772	4.6 (2.5)	4 (3, 5)	32.2 (9.4)	30 (30, 40)	247.0 (132.9)	225 (150, 300)	5,980 (13.1%)	7.8 (4.0)	7 (5, 10)
2011		43,123	4.6 (2.6)	4 (3, 5)	32.4 (9.4)	30 (30, 40)	230.9 (90.6)	225 (150, 300)	5,313 (12.3%)	7.9 (4.1)	7 (5, 10)
2012		39,882	4.7 (2.7)	4 (3, 5)	32.5 (9.6)	30 (30, 40)	231.9 (93.5)	225 (150, 300)	4,927 (12.4%)	8.0 (4.1)	7 (5, 10)
2013		38,781	4.8 (2.6)	5 (3, 5)	32.4 (9.7)	30 (30, 40)	229.1 (90.8)	225 (150, 300)	4,615 (11.9%)	8.1 (4.2)	7 (5, 10)
2014		38,849	4.9 (2.6)	5 (3, 5)	32.7 (9.9)	30 (30, 40)	230.2 (93.0)	225 (150, 300)	4,311 (11.1%)	8.4 (4.3)	7 (5, 11)
2015		30,949	5.0 (2.6)	5 (3, 6)	33.1 (9.9)	30 (30, 40)	233.2 (94.2)	225 (150, 300)	2,922 (9.4%)	8.4 (4.2)	7 (5, 11)

Table 3. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Year

Surgery	Year	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Cholecystectomy (laparoscopic)											
Total		149,026	4.7 (2.7)	4 (3, 5)	31.6 (10.8)	30 (30, 40)	210.3 (112.9)	200 (150, 225)	10,691 (7.2%)	8.4 (5.0)	7 (5, 11)
2009		4,436	4.6 (2.4)	4 (3, 5)	31.6 (10.0)	30 (26, 40)	237.8 (151.1)	200 (150, 296)	386 (8.7%)	7.9 (4.6)	7 (4, 11)
2010		18,530	4.6 (2.6)	4 (3, 5)	31.7 (10.0)	30 (30, 40)	233.4 (144.3)	200 (150, 263)	1,535 (8.3%)	7.5 (4.6)	6 (4, 10)
2011		27,633	4.7 (2.8)	4 (3, 5)	31.3 (10.9)	30 (25, 36)	203.2 (121.0)	188 (150, 225)	2,185 (7.9%)	8.4 (5.1)	7 (5, 12)
2012		26,809	4.7 (2.7)	4 (3, 5)	31.5 (10.8)	30 (28, 40)	204.9 (100.1)	200 (150, 225)	2,002 (7.5%)	8.4 (4.9)	7 (5, 11)
2013		25,891	4.8 (2.7)	4 (3, 5)	31.4 (10.6)	30 (28, 40)	204.2 (98.6)	188 (150, 225)	1,856 (7.2%)	8.5 (5.1)	7 (5, 12)
2014		25,659	4.8 (2.7)	5 (3, 5)	31.6 (11.0)	30 (30, 40)	207.1 (101.4)	200 (150, 225)	1,673 (6.5%)	8.7 (5.3)	7 (5, 12)
2015		20,068	5.0 (2.7)	5 (3, 5)	32.3 (11.5)	30 (30, 40)	211.6 (101.7)	200 (150, 233)	1,054 (5.3%)	8.8 (5.4)	8 (5, 12)
Cholecystectomy (nonspecific)											
Total		4,873	5.4 (3.3)	5 (3, 6)	33.7 (15.4)	30 (25, 40)	232.3 (143.7)	210 (150, 300)	840 (17.2%)	9.8 (5.0)	9 (6, 13)
2009		124	5.0 (2.6)	5 (3, 6)	31.3 (10.1)	30 (25, 35)	234.2 (136.9)	225 (150, 281)	16 (12.9%)	8.9 (5.3)	8 (5, 13)
2010		471	5.0 (2.8)	5 (3, 6)	34.2 (12.2)	30 (30, 40)	259.6 (175.1)	225 (150, 300)	102 (21.7%)	9.3 (4.4)	9 (5, 13)
2011		1,031	5.3 (3.1)	5 (3, 6)	33.9 (15.7)	30 (25, 40)	223.9 (128.5)	200 (150, 300)	189 (18.3%)	9.4 (5.0)	9 (6, 12)
2012		918	5.6 (3.9)	5 (3, 7)	33.9 (18.5)	30 (25, 40)	228.4 (167.4)	200 (150, 280)	131 (14.3%)	10.1 (5.4)	10 (6, 13)
2013		877	5.4 (3.1)	5 (3, 6)	32.9 (13.6)	30 (25, 40)	223.9 (124.3)	224 (150, 300)	174 (19.8%)	10.1 (4.9)	10 (6, 14)
2014		858	5.6 (3.4)	5 (3, 7)	34.0 (16.1)	30 (25, 40)	236.3 (141.7)	225 (150, 300)	147 (17.1%)	9.7 (5.4)	9 (6, 12)
2015		594	5.6 (3.2)	5 (4, 7)	33.7 (14.5)	30 (28, 40)	237.6 (129.2)	225 (150, 300)	81 (13.6%)	10.2 (5.1)	9 (7, 13)
Hip fracture treatment											
Total		11,939	7.8 (5.4)	6 (5, 10)	49.7 (28.4)	40 (30, 60)	355.3 (258.1)	300 (175, 450)	4,481 (37.5%)	10.8 (6.0)	10 (7, 14)
2009		232	7.3 (4.6)	6 (5, 8)	49.0 (23.3)	40 (30, 60)	369.4 (231.2)	300 (200, 450)	103 (44.4%)	9.6 (4.4)	9 (6, 13)
2010		966	7.7 (5.3)	6 (5, 10)	56.0 (27.1)	50 (40, 60)	440.0 (292.7)	375 (250, 500)	440 (45.5%)	10.3 (5.6)	9 (7, 13)
2011		2,358	7.7 (5.4)	6 (5, 10)	48.3 (27.2)	40 (30, 60)	339.0 (240.1)	300 (150, 450)	875 (37.1%)	10.8 (6.1)	10 (7, 14)
2012		2,174	7.7 (5.5)	6 (5, 10)	49.5 (29.3)	40 (30, 60)	352.1 (257.6)	300 (160, 450)	843 (38.8%)	10.7 (6.0)	10 (6, 14)
2013		2,199	8.0 (5.4)	7 (5, 10)	49.1 (27.9)	40 (30, 60)	341.1 (238.1)	300 (150, 450)	802 (36.5%)	10.7 (6.4)	10 (6, 14)
2014		2,298	7.8 (5.4)	6 (5, 10)	48.5 (29.8)	40 (30, 60)	348.8 (272.5)	300 (150, 450)	816 (35.5%)	11.0 (6.0)	10 (7, 15)
2015		1,712	8.1 (5.5)	7 (5, 10)	50.3 (28.7)	42 (30, 60)	359.0 (261.0)	300 (150, 450)	602 (35.2%)	11.0 (5.7)	10 (7, 15)

Table 3. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Year

Surgery	Year	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Hip replacement											
Total		42,788	8.1 (4.8)	7 (5, 10)	64.0 (27.3)	60 (40, 80)	473.5 (265.8)	450 (300, 600)	13,142 (30.7%)	11.2 (5.4)	11 (7, 14)
2009		910	7.7 (4.5)	7 (5, 9)	62.5 (24.5)	60 (45, 80)	495.5 (281.2)	450 (300, 600)	338 (37.1%)	10.7 (5.4)	10 (7, 14)
2010		3,604	7.6 (4.2)	7 (5, 9)	62.5 (25.4)	60 (40, 80)	489.5 (288.6)	450 (300, 600)	1,270 (35.2%)	10.6 (5.3)	10 (7, 14)
2011		6,990	7.7 (4.6)	7 (5, 10)	60.5 (25.8)	60 (40, 80)	443.1 (249.2)	400 (300, 600)	2,362 (33.8%)	11.0 (5.2)	10 (7, 14)
2012		7,044	7.7 (4.4)	7 (5, 10)	62.0 (27.2)	60 (40, 80)	452.1 (262.0)	400 (300, 600)	2,299 (32.6%)	10.9 (5.2)	10 (7, 14)
2013		7,855	8.0 (5.0)	7 (5, 10)	62.5 (26.7)	60 (40, 80)	459.8 (251.3)	450 (300, 600)	2,484 (31.6%)	11.2 (5.3)	11 (7, 14)
2014		8,930	8.4 (4.8)	7 (5, 10)	65.2 (27.0)	60 (50, 90)	481.6 (259.7)	450 (300, 600)	2,545 (28.5%)	11.3 (5.5)	11 (7, 14)
2015		7,455	9.1 (5.1)	8 (5, 10)	70.1 (29.7)	60 (50, 90)	516.2 (285.5)	450 (300, 675)	1,844 (24.7%)	12.0 (5.7)	12 (8, 15)
Hysterectomy (non-laparoscopic)											
Total		11,600	4.9 (2.7)	5 (3, 5)	32.1 (11.6)	30 (30, 40)	227.6 (130.2)	225 (150, 263)	1,488 (12.8%)	8.7 (4.9)	7 (5, 12)
2009		531	4.8 (2.8)	4 (3, 5)	32.5 (10.4)	30 (28, 40)	263.0 (174.7)	225 (150, 300)	104 (19.6%)	8.7 (5.0)	7 (5, 12)
2010		2,004	4.6 (2.3)	4 (3, 5)	32.1 (10.3)	30 (30, 40)	255.7 (161.1)	225 (150, 300)	323 (16.1%)	8.7 (4.9)	8 (5, 12)
2011		2,326	4.7 (2.6)	4 (3, 5)	31.4 (11.0)	30 (25, 35)	217.0 (109.4)	225 (150, 240)	298 (12.8%)	8.3 (4.7)	7 (5, 12)
2012		1,908	4.9 (2.9)	5 (3, 5)	32.3 (12.4)	30 (30, 40)	221.3 (146.8)	225 (150, 250)	229 (12.0%)	8.4 (4.7)	7 (5, 11)
2013		1,891	5.0 (2.7)	5 (3, 5)	32.2 (11.6)	30 (30, 40)	218.9 (101.6)	225 (150, 250)	234 (12.4%)	9.4 (5.0)	8 (6, 13)
2014		1,744	4.9 (2.7)	5 (3, 5)	32.0 (12.0)	30 (30, 40)	216.3 (109.2)	200 (150, 225)	194 (11.1%)	8.8 (4.8)	7 (5, 12)
2015		1,196	5.2 (2.9)	5 (3, 6)	32.9 (13.2)	30 (30, 40)	225.6 (116.7)	225 (150, 256)	106 (8.9%)	8.9 (5.1)	8 (5, 12)
Hysterectomy (laparoscopic)											
Total		11,675	4.8 (2.6)	4 (3, 5)	32.0 (10.2)	30 (30, 40)	229.8 (114.1)	225 (150, 263)	1,397 (12.0%)	8.8 (4.9)	8 (5, 12)
2009		386	4.8 (2.8)	4 (3, 5)	31.2 (8.0)	30 (30, 30)	251.8 (148.4)	225 (150, 300)	60 (15.5%)	8.9 (4.5)	8 (6, 12)
2010		1,604	4.5 (2.3)	4 (3, 5)	31.7 (10.0)	30 (30, 40)	255.3 (156.2)	225 (150, 300)	221 (13.8%)	7.8 (4.7)	7 (4, 11)
2011		1,971	4.6 (2.7)	4 (3, 5)	31.6 (9.9)	30 (30, 36)	222.1 (106.1)	225 (150, 263)	237 (12.0%)	8.3 (4.7)	7 (5, 11)
2012		2,060	4.6 (2.4)	4 (3, 5)	31.9 (10.0)	30 (30, 40)	223.7 (96.9)	225 (150, 263)	258 (12.5%)	9.5 (4.7)	9 (6, 14)
2013		2,162	4.9 (2.7)	5 (3, 5)	31.9 (10.4)	30 (30, 36)	221.3 (98.4)	225 (150, 240)	258 (11.9%)	9.0 (5.1)	8 (5, 13)
2014		2,068	4.9 (2.5)	5 (3, 5)	32.2 (10.6)	30 (30, 40)	227.6 (104.0)	225 (150, 270)	223 (10.8%)	8.9 (5.4)	8 (5, 12)
2015		1,424	5.0 (2.6)	5 (3, 5)	32.8 (10.3)	30 (30, 40)	230.9 (113.0)	225 (150, 270)	140 (9.8%)	9.4 (4.9)	8 (6, 13)

Table 3. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Year

Surgery	Year	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Knee arthroplasty											
	Total	92,819	8.1 (4.7)	7 (5, 10)	63.6 (27.6)	60 (40, 80)	493.5 (281.0)	450 (300, 600)	56,986 (61.4%)	10.9 (5.2)	10 (7, 14)
	2009	1,732	7.5 (4.3)	6 (5, 9)	60.2 (25.6)	60 (40, 75)	491.3 (305.4)	450 (300, 600)	1,167 (67.4%)	10.0 (5.1)	9 (6, 13)
	2010	6,933	7.5 (4.2)	7 (5, 9)	61.8 (25.7)	60 (40, 80)	499.8 (283.8)	450 (300, 600)	4,728 (68.2%)	10.3 (5.1)	9 (7, 13)
	2011	15,774	7.5 (4.3)	7 (5, 9)	59.2 (25.2)	60 (40, 75)	449.3 (253.3)	400 (300, 600)	9,962 (63.2%)	10.4 (4.9)	10 (7, 13)
	2012	16,398	7.7 (4.4)	7 (5, 10)	61.1 (26.5)	60 (40, 80)	467.3 (265.5)	450 (300, 600)	10,309 (62.9%)	10.7 (5.0)	10 (7, 14)
	2013	17,082	7.9 (4.6)	7 (5, 10)	62.4 (27.2)	60 (40, 80)	481.6 (270.7)	450 (300, 600)	10,616 (62.1%)	10.8 (5.2)	10 (7, 14)
	2014	19,101	8.3 (4.8)	7 (5, 10)	65.1 (27.9)	60 (45, 80)	505.7 (283.9)	450 (300, 600)	11,460 (60.0%)	11.2 (5.2)	11 (7, 14)
	2015	15,799	9.1 (5.2)	8 (5, 10)	71.6 (30.3)	60 (50, 90)	560.6 (311.2)	450 (338, 675)	8,744 (55.3%)	12.0 (5.5)	12 (8, 15)
Laminectomy/discectomy											
	Total	13,935	8.2 (4.7)	7 (5, 10)	60.2 (25.5)	60 (40, 75)	459.2 (264.2)	450 (300, 600)	2,396 (17.2%)	10.9 (6.0)	10 (6, 15)
	2009	398	7.8 (4.3)	7 (5, 10)	58.6 (23.5)	60 (40, 70)	496.7 (308.6)	450 (300, 600)	66 (16.6%)	10.0 (5.1)	9 (7, 14)
	2010	1,674	7.7 (4.7)	6 (5, 10)	57.8 (24.4)	60 (40, 60)	454.7 (283.4)	400 (300, 600)	296 (17.7%)	10.7 (6.3)	9 (6, 15)
	2011	2,309	7.9 (4.6)	7 (5, 10)	58.3 (24.2)	60 (40, 65)	440.8 (256.2)	400 (270, 563)	415 (18.0%)	10.4 (5.8)	9 (6, 14)
	2012	2,301	7.9 (4.4)	7 (5, 10)	59.0 (25.5)	60 (40, 70)	444.2 (251.1)	400 (300, 600)	404 (17.6%)	11.4 (6.0)	11 (7, 15)
	2013	2,465	8.1 (4.6)	7 (5, 10)	59.4 (25.2)	60 (40, 70)	448.2 (245.7)	450 (300, 600)	428 (17.4%)	10.5 (5.8)	9 (6, 15)
	2014	2,683	8.6 (5.0)	7 (5, 10)	62.5 (25.9)	60 (40, 80)	476.1 (265.7)	450 (300, 600)	467 (17.4%)	11.3 (6.0)	11 (6, 15)
	2015	2,105	8.9 (5.1)	8 (5, 10)	63.6 (27.0)	60 (45, 80)	483.4 (277.5)	450 (300, 600)	320 (15.2%)	11.6 (6.2)	11 (7, 15)
Spinal fusion (all levels)											
	Total	29,292	9.1 (5.4)	8 (5, 10)	66.9 (29.7)	60 (50, 90)	539.0 (360.6)	450 (300, 675)	9,734 (33.2%)	11.9 (6.1)	11 (7, 15)
	2009	734	8.5 (5.0)	7 (5, 10)	62.1 (26.9)	60 (40, 80)	524.1 (365.3)	450 (300, 675)	265 (36.1%)	11.0 (5.5)	10 (7, 15)
	2010	2,939	8.5 (5.1)	7 (5, 10)	64.7 (28.8)	60 (40, 80)	539.7 (396.5)	450 (300, 675)	987 (33.6%)	11.2 (6.0)	10 (7, 15)
	2011	4,854	8.6 (5.1)	7 (5, 10)	64.1 (28.4)	60 (40, 80)	508.8 (337.8)	450 (300, 615)	1,632 (33.6%)	11.6 (5.9)	11 (7, 15)
	2012	4,962	8.9 (5.4)	8 (5, 10)	65.6 (28.4)	60 (50, 84)	521.8 (331.3)	450 (300, 675)	1,650 (33.3%)	11.7 (6.0)	11 (7, 15)
	2013	5,238	9.0 (5.5)	8 (5, 10)	66.2 (29.5)	60 (50, 90)	528.6 (335.2)	450 (300, 675)	1,771 (33.8%)	11.9 (6.0)	11 (7, 15)
	2014	5,884	9.4 (5.5)	8 (5, 10)	68.3 (30.7)	60 (50, 90)	554.6 (405.7)	450 (300, 675)	1,965 (33.4%)	12.1 (6.4)	11 (8, 15)
	2015	4,681	10.1 (5.8)	9 (6, 13)	72.2 (31.7)	60 (50, 90)	582.6 (351.1)	480 (360, 675)	1,464 (31.3%)	12.8 (6.5)	12 (8, 16)

Table 3. Descriptive Statistics for the Initial Dispensing of an Opioid Analgesic within 7 Days of Surgery in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Year

Surgery	Year	Number of Patients	Days' Supply		Tablets/Capsules Dispensed		Morphine Milligram Equivalents		Re-fills N (%)	Time to Re-fill in Days	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)		Mean (SD)	Median (IQR)
Spinal fusion (1-3 levels)											
Total		20,908	9.0 (5.3)	8 (5, 10)	66.2 (28.9)	60 (46, 90)	526.6 (349.3)	450 (300, 675)	6,349 (30.4%)	11.9 (6.2)	11 (7, 15)
2009		508	8.5 (4.8)	7 (5, 10)	62.8 (26.6)	60 (40, 80)	534.2 (377.6)	450 (300, 675)	158 (31.1%)	11.2 (5.9)	11 (7, 15)
2010		1,954	8.4 (4.9)	7 (5, 10)	64.6 (27.6)	60 (40, 80)	524.2 (330.9)	450 (300, 675)	568 (29.1%)	11.4 (5.9)	10 (7, 15)
2011		3,450	8.5 (5.0)	7 (5, 10)	63.6 (27.9)	60 (40, 80)	496.6 (314.7)	450 (300, 600)	1,045 (30.3%)	11.7 (6.1)	11 (7, 15)
2012		3,606	8.8 (5.3)	8 (5, 10)	64.5 (26.7)	60 (45, 80)	506.2 (321.7)	450 (300, 600)	1,111 (30.8%)	11.7 (6.0)	11 (7, 15)
2013		3,803	8.8 (5.3)	8 (5, 10)	65.0 (27.9)	60 (45, 84)	513.3 (316.7)	450 (300, 675)	1,216 (32.0%)	11.8 (5.9)	11 (7, 15)
2014		4,267	9.3 (5.6)	8 (5, 10)	67.9 (30.1)	60 (50, 90)	545.6 (418.6)	450 (300, 675)	1,312 (30.7%)	12.1 (6.4)	11 (7, 15)
2015		3,320	10.0 (5.7)	8 (6, 12)	71.4 (31.7)	60 (50, 90)	571.1 (350.4)	450 (350, 675)	939 (28.3%)	13.0 (6.8)	12 (8, 16)
Spinal fusion (4+ levels)											
Total		7,193	9.5 (5.7)	8 (5, 11)	70.1 (32.1)	60 (50, 90)	583.0 (376.8)	450 (300, 675)	3,036 (42.2%)	11.7 (6.1)	11 (7, 15)
2009		186	8.9 (5.5)	7 (5, 10)	62.9 (27.9)	60 (40, 80)	513.5 (337.4)	450 (300, 600)	100 (53.8%)	10.5 (4.6)	10 (7, 14)
2010		837	9.0 (5.5)	8 (5, 10)	67.7 (31.1)	60 (48, 90)	588.4 (428.5)	450 (300, 720)	381 (45.5%)	10.9 (6.1)	10 (6, 14)
2011		1,222	8.9 (5.4)	8 (5, 10)	67.2 (29.2)	60 (50, 90)	555.5 (392.6)	450 (300, 675)	527 (43.1%)	11.3 (5.6)	11 (7, 14)
2012		1,178	9.2 (5.6)	8 (5, 10)	69.9 (33.1)	60 (50, 90)	577.4 (358.7)	450 (315, 675)	490 (41.6%)	11.7 (6.1)	11 (7, 15)
2013		1,251	9.6 (6.0)	8 (5, 11)	70.3 (33.6)	60 (50, 90)	575.0 (373.4)	450 (300, 675)	496 (39.6%)	12.0 (6.2)	11 (7, 15)
2014		1,369	9.6 (5.5)	8 (5, 12)	70.6 (32.4)	60 (50, 90)	592.1 (364.9)	480 (300, 720)	576 (42.1%)	12.0 (6.5)	11 (8, 15)
2015		1,150	10.6 (6.1)	10 (7, 14)	75.5 (32.5)	75 (60, 90)	623.4 (357.3)	600 (375, 800)	466 (40.5%)	12.3 (6.0)	12 (8, 15)
Tooth extraction											
Total		181,300	3.5 (1.7)	3 (2, 4)	19.7 (6.5)	20 (15, 20)	129.1 (65.0)	113 (90, 150)	14,976 (8.3%)	6.9 (3.7)	6 (4, 8)
2009		6,920	3.4 (1.6)	3 (2, 4)	19.4 (6.3)	20 (15, 20)	137.3 (85.2)	120 (90, 150)	692 (10.0%)	7.0 (3.8)	6 (4, 8)
2010		30,741	3.4 (1.7)	3 (2, 4)	19.4 (6.1)	20 (15, 20)	135.3 (76.3)	120 (90, 150)	3,032 (9.9%)	6.7 (3.6)	6 (4, 8)
2011		29,207	3.5 (1.7)	3 (2, 4)	19.6 (6.4)	20 (15, 20)	128.6 (62.1)	113 (90, 150)	2,646 (9.1%)	6.9 (3.7)	6 (4, 8)
2012		28,056	3.5 (1.7)	3 (2, 4)	19.7 (6.6)	20 (15, 20)	128.2 (62.3)	113 (90, 150)	2,524 (9.0%)	6.7 (3.6)	6 (4, 8)
2013		31,121	3.5 (1.6)	3 (2, 4)	19.6 (6.1)	20 (15, 20)	126.5 (58.5)	113 (90, 150)	2,585 (8.3%)	6.8 (3.6)	6 (4, 8)
2014		30,806	3.5 (1.7)	3 (2, 4)	19.7 (6.9)	20 (15, 20)	126.5 (62.6)	113 (90, 150)	2,143 (7.0%)	7.0 (3.7)	6 (4, 8)
2015		24,449	3.6 (1.7)	3 (3, 4)	20.1 (6.6)	20 (16, 24)	127.5 (59.4)	113 (90, 150)	1,354 (5.5%)	7.4 (3.9)	7 (5, 9)

*All surgeries population excluded patients with any prior surgery before index

Table 4a. Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics by Days' Supply for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Surgery	Main independent variable in model: days' supply														Value with lowest probability of re-fill
	Observed ¹			Modeled ^{2,3}											
	Age group (years)	Mean (SD)	Median (IQR)	First value with probability of re-fill below:					Estimated probability of re-fill (95% CI) at value of:						
			50%	25%	20%	15%	10%	1	3	5	7	14			
All surgeries															
All ages	5.3 (3.6)	5 (3, 6)	1 (20.7%)	1 (20.7%)	2 (19.7%)	8 (15.0%)		20.7% (19.9%, 21.6%)	18.9% (18.8%, 19.1%)	17.3% (17.2%, 17.5%)	15.6% (15.5%, 15.8%)		10 (14.4%)		
18-40	4.5 (2.5)	4 (3, 5)	1 (14.3%)	1 (14.3%)	1 (14.3%)	1 (14.3%)	6 (9.8%)	14.3% (13.2%, 15.3%)	12.4% (12.2%, 12.6%)	10.6% (10.4%, 10.7%)	9.2% (9.0%, 9.5%)		9 (8.9%)		
41-64	5.5 (3.7)	5 (3, 7)	1 (21.0%)	1 (21.0%)	5 (19.6%)			21.0% (19.4%, 22.7%)	20.7% (20.3%, 21.0%)	19.6% (19.4%, 19.9%)	18.8% (18.4%, 19.1%)		9 (16.5%)		
65+	6.9 (4.5)	5 (4, 8)	1 (36.2%)	9 (24.3%)				36.2% (33.7%, 38.6%)	32.2% (31.6%, 32.7%)	29.7% (29.4%, 30.0%)	27.5% (27.1%, 28.0%)		9 (24.3%)		
Appendectomy (laparoscopic)															
All ages	4.5 (2.5)	4 (3, 5)	1 (10.3%)	1 (10.3%)	1 (10.3%)	1 (10.3%)	2 (8.7%)	10.3% (7.7%, 13.0%)	7.9% (7.4%, 8.3%)	6.8% (6.3%, 7.2%)	6.5% (5.7%, 7.3%)		7 (6.5%)		
18-40	4.5 (2.4)	4 (3, 5)	1 (11.2%)	1 (11.2%)	1 (11.2%)	1 (11.2%)	2 (9.6%)	11.2% (7.6%, 14.7%)	8.2% (7.6%, 8.8%)	6.8% (6.2%, 7.3%)	6.0% (4.9%, 7.1%)		7 (6.0%)		
41-64	4.5 (2.6)	4 (3, 5)	1 (9.0%)	1 (9.0%)	1 (9.0%)	1 (9.0%)	1 (9.0%)	9.0% (4.5%, 13.5%)	8.1% (7.3%, 8.9%)	7.3% (6.5%, 8.0%)	7.6% (6.0%, 9.1%)		5 (7.3%)		
65+	4.8 (2.9)	4 (3, 5)													
Appendectomy (nonspecific)															
All ages	4.8 (2.8)	4 (3, 5)	1 (19.5%)	1 (19.5%)	1 (19.5%)	5 (13.6%)		19.5% (7.6%, 31.4%)	15.6% (13.9%, 17.2%)	13.6% (12.2%, 15.0%)	13.4% (10.7%, 16.2%)		7 (13.4%)		
18-40	4.7 (2.5)	4 (3, 5)	-	-	-	-	-	-	-	-	-	-	-		
41-64	4.8 (2.9)	4 (3, 5)	-	-	-	-	-	-	-	-	-	-	-		
65+	5.2 (3.3)	5 (3, 6)	-	-	-	-	-	-	-	-	-	-	-		
Bunionectomy															
All ages	5.6 (3.1)	5 (4, 7)	1 (20.2%)	1 (20.2%)				20.2% (14.5%, 25.9%)	23.7% (22.8%, 24.5%)	21.8% (21.1%, 22.5%)	21.5% (20.5%, 22.5%)		1 (20.2%)		
18-40	5.5 (3.0)	5 (4, 7)	1 (40.1%)	9 (22.4%)				40.1% (23.6%, 56.6%)	33.7% (31.4%, 36.0%)	29.8% (27.9%, 31.6%)	29.9% (27.1%, 32.7%)		9 (22.4%)		
41-64	5.5 (2.9)	5 (4, 6)	1 (16.3%)	1 (16.3%)	1 (16.3%)			16.3% (8.9%, 23.6%)	23.3% (22.1%, 24.6%)	22.2% (21.2%, 23.2%)	22.1% (20.6%, 23.5%)		1 (16.3%)		
65+	5.7 (3.4)	5 (4, 7)	1 (16.2%)	1 (16.2%)	1 (16.2%)	8 (14.6%)		16.2% (7.1%, 25.2%)	18.7% (17.2%, 20.3%)	16.8% (15.6%, 17.9%)	15.8% (14.2%, 17.4%)		8 (14.6%)		
Cesarean section															
All ages	4.7 (2.6)	5 (3, 5)	1 (14.2%)	1 (14.2%)	1 (14.2%)	1 (14.2%)	7 (9.3%)	14.2% (12.4%, 16.0%)	13.3% (13.1%, 13.6%)	11.2% (10.9%, 11.4%)	9.3% (8.9%, 9.7%)		7 (9.3%)		
18-40	4.7 (2.6)	5 (3, 5)	1 (14.3%)	1 (14.3%)	1 (14.3%)	1 (14.3%)	7 (9.3%)	14.3% (12.5%, 16.1%)	13.3% (13.0%, 13.6%)	11.2% (10.9%, 11.4%)	9.3% (8.9%, 9.7%)		7 (9.3%)		
41-64	4.8 (2.7)	5 (3, 5)	1 (13.0%)	1 (13.0%)	1 (13.0%)	1 (13.0%)	7 (8.5%)	13.0% (3.7%, 22.4%)	14.6% (13.0%, 16.1%)	11.5% (10.3%, 12.6%)	8.5% (6.4%, 10.7%)		7 (8.5%)		
65+	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cholecystectomy (laparoscopic)															
All ages	4.7 (2.7)	4 (3, 5)	1 (11.5%)	1 (11.5%)	1 (11.5%)	1 (11.5%)	2 (9.3%)	11.5% (9.5%, 13.5%)	7.7% (7.4%, 8.0%)	6.7% (6.5%, 6.9%)	6.2% (5.7%, 6.7%)		7 (6.2%)		
18-40	4.6 (2.6)	4 (3, 5)	1 (14.6%)	1 (14.6%)	1 (14.6%)	1 (14.6%)	4 (9.5%)	14.6% (9.8%, 19.4%)	10.3% (9.7%, 10.8%)	8.5% (8.0%, 9.1%)	6.9% (5.9%, 7.9%)		7 (6.9%)		
41-64	4.7 (2.6)	4 (3, 5)	1 (9.4%)	1 (9.4%)	1 (9.4%)	1 (9.4%)	1 (9.4%)	9.4% (6.7%, 12.1%)	7.5% (7.0%, 7.9%)	6.9% (6.5%, 7.3%)	6.7% (5.9%, 7.4%)		7 (6.7%)		
65+	4.9 (2.9)	5 (3, 5)	1 (11.9%)	1 (11.9%)	1 (11.9%)	1 (11.9%)	2 (7.5%)	11.9% (8.5%, 15.3%)	5.9% (5.5%, 6.4%)	5.0% (4.6%, 5.3%)	4.9% (4.3%, 5.6%)		4 (4.9%)		
Cholecystectomy (nonspecific)															
All ages	5.4 (3.3)	5 (3, 6)	1 (22.1%)	1 (22.1%)	2 (16.2%)			22.1% (8.4%, 35.7%)	19.7% (17.5%, 21.9%)	16.1% (14.3%, 17.9%)	17.2% (14.2%, 20.2%)		6 (16.0%)		
18-40	5.3 (3.4)	5 (3, 6)	-	-	-	-	-	-	-	-	-	-	-		
41-64	5.3 (3.4)	5 (3, 6)	-	-	-	-	-	-	-	-	-	-	-		
65+	5.5 (3.3)	5 (4, 7)	-	-	-	-	-	-	-	-	-	-	-		
Coronary artery bypass graft															
All ages	7.2 (4.4)	6 (5, 8)	1 (32.4%)	3 (24.7%)	7 (19.9%)			32.4% (25.0%, 39.8%)	24.7% (23.4%, 26.0%)	23.0% (22.2%, 23.7%)	19.9% (19.1%, 20.7%)		9 (18.6%)		
18-40	7.1 (4.6)	6 (5, 8)	-	-	-	-	-	-	-	-	-	-	-		
41-64	7.0 (4.2)	6 (5, 8)	1 (37.8%)					37.8% (24.0%, 51.7%)	32.0% (29.6%, 34.3%)	30.5% (29.0%, 32.0%)	27.9% (26.2%, 29.5%)		9 (26.2%)		
65+	7.2 (4.5)	6 (5, 8)	1 (28.4%)	2 (23.4%)	5 (19.1%)	8 (14.9%)		28.4% (19.7%, 37.2%)	21.1% (19.6%, 22.7%)	19.1% (18.2%, 19.9%)	15.9% (15.0%, 16.8%)		9 (14.9%)		
Hip fracture treatment															
All ages	7.8 (5.4)	6 (5, 10)	2 (47.1%)					53.9% (46.5%, 61.3%)	43.2% (40.7%, 45.6%)	39.3% (37.7%, 40.8%)	36.7% (34.8%, 38.6%)	31.5% (28.3%, 34.7%)	13 (31.0%)		
18-40	7.9 (4.9)	7 (5, 10)	1 (38.8%)					38.8% (0.0%, 79.4%)	61.6% (54.3%, 69.0%)	54.1% (49.4%, 58.7%)	49.4% (44.1%, 54.6%)	44.5% (34.9%, 54.2%)	1 (38.8%)		
41-64	7.5 (4.9)	6 (5, 10)	3 (47.4%)					56.8% (36.4%, 77.1%)	47.4% (42.4%, 52.3%)	45.6% (42.3%, 48.9%)	43.5% (39.5%, 47.4%)	38.6% (31.9%, 45.3%)	15 (35.1%)		
65+	7.9 (5.7)	6 (5, 10)	1 (49.0%)	12 (24.6%)				49.0% (40.6%, 57.3%)	38.0% (34.9%, 41.0%)	33.3% (31.4%, 35.3%)	31.1% (28.7%, 33.5%)	25.4% (21.3%, 29.4%)	13 (24.4%)		
Hip replacement															
All ages	8.1 (4.8)	7 (5, 10)	1 (36.0%)	12 (24.9%)	14 (20.0%)			36.0% (29.1%, 42.9%)	38.6% (36.9%, 40.3%)	35.3% (34.5%, 36.2%)	30.6% (29.6%, 31.6%)	20.0% (16.3%, 23.7%)	14 (20.0%)		
18-40	8.3 (4.6)	7 (5, 10)	-	-	-	-	-	-	-	-	-	-	-		
41-64	8.0 (4.5)	7 (5, 10)	1 (40.5%)	14 (21.4%)				40.5% (27.3%, 53.8%)	41.6% (38.7%, 44.4%)	39.4% (37.9%, 40.9%)	33.6% (31.8%, 35.4%)	21.4% (15.0%, 27.8%)	14 (21.4%)		

Table 4a. Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics by Days' Supply for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Surgery	Main independent variable in model: days' supply												Value with lowest probability of re-fill
	Observed ¹		First value with probability of re-fill below:					Modeled ^{2,3}					
	Mean (SD)	Median (IQR)	50%	25%	20%	15%	10%	Estimated probability of re-fill (95% CI) at value of:					
Age group (years)							1	3	5	7	14		
65+	8.2 (4.9)	7 (5, 10)	1 (32.8%)	11 (24.5%)	14 (17.7%)			32.8% (24.9%, 40.8%)	36.7% (34.5%, 38.8%)	32.8% (31.7%, 33.8%)	28.9% (27.6%, 30.1%)	17.7% (13.4%, 22.1%)	14 (17.7%)
Hysterectomy (laparoscopic)													
All ages	4.8 (2.6)	4 (3, 5)	1 (10.3%)	1 (10.3%)	1 (10.3%)	1 (10.3%)		10.3% (3.3%, 17.2%)	12.7% (11.5%, 13.9%)	11.8% (10.8%, 12.9%)	11.5% (9.3%, 13.7%)		1 (10.3%)
18-40	4.7 (2.5)	4 (3, 5)	1 (18.1%)	1 (18.1%)	1 (18.1%)			18.1% (2.8%, 33.4%)	15.2% (13.0%, 17.4%)	15.2% (13.2%, 17.2%)	15.1% (11.0%, 19.2%)		7 (15.1%)
41-64	4.7 (2.6)	4 (3, 5)	-	-	-	-		-	-	-	-		-
65+	4.9 (2.6)	5 (3, 5)	-	-	-	-		-	-	-	-		-
Hysterectomy (non-laparoscopic)													
All ages	4.9 (2.7)	5 (3, 5)	1 (22.4%)	1 (22.4%)	2 (11.7%)	2 (11.7%)		22.4% (14.1%, 30.6%)	13.6% (12.3%, 14.9%)	12.6% (11.5%, 13.7%)	11.7% (9.6%, 13.7%)		7 (11.7%)
18-40	4.7 (2.5)	4 (3, 5)	-	-	-	-		-	-	-	-		-
41-64	4.8 (2.7)	5 (3, 5)	1 (22.5%)	1 (22.5%)	2 (12.6%)	2 (12.6%)		22.5% (8.9%, 36.2%)	14.3% (12.3%, 16.4%)	13.4% (11.6%, 15.2%)	14.6% (11.1%, 18.1%)		2 (12.6%)
65+	5.0 (2.8)	5 (3, 5)	-	-	-	-		-	-	-	-		-
Knee arthroplasty													
All ages	8.1 (4.7)	7 (5, 10)						65.0% (58.9%, 71.2%)	69.5% (68.3%, 70.6%)	66.5% (65.9%, 67.0%)	62.1% (61.4%, 62.8%)	55.4% (52.3%, 58.5%)	13 (55.4%)
18-40	7.8 (4.4)	7 (5, 10)	-	-	-	-		-	-	-	-	-	-
41-64	7.9 (4.6)	7 (5, 10)						75.5% (64.8%, 86.2%)	75.3% (73.4%, 77.2%)	73.0% (71.9%, 74.0%)	70.4% (69.2%, 71.6%)	67.9% (62.1%, 73.7%)	10 (64.3%)
65+	8.1 (4.7)	7 (5, 10)						61.1% (53.7%, 68.6%)	67.7% (66.3%, 69.0%)	64.0% (63.4%, 64.7%)	59.2% (58.3%, 60.0%)	51.3% (47.8%, 54.9%)	13 (51.2%)
Laminectomy/discectomy													
All ages	8.2 (4.7)	7 (5, 10)	1 (42.5%)	3 (22.1%)	4 (19.3%)			42.5% (28.3%, 56.7%)	22.1% (19.6%, 24.5%)	18.2% (17.1%, 19.4%)	16.8% (15.4%, 18.1%)	17.5% (14.6%, 20.4%)	10 (15.3%)
18-40	8.1 (4.6)	7 (5, 10)	-	-	-	-		-	-	-	-	-	-
41-64	8.1 (4.7)	7 (5, 10)	1 (43.5%)	3 (21.3%)	4 (18.9%)	15 (13.7%)		43.5% (18.8%, 68.1%)	21.3% (17.7%, 24.9%)	18.2% (16.4%, 20.0%)	16.8% (14.8%, 18.9%)	17.1% (12.8%, 21.5%)	15 (13.7%)
65+	8.3 (4.8)	7 (5, 10)	1 (43.3%)	3 (22.3%)	5 (19.2%)			43.3% (22.5%, 64.1%)	22.3% (17.9%, 26.8%)	19.2% (17.1%, 21.2%)	17.1% (14.8%, 19.4%)	16.6% (11.8%, 21.4%)	12 (15.6%)
Spinal fusion (all levels)													
All ages	9.1 (5.4)	8 (5, 10)	1 (49.0%)					49.0% (35.8%, 62.2%)	38.9% (36.6%, 41.2%)	35.7% (34.6%, 36.8%)	34.2% (33.1%, 35.4%)	29.0% (27.0%, 31.1%)	15 (28.0%)
18-40	8.9 (5.3)	8 (5, 10)	1 (44.5%)					44.5% (6.9%, 82.0%)	49.6% (42.7%, 56.4%)	40.3% (36.8%, 43.8%)	40.0% (36.1%, 43.9%)	34.4% (27.6%, 41.2%)	15 (30.9%)
41-64	8.9 (5.3)	8 (5, 10)	1 (45.5%)					45.5% (25.6%, 65.3%)	35.7% (32.5%, 38.9%)	35.0% (33.4%, 36.7%)	34.3% (32.6%, 36.0%)	30.4% (27.3%, 33.6%)	15 (29.6%)
65+	9.3 (5.6)	8 (5, 10)	2 (44.9%)					51.9% (32.0%, 71.8%)	40.3% (36.6%, 44.0%)	35.4% (33.8%, 37.1%)	33.0% (31.4%, 34.5%)	26.6% (23.6%, 29.5%)	15 (25.9%)
Spinal fusion (1-3 levels)													
All ages	9.0 (5.3)	8 (5, 10)	2 (42.1%)					56.2% (40.0%, 72.4%)	35.5% (32.8%, 38.2%)	32.9% (31.7%, 34.2%)	31.3% (30.0%, 32.6%)	26.9% (24.5%, 29.3%)	15 (25.1%)
18-40	8.9 (5.2)	8 (5, 10)	-	-	-	-		-	-	-	-	-	-
41-64	8.8 (5.2)	8 (5, 10)	2 (38.0%)					50.5% (24.4%, 76.6%)	32.8% (29.1%, 36.5%)	31.8% (29.9%, 33.7%)	30.6% (28.7%, 32.5%)	28.2% (24.5%, 32.0%)	15 (25.7%)
65+	9.2 (5.5)	8 (5, 10)	2 (42.5%)	14 (24.6%)				55.6% (33.4%, 77.7%)	36.5% (32.4%, 40.7%)	34.1% (32.2%, 35.9%)	31.2% (29.4%, 32.9%)	24.6% (21.3%, 28.0%)	15 (24.2%)
Spinal fusion (4+ levels)													
All ages	9.5 (5.7)	8 (5, 11)	1 (38.0%)					38.0% (13.7%, 62.4%)	51.9% (47.1%, 56.8%)	45.5% (43.2%, 47.8%)	43.6% (41.4%, 45.8%)	37.1% (32.7%, 41.5%)	15 (37.0%)
18-40	9.0 (5.3)	8 (5, 10)	-	-	-	-		-	-	-	-	-	-
41-64	9.4 (5.6)	8 (5, 11)	1 (40.4%)					40.4% (8.1%, 72.7%)	45.6% (38.5%, 52.7%)	46.9% (43.5%, 50.3%)	46.2% (42.9%, 49.4%)	38.2% (31.5%, 44.9%)	13 (37.3%)
65+	9.7 (5.9)	8 (5, 12)	1 (23.2%)	1 (23.2%)				23.2% (0.0%, 64.0%)	55.6% (47.6%, 63.7%)	40.8% (37.3%, 44.4%)	38.1% (34.7%, 41.4%)	35.9% (29.2%, 42.6%)	1 (23.2%)
Tooth extraction													
All ages	3.5 (1.7)	3 (2, 4)	1 (9.6%)	1 (9.6%)	1 (9.6%)	1 (9.6%)	1 (9.6%)	9.6% (8.8%, 10.5%)	8.6% (8.3%, 8.8%)	7.2% (6.9%, 7.5%)			5 (7.2%)
18-40	3.5 (1.6)	3 (3, 4)	1 (11.5%)	1 (11.5%)	1 (11.5%)	1 (11.5%)	3 (9.4%)	11.5% (10.3%, 12.7%)	9.4% (9.2%, 9.7%)	7.8% (7.4%, 8.2%)			5 (7.8%)
41-64	3.4 (1.7)	3 (2, 4)	1 (5.5%)	1 (5.5%)	1 (5.5%)	1 (5.5%)	1 (5.5%)	5.5% (4.5%, 6.6%)	6.1% (5.7%, 6.5%)	5.5% (5.0%, 6.1%)			4 (5.3%)
65+	3.5 (2.0)	3 (2, 4)	-	-	-	-	-	-	-	-			-

¹Observed days' supply was evaluated in the overall population of post-surgical opioid initiators. All model estimates were derived after restricting this population to those with a days' supply of no more than the 90th percentile for their given surgery and with 90 or fewer initial days' supply.

²Re-fill probabilities are blank when the probability associated with all days' supply was greater than the indicated threshold or the days' supply values of interest were above the 90th percentile for a given surgery.

³Dashes indicate that a model was not run due to lack of sufficient outcome events.

Table 4b. Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics by Number of Tablets/Capsules Dispensed of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

		Main independent variable in model: tablets/capsules dispensed												
		Observed ¹		First value with probability of re-fill below:					Modeled ^{2,3}					Value with lowest probability of re-fill
		Mean (SD)	Median (IQR)	50%	25%	20%	15%	10%	10	15	20	20	60	
Surgery	Age group (years)													
All surgeries														
	All ages	36.8 (21.5)	30 (24, 40)	1 (24.4%)	1 (24.4%)	6 (19.3%)	59 (14.9%)		17.7% (17.3%, 18.1%)	17.1% (16.9%, 17.4%)	17.1% (16.9%, 17.3%)	16.5% (16.3%, 16.6%)	14.7% (14.5%, 14.9%)	60 (14.7%)
	18-40	29.6 (12.4)	30 (20, 30)	1 (11.4%)	1 (11.4%)	1 (11.4%)	1 (11.4%)		12.4% (11.9%, 13.0%)	12.3% (12.0%, 12.7%)	12.0% (11.7%, 12.2%)	11.1% (10.9%, 11.2%)	10.1% (9.6%, 10.6%)	60 (10.1%)
	41-64	39.6 (24.4)	30 (24, 50)	1 (26.2%)	2 (24.4%)	6 (19.6%)			17.5% (16.6%, 18.4%)	17.0% (16.4%, 17.5%)	17.4% (16.9%, 17.8%)	18.0% (17.8%, 18.3%)	17.0% (16.6%, 17.3%)	60 (17.0%)
	65+	48.5 (26.5)	40 (30, 60)	1 (40.7%)	60 (24.8%)				32.2% (31.1%, 33.3%)	29.9% (29.1%, 30.7%)	28.8% (28.1%, 29.4%)	28.3% (28.0%, 28.7%)	24.8% (24.5%, 25.1%)	60 (24.8%)
Appendectomy (laparoscopic)														
	All ages	31.7 (10.7)	30 (30, 40)	1 (25.1%)	2 (20.9%)	3 (17.7%)	5 (13.2%)	8 (9.7%)	8.5% (7.0%, 9.9%)	7.5% (6.7%, 8.4%)	8.0% (7.4%, 8.5%)	7.4% (7.1%, 7.7%)		35 (6.9%)
	18-40	31.8 (10.6)	30 (30, 40)	1 (24.6%)	1 (24.6%)	3 (17.9%)	5 (13.7%)	9 (9.6%)	9.1% (7.3%, 11.0%)	8.2% (7.0%, 9.4%)	8.6% (7.8%, 9.3%)	7.6% (7.1%, 8.0%)		37 (6.7%)
	41-64	32.1 (10.7)	30 (30, 40)	1 (21.2%)	1 (21.2%)	2 (17.8%)	4 (13.2%)	7 (9.5%)	7.9% (5.3%, 10.4%)	7.3% (5.8%, 8.9%)	8.0% (7.0%, 8.9%)	7.7% (7.1%, 8.2%)		14 (7.3%)
	65+	30.6 (11.2)	30 (25, 30)											
Appendectomy (nonspecific)														
	All ages	32.2 (12.2)	30 (25, 40)	3 (42.7%)	6 (24.6%)	8 (18.5%)	11 (14.2%)		15.2% (10.5%, 19.9%)	13.0% (10.3%, 15.7%)	14.5% (12.8%, 16.3%)	13.8% (12.7%, 14.9%)		15 (13.0%)
	18-40	32.2 (11.7)	30 (28, 40)	-	-	-	-	-	-	-	-	-	-	-
	41-64	32.6 (12.2)	30 (30, 40)	-	-	-	-	-	-	-	-	-	-	-
	65+	31.6 (13.0)	30 (25, 36)	-	-	-	-	-	-	-	-	-	-	-
Bunionectomy														
	All ages	37.8 (15.2)	30 (30, 40)	1 (30.6%)	6 (24.6%)				21.9% (18.9%, 25.0%)	20.4% (19.0%, 21.7%)	20.1% (19.0%, 21.1%)	21.6% (21.0%, 22.2%)	21.1% (19.9%, 22.3%)	19 (20.0%)
	18-40	38.0 (15.5)	30 (30, 42)	4 (47.5%)					35.0% (27.1%, 42.9%)	30.3% (26.5%, 34.2%)	28.8% (26.0%, 31.7%)	30.5% (28.8%, 32.2%)	28.4% (25.1%, 31.7%)	60 (28.4%)
	41-64	38.2 (14.9)	35 (30, 45)	1 (23.2%)	1 (23.2%)	12 (20.0%)			20.2% (16.8%, 23.7%)	19.8% (18.0%, 21.6%)	20.0% (18.6%, 21.4%)	21.8% (20.9%, 22.7%)	22.5% (20.7%, 24.2%)	16 (19.8%)
	65+	37.0 (15.4)	30 (30, 40)	1 (20.5%)	1 (20.5%)	2 (19.7%)	60 (14.9%)		16.4% (12.4%, 20.4%)	15.7% (13.7%, 17.8%)	15.7% (14.2%, 17.3%)	16.7% (15.6%, 17.7%)	14.9% (13.0%, 16.8%)	60 (14.9%)
Cesarean section														
	All ages	32.5 (9.6)	30 (30, 40)	1 (23.6%)	1 (23.6%)	4 (18.7%)	9 (14.4%)		13.9% (12.5%, 15.3%)	12.5% (11.8%, 13.2%)	12.2% (11.8%, 12.6%)	12.0% (11.9%, 12.2%)		40 (11.6%)
	18-40	32.5 (9.6)	30 (30, 40)	1 (22.0%)	1 (22.0%)	3 (19.1%)	8 (14.7%)		13.7% (12.4%, 15.1%)	12.5% (11.8%, 13.3%)	12.2% (11.9%, 12.6%)	12.0% (11.8%, 12.2%)		40 (11.7%)
	41-64	32.8 (9.4)	30 (30, 40)	3 (44.9%)	7 (23.8%)	9 (18.4%)	12 (14.1%)	33 (9.6%)	16.6% (9.7%, 23.6%)	12.3% (8.8%, 15.7%)	11.9% (10.1%, 13.8%)	12.9% (11.9%, 13.9%)		37 (6.5%)
	65+	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholecystectomy (laparoscopic)														
	All ages	31.6 (10.8)	30 (30, 40)	1 (26.4%)	2 (22.9%)	3 (20.0%)	6 (14.2%)	11 (9.9%)	10.4% (9.4%, 11.4%)	8.6% (8.1%, 9.2%)	8.1% (7.8%, 8.4%)	7.0% (6.8%, 7.2%)		40 (6.5%)
	18-40	32.2 (10.3)	30 (30, 40)	1 (14.5%)	1 (14.5%)	1 (14.5%)	1 (14.5%)	25 (9.9%)	13.4% (10.7%, 16.0%)	12.2% (10.7%, 13.7%)	11.0% (10.2%, 11.7%)	9.1% (8.7%, 9.5%)		40 (8.2%)
	41-64	32.1 (10.7)	30 (30, 40)	1 (21.3%)	1 (21.3%)	2 (18.7%)	4 (14.9%)	9 (9.9%)	9.4% (7.9%, 11.0%)	8.0% (7.1%, 8.9%)	7.7% (7.2%, 8.2%)	7.3% (7.0%, 7.6%)		37 (6.5%)
	65+	30.5 (11.2)	30 (24, 30)	1 (33.6%)	3 (21.8%)	4 (18.0%)	6 (12.8%)	8 (10.0%)	8.4% (7.0%, 9.7%)	6.9% (6.2%, 7.5%)	6.4% (5.9%, 6.9%)	5.0% (4.8%, 5.3%)		40 (4.9%)
Cholecystectomy (nonspecific)														
	All ages	33.7 (15.4)	30 (25, 40)	1 (36.3%)	6 (23.3%)	9 (19.1%)	16 (14.8%)		18.1% (12.0%, 24.2%)	15.1% (11.6%, 18.6%)	14.5% (12.3%, 16.7%)	17.4% (15.7%, 19.0%)		19 (14.5%)
	18-40	35.5 (21.4)	30 (30, 40)	-	-	-	-	-	-	-	-	-	-	-
	41-64	35.0 (14.8)	30 (30, 40)	-	-	-	-	-	-	-	-	-	-	-
	65+	32.5 (14.5)	30 (25, 40)	-	-	-	-	-	-	-	-	-	-	-
Coronary artery bypass graft														
	All ages	46.3 (20.3)	40 (30, 60)	5 (46.3%)	15 (24.8%)	51 (19.8%)			31.4% (26.9%, 35.9%)	24.8% (22.0%, 27.5%)	22.7% (20.8%, 24.6%)	23.7% (22.8%, 24.5%)	19.2% (18.1%, 20.2%)	57 (18.1%)
	18-40	48.4 (20.0)	48 (30, 60)	-	-	-	-	-	-	-	-	-	-	-
	41-64	47.8 (20.2)	45 (30, 60)	7 (48.6%)					38.3% (28.1%, 48.6%)	29.9% (24.1%, 35.7%)	28.1% (24.1%, 32.1%)	31.4% (29.6%, 33.2%)	27.2% (25.2%, 29.2%)	60 (27.2%)
	65+	45.5 (20.2)	40 (30, 50)	3 (46.8%)	12 (24.7%)	20 (19.8%)	51 (14.9%)		27.5% (22.6%, 32.4%)	21.9% (18.9%, 25.0%)	19.8% (17.7%, 21.9%)	19.8% (18.8%, 20.7%)	15.0% (13.8%, 16.2%)	56 (12.8%)
Hip fracture treatment														
	All ages	49.7 (28.4)	40 (30, 60)	9 (49.2%)					48.1% (44.1%, 52.0%)	43.7% (40.3%, 47.1%)	41.0% (38.6%, 43.5%)	39.4% (37.8%, 41.1%)	35.2% (33.4%, 37.0%)	90 (30.2%)
	18-40	63.1 (32.4)	60 (40, 80)	1 (43.4%)					51.4% (36.4%, 66.3%)	54.0% (42.6%, 65.4%)	55.5% (46.0%, 65.0%)	55.6% (50.2%, 61.1%)	55.8% (51.0%, 60.7%)	90 (41.4%)
	41-64	54.0 (28.5)	50 (30, 60)	10 (50.0%)					50.0% (39.9%, 60.1%)	45.3% (37.1%, 53.5%)	43.7% (37.5%, 49.9%)	46.1% (42.4%, 49.8%)	39.3% (35.8%, 42.9%)	66 (37.8%)
	65+	45.0 (26.2)	40 (30, 60)	5 (49.2%)	67 (24.9%)	75 (20.0%)			43.3% (38.9%, 47.8%)	39.2% (35.4%, 43.0%)	36.5% (33.7%, 39.2%)	33.7% (31.8%, 35.5%)	29.6% (27.3%, 31.9%)	81 (18.5%)

Table 4b. Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics by Number of Tablets/Capsules Dispensed of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

		Main independent variable in model: tablets/capsules dispensed													
		Observed ¹		First value with probability of re-fill below:						Modeled ^{2,3}					Value with lowest probability of re-fill
		Mean (SD)	Median (IQR)	50%	25%	20%	15%	10%	10	15	20	20	60		
Surgery	Age group (years)														
Hip replacement															
	All ages	64.0 (27.3)	60 (40, 80)	1 (43.6%)	85 (24.7%)					36.5% (32.7%, 40.4%)	35.3% (32.7%, 37.9%)	35.4% (33.2%, 37.5%)	37.1% (35.9%, 38.3%)	31.3% (30.6%, 32.1%)	95 (21.4%)
	18-40	70.3 (30.3)	60 (50, 90)	-	-	-	-	-	-	-	-	-	-	-	-
	41-64	68.7 (27.5)	60 (50, 90)	4 (49.5%)	91 (24.5%)					42.7% (34.2%, 51.2%)	39.7% (34.3%, 45.1%)	38.5% (34.5%, 42.5%)	39.4% (36.8%, 42.0%)	36.2% (34.7%, 37.6%)	95 (23.2%)
	65+	61.2 (26.7)	60 (40, 80)	1 (35.4%)	76 (24.8%)	93 (19.9%)				32.9% (28.6%, 37.2%)	32.9% (30.0%, 35.8%)	33.5% (31.0%, 35.9%)	35.0% (33.6%, 36.4%)	28.5% (27.5%, 29.4%)	96 (19.7%)
Hysterectomy (laparoscopic)															
	All ages	32.0 (10.2)	30 (30, 40)	1 (35.5%)	4 (23.7%)	6 (18.9%)	9 (14.6%)			13.7% (8.4%, 19.0%)	11.5% (8.8%, 14.3%)	11.5% (10.1%, 12.9%)	11.8% (11.0%, 12.6%)		18 (11.3%)
	18-40	32.0 (10.4)	30 (30, 40)	1 (30.8%)	4 (23.0%)	6 (19.7%)	14 (14.9%)			16.1% (7.8%, 24.5%)	14.8% (10.1%, 19.4%)	15.0% (12.5%, 17.5%)	15.0% (13.4%, 16.6%)		16 (14.7%)
	41-64	32.2 (9.9)	30 (30, 40)	-	-	-	-	-	-	-	-	-	-	-	-
	65+	31.1 (10.3)	30 (30, 30)	-	-	-	-	-	-	-	-	-	-	-	-
Hysterectomy (non-laparoscopic)															
	All ages	32.1 (11.6)	30 (30, 40)	5 (41.3%)	8 (20.3%)	9 (16.8%)	10 (14.3%)			14.3% (9.9%, 18.8%)	10.6% (8.3%, 12.9%)	12.6% (11.2%, 14.0%)	12.2% (11.4%, 13.0%)		15 (10.6%)
	18-40	32.8 (12.2)	30 (30, 40)	-	-	-	-	-	-	-	-	-	-	-	-
	41-64	32.8 (11.2)	30 (30, 40)	2 (39.8%)	5 (20.6%)	6 (17.2%)	7 (14.8%)			11.1% (6.4%, 15.9%)	11.0% (7.9%, 14.2%)	14.3% (11.9%, 16.6%)	12.8% (11.2%, 14.3%)		34 (10.1%)
	65+	30.7 (11.5)	30 (24, 30)	-	-	-	-	-	-	-	-	-	-	-	-
Knee arthroplasty															
	All ages	63.6 (27.6)	60 (40, 80)							65.1% (61.7%, 68.5%)	66.1% (64.0%, 68.2%)	67.1% (65.5%, 68.6%)	68.4% (67.6%, 69.3%)	61.6% (61.0%, 62.2%)	96 (52.1%)
	18-40	61.3 (29.7)	60 (40, 80)	-	-	-	-	-	-	-	-	-	-	-	-
	41-64	66.8 (28.8)	60 (50, 90)							68.4% (61.8%, 75.1%)	71.0% (66.8%, 75.1%)	72.9% (69.9%, 75.9%)	75.2% (73.5%, 76.8%)	70.2% (69.2%, 71.3%)	96 (62.3%)
	65+	62.5 (27.1)	60 (40, 80)	91 (49.6%)						64.1% (60.1%, 68.2%)	64.6% (62.1%, 67.1%)	65.2% (63.4%, 67.0%)	66.1% (65.1%, 67.1%)	58.6% (57.9%, 59.2%)	96 (48.7%)
Laminectomy/discectomy															
	All ages	60.2 (25.5)	60 (40, 75)	1 (41.0%)	19 (24.6%)	33 (19.9%)	77 (15.0%)			30.7% (23.4%, 38.0%)	26.9% (22.4%, 31.4%)	24.1% (20.8%, 27.4%)	20.6% (19.0%, 22.2%)	16.9% (15.8%, 17.9%)	88 (14.4%)
	18-40	61.3 (25.6)	60 (40, 80)	-	-	-	-	-	-	-	-	-	-	-	-
	41-64	61.3 (25.6)	60 (40, 80)	1 (16.9%)	1 (16.9%)	1 (16.9%)				21.4% (10.7%, 32.0%)	22.6% (16.1%, 29.1%)	23.0% (18.4%, 27.6%)	21.8% (19.3%, 24.3%)	15.7% (14.1%, 17.3%)	90 (15.3%)
	65+	58.0 (25.0)	60 (40, 65)	1 (49.3%)	23 (24.3%)	32 (19.8%)	70 (14.9%)			36.8% (27.2%, 46.3%)	31.1% (24.3%, 37.9%)	26.5% (21.3%, 31.8%)	20.5% (18.1%, 23.0%)	18.3% (16.4%, 20.2%)	84 (11.7%)
Spinal fusion (all levels)															
	All ages	66.9 (29.7)	60 (50, 90)	5 (49.0%)						42.7% (35.4%, 50.1%)	38.7% (34.6%, 42.9%)	36.5% (33.7%, 39.2%)	35.1% (33.5%, 36.7%)	33.7% (32.7%, 34.6%)	95 (28.6%)
	18-40	67.8 (32.7)	60 (45, 90)	1 (16.6%)	1 (16.6%)	1 (16.6%)				34.2% (20.3%, 48.0%)	40.6% (31.3%, 49.8%)	43.9% (36.7%, 51.1%)	43.5% (39.2%, 47.8%)	37.4% (34.1%, 40.7%)	1 (16.6%)
	41-64	67.4 (29.7)	60 (50, 90)	4 (49.8%)						41.1% (30.2%, 52.0%)	36.7% (30.5%, 42.9%)	34.3% (30.3%, 38.3%)	33.3% (31.0%, 35.6%)	33.2% (31.7%, 34.6%)	96 (30.5%)
	65+	66.2 (29.1)	60 (48, 90)	8 (49.3%)						46.1% (35.5%, 56.7%)	40.3% (34.3%, 46.3%)	37.0% (32.8%, 41.2%)	35.1% (32.8%, 37.4%)	33.5% (32.1%, 34.9%)	95 (25.7%)
Spinal fusion (1-3 levels)															
	All ages	66.2 (28.9)	60 (46, 90)	9 (49.4%)						47.4% (38.1%, 56.8%)	39.9% (34.8%, 45.1%)	35.6% (32.2%, 38.9%)	32.6% (30.8%, 34.4%)	30.6% (29.5%, 31.7%)	94 (25.2%)
	18-40	68.0 (31.9)	60 (45, 90)	-	-	-	-	-	-	-	-	-	-	-	-
	41-64	66.8 (28.9)	60 (50, 90)	8 (50.0%)						46.2% (32.8%, 59.6%)	39.1% (31.5%, 46.6%)	34.7% (29.9%, 39.4%)	31.2% (28.6%, 33.8%)	29.3% (27.6%, 30.9%)	94 (26.5%)
	65+	65.3 (28.2)	60 (45, 90)	9 (48.2%)	90 (24.7%)					46.1% (34.0%, 58.2%)	38.5% (31.6%, 45.3%)	34.4% (29.7%, 39.1%)	32.7% (30.2%, 35.3%)	31.5% (29.9%, 33.1%)	95 (23.5%)
Spinal fusion (4+ levels)															
	All ages	70.1 (32.1)	60 (50, 90)	1 (28.0%)						37.9% (25.1%, 50.6%)	41.6% (33.7%, 49.5%)	44.0% (38.7%, 49.4%)	45.9% (42.6%, 49.3%)	43.7% (41.7%, 45.8%)	1 (28.0%)
	18-40	70.3 (34.8)	60 (50, 90)	-	-	-	-	-	-	-	-	-	-	-	-
	41-64	70.4 (31.8)	60 (50, 90)	1 (32.1%)						35.4% (17.5%, 53.3%)	37.2% (25.8%, 48.6%)	39.1% (31.0%, 47.3%)	42.6% (37.5%, 47.6%)	46.1% (42.9%, 49.2%)	1 (32.1%)
	65+	69.8 (31.6)	60 (50, 90)	14 (50.0%)						51.9% (34.1%, 69.7%)	49.5% (38.7%, 60.4%)	47.4% (39.9%, 55.0%)	44.1% (39.5%, 48.8%)	39.8% (36.6%, 43.1%)	95 (32.5%)
Tooth extraction															
	All ages	19.7 (6.5)	20 (15, 20)	1 (24.8%)	1 (24.8%)	2 (17.4%)	3 (12.9%)	5 (8.5%)		7.3% (6.9%, 7.7%)	9.3% (9.0%, 9.6%)	8.2% (8.0%, 8.4%)	7.4% (7.0%, 7.8%)		8 (7.0%)
	18-40	20.2 (6.2)	20 (16, 21)	1 (26.1%)	2 (18.8%)	2 (18.8%)	3 (14.2%)	5 (9.6%)		8.2% (7.6%, 8.8%)	10.5% (10.2%, 10.9%)	9.1% (8.8%, 9.3%)	7.9% (7.5%, 8.3%)		8 (7.9%)
	41-64	18.2 (6.8)	20 (15, 20)	1 (16.1%)	1 (16.1%)	1 (16.1%)	2 (11.7%)	3 (9.0%)		5.1% (4.6%, 5.7%)	6.0% (5.5%, 6.4%)	5.7% (5.3%, 6.0%)	6.4% (5.6%, 7.3%)		9 (5.0%)
	65+	18.3 (7.7)	18 (12, 20)	-	-	-	-	-	-	-	-	-	-	-	-

¹Observed tablets/capsules dispensed was evaluated in the overall population of post-surgical opioid initiators. All model estimates were derived after restricting this population to those with the number of tablets/capsules dispensed of no more than the 90th percentile for their given surgery and with 90 or fewer initial days' supply.

²Re-fill probabilities are blank when the probability associated with all tablets/capsules dispensed was greater than the indicated threshold or the number of tablets/capsules of interest were above the 90th percentile for a given surgery.

³Dashes indicate that a model was not run due to lack of sufficient outcome events.

Table 4c. Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics by Morphine Milligram Equivalents of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

		Main independent variable in model: morphine milligram equivalents													
		Observed ¹			First value with probability of re-fill below:					Modeled ^{2,3}					Value with lowest probability of re-fill
		Mean (SD)	Median (IQR)						Estimated probability of re-fill (95% CI) at value of:						
Surgery	Age group (years)			50%	25%	20%	15%	10%	50	100	200	300	400		
All surgeries															
	All ages	264.2 (203.6)	225 (150, 300)	1 (20.3%)	1 (20.3%)	4 (20.0%)				16.8% (16.4%, 17.3%)	16.0% (15.8%, 16.2%)	15.7% (15.5%, 15.8%)	15.8% (15.6%, 15.9%)	16.3% (16.0%, 16.6%)	450 (15.2%)
	18-40	209.4 (122.6)	200 (150, 225)	1 (11.6%)	1 (11.6%)	1 (11.6%)	1 (11.6%)			11.6% (11.0%, 12.1%)	11.4% (11.1%, 11.6%)	10.8% (10.5%, 11.0%)	11.5% (11.3%, 11.8%)	11.9% (11.5%, 12.4%)	191 (10.7%)
	41-64	293.0 (245.0)	225 (150, 375)	1 (20.7%)	1 (20.7%)	6 (19.9%)				16.0% (15.2%, 16.8%)	15.8% (15.4%, 16.3%)	17.1% (16.8%, 17.4%)	17.2% (16.9%, 17.6%)	18.0% (17.4%, 18.5%)	76 (15.6%)
	65+	346.8 (249.6)	300 (160, 450)	1 (41.6%)	427 (25.0%)					31.1% (29.9%, 32.3%)	27.7% (27.0%, 28.5%)	27.1% (26.8%, 27.5%)	25.6% (25.2%, 26.0%)	25.6% (25.1%, 26.2%)	450 (23.9%)
Appendectomy (laparoscopic)															
	All ages	208.6 (103.6)	200 (150, 225)	1 (19.5%)	1 (19.5%)	1 (19.5%)	15 (14.8%)	43 (9.9%)		9.3% (7.7%, 10.8%)	7.4% (6.8%, 8.0%)	7.1% (6.6%, 7.7%)	7.8% (7.1%, 8.5%)		204 (7.1%)
	18-40	209.9 (103.5)	200 (150, 225)	1 (17.0%)	1 (17.0%)	1 (17.0%)	10 (14.9%)	48 (10.0%)		9.8% (7.9%, 11.7%)	8.0% (7.2%, 8.8%)	7.3% (6.6%, 8.1%)	7.9% (6.9%, 8.8%)		216 (7.3%)
	41-64	212.5 (106.2)	200 (150, 225)	1 (15.5%)	1 (15.5%)	1 (15.5%)	4 (14.8%)	32 (10.0%)		8.5% (5.7%, 11.2%)	7.2% (6.2%, 8.3%)	7.8% (6.7%, 8.9%)	8.2% (7.0%, 9.4%)		99 (7.2%)
	65+	191.3 (94.2)	150 (150, 225)												
Appendectomy (nonspecific)															
	All ages	219.5 (124.9)	200 (150, 250)	1 (39.3%)	30 (24.8%)	47 (19.8%)	77 (14.9%)			19.1% (13.5%, 24.8%)	13.2% (11.2%, 15.1%)	14.3% (12.3%, 16.3%)	17.6% (15.2%, 19.9%)		130 (12.5%)
	18-40	221.1 (130.3)	200 (150, 250)	-	-	-	-	-		-	-	-	-	-	-
	41-64	227.0 (127.0)	200 (150, 300)	-	-	-	-	-		-	-	-	-	-	-
	65+	202.8 (107.6)	175 (150, 225)	-	-	-	-	-		-	-	-	-	-	-
Bunionectomy															
	All ages	280.9 (174.2)	225 (150, 338)	1 (40.0%)	35 (24.9%)	65 (19.9%)				21.8% (18.7%, 24.9%)	18.8% (17.5%, 20.0%)	21.2% (20.5%, 21.9%)	23.6% (22.7%, 24.5%)	26.7% (25.0%, 28.5%)	96 (18.7%)
	18-40	289.8 (178.3)	225 (150, 350)	1 (50.0%)						32.6% (23.9%, 41.4%)	29.1% (25.6%, 32.7%)	29.4% (27.4%, 31.4%)	31.1% (28.6%, 33.5%)	39.8% (35.3%, 44.3%)	241 (28.8%)
	41-64	289.6 (180.3)	225 (150, 338)	1 (37.5%)	29 (24.7%)	52 (19.9%)				20.2% (16.4%, 24.0%)	17.8% (16.2%, 19.5%)	21.6% (20.6%, 22.6%)	24.4% (23.1%, 25.7%)	25.9% (23.5%, 28.2%)	90 (17.7%)
	65+	261.3 (159.3)	225 (150, 300)	1 (30.4%)	14 (24.8%)	31 (20.0%)	80 (15.0%)			16.9% (12.9%, 20.9%)	14.9% (13.1%, 16.6%)	16.1% (15.0%, 17.3%)	18.5% (16.9%, 20.1%)	21.6% (18.4%, 24.8%)	94 (14.8%)
Cesarean section															
	All ages	234.5 (103.4)	225 (150, 300)	1 (17.0%)	1 (17.0%)	1 (17.0%)	32 (15.0%)			14.0% (12.4%, 15.6%)	12.1% (11.6%, 12.7%)	11.8% (11.5%, 12.1%)	12.4% (12.1%, 12.8%)		153 (11.4%)
	18-40	234.5 (103.4)	225 (150, 300)	1 (16.4%)	1 (16.4%)	1 (16.4%)	27 (15.0%)			13.9% (12.3%, 15.5%)	12.1% (11.6%, 12.6%)	11.7% (11.5%, 12.0%)	12.5% (12.2%, 12.8%)		153 (11.4%)
	41-64	237.0 (103.4)	225 (150, 300)	1 (32.6%)	21 (24.9%)	40 (20.0%)	74 (15.0%)			18.1% (10.2%, 26.1%)	13.1% (10.4%, 15.7%)	12.7% (11.1%, 14.3%)	11.4% (9.8%, 13.0%)		300 (11.4%)
	65+	-	-	-	-	-	-	-		-	-	-	-	-	-
Cholecystectomy (laparoscopic)															
	All ages	210.3 (112.9)	200 (150, 225)	1 (21.6%)	1 (21.6%)	5 (19.9%)	21 (15.0%)	56 (9.9%)		10.4% (9.4%, 11.5%)	8.1% (7.7%, 8.5%)	6.6% (6.3%, 6.9%)	6.7% (6.3%, 7.1%)		279 (6.1%)
	18-40	218.2 (109.7)	200 (150, 250)	1 (16.3%)	1 (16.3%)	1 (16.3%)	17 (14.9%)	134 (10.0%)		13.0% (10.1%, 16.0%)	11.2% (10.2%, 12.1%)	8.3% (7.6%, 9.1%)	8.5% (7.7%, 9.3%)		278 (7.3%)
	41-64	218.2 (124.1)	200 (150, 250)	1 (19.4%)	1 (19.4%)	1 (19.4%)	15 (14.9%)	47 (9.9%)		9.7% (8.1%, 11.3%)	7.9% (7.3%, 8.5%)	6.9% (6.4%, 7.4%)	6.8% (6.2%, 7.4%)		280 (6.2%)
	65+	194.3 (98.5)	150 (150, 225)	1 (19.1%)	1 (19.1%)	1 (19.1%)	14 (14.9%)	40 (10.0%)		8.8% (7.6%, 10.1%)	6.1% (5.6%, 6.5%)	5.0% (4.6%, 5.4%)	5.3% (4.6%, 6.0%)		205 (5.0%)
Cholecystectomy (nonspecific)															
	All ages	232.3 (143.7)	210 (150, 300)	1 (41.6%)	24 (24.9%)	37 (19.7%)	61 (14.9%)			16.6% (11.1%, 22.0%)	13.7% (11.3%, 16.1%)	18.9% (15.8%, 21.9%)	18.5% (15.8%, 21.2%)	19.8% (11.7%, 27.8%)	89 (13.5%)
	18-40	255.3 (201.2)	225 (150, 300)	-	-	-	-	-		-	-	-	-	-	-
	41-64	250.4 (154.5)	225 (150, 300)	-	-	-	-	-		-	-	-	-	-	-
	65+	217.2 (121.5)	200 (150, 250)	-	-	-	-	-		-	-	-	-	-	-
Coronary artery bypass graft															
	All ages	306.4 (191.8)	250 (200, 375)	17 (49.7%)	74 (24.8%)	381 (20.0%)				30.9% (26.2%, 35.7%)	22.4% (20.5%, 24.2%)	23.8% (22.8%, 24.8%)	21.0% (20.0%, 22.0%)	19.4% (18.0%, 20.9%)	441 (18.8%)
	18-40	346.6 (208.1)	300 (225, 450)	-	-	-	-	-		-	-	-	-	-	-
	41-64	335.1 (212.8)	300 (200, 375)	29 (49.7%)						38.1% (27.1%, 49.2%)	28.1% (24.1%, 32.1%)	31.7% (29.6%, 33.8%)	28.6% (26.9%, 30.4%)	29.0% (26.0%, 32.0%)	268 (27.8%)
	65+	292.3 (179.0)	250 (200, 375)	12 (49.9%)	55 (24.9%)	83 (20.0%)	402 (15.0%)			26.5% (21.3%, 31.6%)	19.1% (16.8%, 21.3%)	19.5% (18.5%, 20.5%)	17.0% (15.9%, 18.1%)	15.0% (13.4%, 16.7%)	480 (13.2%)
Hip fracture treatment															
	All ages	355.3 (258.1)	300 (175, 450)	39 (49.9%)						47.4% (43.3%, 51.4%)	40.6% (37.8%, 43.5%)	38.0% (36.3%, 39.7%)	37.1% (35.2%, 38.9%)	35.1% (33.3%, 37.0%)	675 (31.5%)
	18-40	520.0 (325.7)	450 (300, 675)	1 (32.6%)						45.1% (25.5%, 64.8%)	51.6% (41.6%, 61.7%)	52.0% (46.1%, 57.9%)	49.9% (44.2%, 55.6%)	54.9% (48.1%, 61.6%)	1 (32.6%)
	41-64	412.8 (265.3)	375 (225, 500)	58 (50.0%)						51.9% (40.8%, 63.0%)	44.2% (37.7%, 50.8%)	46.6% (42.5%, 50.7%)	43.8% (40.0%, 47.6%)	39.1% (35.7%, 42.6%)	416 (39.0%)
	65+	296.4 (214.1)	225 (150, 375)	21 (49.7%)	585 (25.0%)					42.4% (37.5%, 47.3%)	36.0% (32.9%, 39.0%)	32.2% (30.3%, 34.1%)	32.0% (29.9%, 34.0%)	31.2% (28.5%, 33.8%)	675 (23.2%)
Hip replacement															
	All ages	473.5 (265.8)	450 (300, 600)	1 (34.3%)	676 (25.0%)					35.2% (30.9%, 39.6%)	36.1% (34.0%, 38.2%)	36.6% (35.5%, 37.8%)	34.4% (33.4%, 35.4%)	30.4% (29.3%, 31.5%)	723 (24.3%)
	18-40	547.2 (295.2)	450 (338, 675)	-	-	-	-	-		-	-	-	-	-	-
	41-64	531.2 (282.9)	450 (315, 675)	1 (49.0%)						41.2% (30.8%, 51.6%)	37.8% (32.9%, 42.6%)	38.4% (36.0%, 40.8%)	40.1% (38.2%, 42.0%)	36.0% (34.6%, 37.4%)	708 (26.3%)

Table 4c. Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics by Morphine Milligram Equivalents of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Surgery and Age Group

Main independent variable in model: morphine milligram equivalents														
		Observed ¹		First value with probability of re-fill below:					Modeled ^{2,3}					Value with lowest probability of re-fill
		Mean (SD)	Median (IQR)						Estimated probability of re-fill (95% CI) at value of:					
Surgery	Age group (years)			50%	25%	20%	15%	10%	50	100	200	300	400	
	65+	439.1 (248.4)	400 (270, 600)	1 (30.1%)	614 (25.0%)				32.3% (27.5%, 37.1%)	34.0% (31.5%, 36.4%)	34.8% (33.5%, 36.1%)	31.2% (30.1%, 32.2%)	27.6% (26.3%, 28.8%)	750 (21.8%)
Hysterectomy (laparoscopic)														
	All ages	229.8 (114.1)	225 (150, 263)	1 (34.0%)	15 (24.8%)	26 (19.9%)	44 (14.9%)		13.8% (7.9%, 19.8%)	10.4% (8.5%, 12.3%)	11.7% (10.7%, 12.6%)	14.0% (12.2%, 15.7%)		106 (10.4%)
	18-40	233.6 (118.2)	225 (150, 270)	9 (48.9%)	34 (24.9%)	44 (20.0%)	63 (14.9%)		17.9% (8.5%, 27.3%)	12.9% (9.6%, 16.1%)	14.4% (12.7%, 16.1%)	19.5% (16.2%, 22.7%)		94 (12.8%)
	41-64	232.1 (114.6)	225 (150, 280)	-	-	-	-		-	-	-	-	-	-
	65+	211.5 (98.5)	200 (150, 225)	-	-	-	-		-	-	-	-	-	-
Hysterectomy (non-laparoscopic)														
	All ages	227.6 (130.2)	225 (150, 263)	21 (49.2%)	41 (24.5%)	48 (19.8%)	59 (14.9%)		18.7% (13.7%, 23.6%)	10.1% (8.5%, 11.7%)	11.9% (10.2%, 13.7%)	13.4% (11.7%, 15.0%)		99 (10.1%)
	18-40	244.2 (155.2)	225 (150, 300)	-	-	-	-		-	-	-	-	-	-
	41-64	238.6 (131.1)	225 (150, 300)	4 (48.9%)	29 (24.7%)	38 (19.9%)	53 (15.0%)		15.7% (9.4%, 22.1%)	10.9% (8.5%, 13.3%)	15.3% (13.5%, 17.2%)	12.7% (10.4%, 15.1%)		97 (10.9%)
	65+	203.6 (105.4)	188 (150, 225)	-	-	-	-		-	-	-	-	-	-
Knee arthroplasty														
	All ages	493.5 (281.0)	450 (300, 600)	-	-	-	-		64.3% (60.2%, 68.4%)	66.3% (64.6%, 68.1%)	66.8% (66.0%, 67.6%)	64.9% (64.2%, 65.5%)	62.9% (62.3%, 63.4%)	838 (54.2%)
	18-40	508.0 (320.6)	450 (300, 600)	-	-	-	-		-	-	-	-	-	-
	41-64	546.0 (305.0)	450 (320, 675)	-	-	-	-		64.7% (55.8%, 73.6%)	70.8% (66.9%, 74.7%)	74.5% (72.8%, 76.1%)	73.2% (71.9%, 74.5%)	71.7% (70.7%, 72.8%)	1 (54.0%)
	65+	474.3 (269.0)	450 (300, 600)	-	-	-	-		64.0% (59.3%, 68.7%)	64.8% (62.7%, 66.8%)	64.1% (63.2%, 65.0%)	62.0% (61.2%, 62.7%)	59.8% (59.1%, 60.4%)	837 (50.5%)
Laminectomy/discectomy														
	All ages	459.2 (264.2)	450 (300, 600)	1 (36.8%)	104 (25.0%)	187 (20.0%)	651 (15.0%)		30.2% (22.0%, 38.5%)	25.3% (21.8%, 28.8%)	19.4% (17.9%, 20.9%)	16.8% (15.6%, 18.1%)	16.5% (14.9%, 18.1%)	684 (14.8%)
	18-40	477.2 (279.4)	450 (300, 600)	-	-	-	-		-	-	-	-	-	-
	41-64	476.9 (270.0)	450 (300, 600)	1 (27.5%)	56 (25.0%)	199 (20.0%)	337 (15.0%)		25.2% (15.8%, 34.6%)	23.3% (18.9%, 27.7%)	19.9% (17.6%, 22.2%)	16.4% (14.4%, 18.3%)	14.1% (11.7%, 16.4%)	389 (14.0%)
	65+	425.1 (242.5)	375 (250, 525)	1 (47.6%)	120 (24.9%)	192 (20.0%)	604 (15.0%)		35.2% (24.7%, 45.6%)	27.1% (21.6%, 32.7%)	19.6% (17.2%, 22.0%)	17.2% (15.3%, 19.2%)	17.7% (15.2%, 20.3%)	714 (12.9%)
Spinal fusion (all levels)														
	All ages	66.9 (29.7)	60 (50, 90)	1 (42.7%)					37.6% (30.0%, 45.2%)	34.7% (31.6%, 37.9%)	33.2% (31.8%, 34.7%)	33.6% (32.3%, 34.8%)	32.8% (31.8%, 33.8%)	807 (30.0%)
	18-40	67.8 (32.7)	60 (45, 90)	1 (29.9%)					34.6% (20.9%, 48.4%)	37.7% (30.7%, 44.8%)	39.5% (35.0%, 43.9%)	37.9% (33.8%, 42.0%)	36.3% (32.9%, 39.7%)	1 (29.9%)
	41-64	67.4 (29.7)	60 (50, 90)	1 (48.0%)					37.6% (26.2%, 48.9%)	32.3% (27.8%, 36.9%)	31.2% (29.1%, 33.4%)	33.7% (31.8%, 35.6%)	32.6% (31.2%, 34.1%)	798 (30.2%)
	65+	66.2 (29.1)	60 (48, 90)	1 (39.3%)					37.7% (27.4%, 48.1%)	36.3% (31.9%, 40.7%)	34.0% (31.9%, 36.1%)	32.6% (30.8%, 34.3%)	32.3% (30.9%, 33.8%)	830 (27.9%)
Spinal fusion (1-3 levels)														
	All ages	66.2 (28.9)	60 (46, 90)	1 (41.6%)					36.6% (27.6%, 45.7%)	33.6% (29.8%, 37.3%)	31.2% (29.5%, 32.9%)	30.8% (29.4%, 32.2%)	30.2% (29.0%, 31.3%)	803 (27.4%)
	18-40	68.0 (31.9)	60 (45, 90)	-	-	-	-		-	-	-	-	-	-
	41-64	66.8 (28.9)	60 (50, 90)	1 (43.9%)					36.0% (21.6%, 50.3%)	31.5% (25.9%, 37.2%)	29.3% (26.8%, 31.8%)	30.2% (28.1%, 32.3%)	29.8% (28.1%, 31.5%)	786 (27.0%)
	65+	65.3 (28.2)	60 (45, 90)	1 (36.2%)					35.1% (23.7%, 46.5%)	34.1% (29.2%, 39.0%)	32.4% (30.0%, 34.8%)	31.1% (29.1%, 33.1%)	30.4% (28.8%, 32.0%)	827 (26.3%)
Spinal fusion (4+ levels)														
	All ages	70.1 (32.1)	60 (50, 90)	1 (45.8%)					44.5% (31.2%, 57.7%)	43.4% (37.4%, 49.3%)	42.0% (38.8%, 45.2%)	41.7% (39.1%, 44.4%)	42.4% (40.3%, 44.4%)	1000 (38.5%)
	18-40	70.3 (34.8)	60 (50, 90)	-	-	-	-		-	-	-	-	-	-
	41-64	70.4 (31.8)	60 (50, 90)	23 (49.9%)					44.4% (24.6%, 64.2%)	38.9% (29.9%, 48.0%)	39.4% (34.6%, 44.3%)	44.3% (40.2%, 48.3%)	43.8% (40.7%, 46.9%)	1000 (30.6%)
	65+	69.8 (31.6)	60 (50, 90)	79 (49.9%)					53.6% (37.2%, 70.1%)	47.5% (39.7%, 55.4%)	39.7% (35.3%, 44.0%)	37.3% (33.4%, 41.2%)	39.1% (35.9%, 42.3%)	852 (32.2%)
Tooth extraction														
	All ages	129.1 (65.0)	113 (90, 150)	1 (10.5%)	1 (10.5%)	1 (10.5%)	1 (10.5%)	4 (9.9%)	7.5% (7.1%, 8.0%)	8.4% (8.2%, 8.6%)	8.3% (7.8%, 8.9%)			38 (7.4%)
	18-40	134.0 (63.0)	120 (100, 150)	1 (11.4%)	1 (11.4%)	1 (11.4%)	1 (11.4%)	11 (9.9%)	8.8% (8.2%, 9.4%)	9.3% (9.1%, 9.6%)	9.1% (8.4%, 9.7%)			38 (8.7%)
	41-64	116.7 (68.4)	100 (75, 150)	1 (14.2%)	1 (14.2%)	1 (14.2%)	1 (14.2%)	8 (9.9%)	4.8% (4.3%, 5.4%)	5.7% (5.3%, 6.0%)	6.5% (5.4%, 7.6%)			45 (4.8%)
	65+	112.3 (67.8)	100 (75, 135)	-	-	-	-	-	-	-	-	-	-	-

¹Observed morphine milligram equivalents (MME) was evaluated in the overall population of post-surgical opioid initiators. All model estimates were derived after restricting this population to those with MME of no more than the 90th percentile for their given surgery and with 90 or fewer initial days' supply.

²Re-fill probabilities are blank when the probability associated with all MME was greater than the indicated threshold or the MME values of interest were above the 90th percentile for a given surgery.

³Dashes indicate that a model was not run due to lack of sufficient outcome events.

Table 5. Model Diagnostics for the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery Age group (years)	Independent variable: days' supply ¹					Independent variable: tablets/capsules dispensed					Independent variable: morphine milligram equivalents				
	Model discrimination		Hosmer-Lemeshow test			Model discrimination		Hosmer-Lemeshow test			Model discrimination		Hosmer-Lemeshow test		
	AIC ²	C-statistic	Chi-square	DF ³	P-value	AIC	C-statistic	Chi-square	DF	P-value	AIC	C-statistic	Chi-square	DF	P-value
All surgeries															
All ages	678,037.4	0.763	81.3	8	<.0001	646,660.5	0.752	117.3	8	<.0001	623,968.6	0.745	110.3	8	<.0001
18-40	314,458.1	0.623	17.6	8	0.0244	315,629.6	0.615	26.2	8	0.001	309,403.4	0.612	36.8	8	<.0001
41-64	174,491.8	0.8	32.7	8	<.0001	160,072.3	0.792	15.5	8	0.0502	150,748.4	0.785	13	8	0.1123
65+	186,825.8	0.81	13.7	8	0.0893	168,727.2	0.814	7	8	0.5322	161,556.7	0.811	11.8	8	0.1581
Appendectomy (laparoscopic)															
All ages	25,784.5	0.599	10.8	8	0.2148	25,089.3	0.595	10.3	8	0.2467	25,428.1	0.596	8.6	8	0.3738
18-40	14,920.7	0.602	11.8	8	0.1617	14,417.5	0.597	12.3	8	0.137	14,602.6	0.597	9.5	8	0.3025
41-64	8,415.7	0.604	12.2	8	0.1428	8,235.3	0.602	10.2	8	0.2514	8,290.4	0.604	10.8	8	0.2119
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Appendectomy (nonspecific)															
All ages	5,825.2	0.62	6.6	8	0.5803	6,031.1	0.62	15.7	8	0.0467	5,687.7	0.62	12.8	8	0.1188
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bunionectomy															
All ages	40,218.6	0.601	16.9	8	0.0311	42,812.7	0.603	5.3	8	0.7227	39,695.9	0.608	7.8	8	0.457
18-40	8,009.9	0.583	5.3	8	0.7251	8,504.5	0.58	8.7	8	0.3666	7,817.7	0.59	5	8	0.7542
41-64	21,441.9	0.575	8.8	8	0.3563	22,675.7	0.579	6.7	8	0.5645	20,826.1	0.584	4.7	8	0.7936
65+	10,538.5	0.564	8.3	8	0.4054	11,402.1	0.568	6.2	8	0.6208	10,819.3	0.573	4.7	8	0.7894
Cesarean section															
All ages	165,270.5	0.585	13.7	8	0.0888	164,801.6	0.578	15.9	8	0.0439	161,336.4	0.58	15.9	8	0.0436
18-40	159,027.4	0.586	11.9	8	0.1571	158,595.9	0.579	21.4	8	0.0062	155,226.4	0.581	15.4	8	0.0521
41-64	6,143.8	0.592	7.8	8	0.4568	6,107.8	0.582	7.3	8	0.5087	6,014.5	0.576	7.4	8	0.4906
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholecystectomy (laparoscopic)															
All ages	69,418.9	0.613	7.6	8	0.4746	68,648.3	0.611	7.7	8	0.4668	68,609.8	0.611	9.8	8	0.2788
18-40	21,972.9	0.61	8.1	8	0.421	21,506.8	0.604	5.3	8	0.7243	21,362.4	0.604	10.2	8	0.2529
41-64	28,667.3	0.593	13.4	8	0.0991	27,914.8	0.593	10.5	8	0.2329	27,726.4	0.595	14.1	8	0.0797
65+	18,457.7	0.6	14.2	8	0.0769	18,930.6	0.596	19.8	8	0.0113	19,229.6	0.595	20.9	8	0.0075
Cholecystectomy (nonspecific)															
All ages	3,848.9	0.628	5.1	8	0.7486	3,878.8	0.629	3	8	0.9326	3,828.2	0.634	6.3	8	0.6096
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 5. Model Diagnostics for the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery Age group (years)	Independent variable: days' supply ¹					Independent variable: tablets/capsules dispensed					Independent variable: morphine milligram equivalents				
	Model discrimination		Hosmer-Lemeshow test			Model discrimination		Hosmer-Lemeshow test			Model discrimination		Hosmer-Lemeshow test		
	AIC ²	C-statistic	Chi-square	DF ³	P-value	AIC	C-statistic	Chi-square	DF	P-value	AIC	C-statistic	Chi-square	DF	P-value
Coronary artery bypass graft															
All ages	30,827.3	0.623	12.2	8	0.1442	30,549.2	0.622	5.9	8	0.6618	30,245.8	0.62	2.9	8	0.9423
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	11,542.9	0.591	7.2	8	0.5102	11,253.8	0.587	7.2	8	0.5143	10,916.7	0.586	4.6	8	0.7988
65+	18,813.6	0.584	8.3	8	0.4021	18,831.3	0.584	7.8	8	0.4534	18,886.1	0.583	9.1	8	0.3358
Hip fracture treatment															
All ages	14,384.1	0.615	3.4	8	0.9082	14,197.5	0.612	10.3	8	0.2431	13,995.3	0.605	3.7	8	0.8808
18-40	2,003.0	0.621	13.6	8	0.094	1,813.8	0.623	8.3	8	0.4023	1,696.0	0.619	7	8	0.54
41-64	3,756.2	0.596	9.3	8	0.3163	3,591.9	0.601	13.8	8	0.088	3,456.6	0.602	2.3	8	0.9692
65+	8,463.1	0.577	5.9	8	0.6556	8,609.2	0.578	2.5	8	0.961	8,675.7	0.569	5.1	8	0.7486
Hip replacement															
All ages	47,027.7	0.6	5	8	0.7586	49,366.6	0.606	11.6	8	0.169	46,965.9	0.593	18.7	8	0.0164
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	17,153.3	0.599	6.8	8	0.5624	17,803.8	0.604	7.5	8	0.4818	16,456.1	0.591	15.3	8	0.0538
65+	28,815.6	0.596	12	8	0.1522	30,461.9	0.602	5.5	8	0.7085	29,472.8	0.586	6.5	8	0.5886
Hysterectomy (laparoscopic)															
All ages	7,481.3	0.622	7.5	8	0.4816	7,430.2	0.625	3.6	8	0.8882	7,394.2	0.624	16.9	8	0.0316
18-40	3,307.8	0.608	7.9	8	0.4431	3,278.7	0.611	4.1	8	0.8448	3,207.1	0.616	3	8	0.936
41-64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hysterectomy (non-laparoscopic)															
All ages	7,500.7	0.668	9.2	8	0.3243	7,403.0	0.67	7.3	8	0.5048	7,318.5	0.673	9.5	8	0.3025
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	3,326.5	0.635	8.5	8	0.3869	3,245.7	0.64	4.2	8	0.8402	3,196.3	0.648	7.8	8	0.4511
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Knee arthroplasty															
All ages	108,769.7	0.597	8.5	8	0.3883	114,057.6	0.599	9.2	8	0.3292	113,798.8	0.59	7.9	8	0.4403
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	26,836.0	0.583	9.5	8	0.3019	27,675.9	0.585	6.7	8	0.5742	27,249.3	0.576	13.9	8	0.0857
65+	81,377.8	0.581	13.4	8	0.0998	85,811.5	0.581	8.4	8	0.3918	85,982.1	0.57	12.2	8	0.1432
Laminectomy/discectomy															
All ages	11,916.6	0.586	10.1	8	0.261	11,538.9	0.59	9.5	8	0.3033	11,339.2	0.584	3.2	8	0.9179
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	4,944.4	0.615	12.8	8	0.1175	4,783.1	0.617	10.6	8	0.2249	4,639.6	0.618	6.9	8	0.5471
65+	4,123.9	0.588	9.5	8	0.3053	4,016.2	0.602	3.7	8	0.8812	4,028.2	0.594	8	8	0.4317

Table 5. Model Diagnostics for the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

	Independent variable: days' supply ¹					Independent variable: tablets/capsules dispensed					Independent variable: morphine milligram equivalents				
	Model discrimination		Hosmer-Lemeshow test			Model discrimination		Hosmer-Lemeshow test			Model discrimination		Hosmer-Lemeshow test		
	AIC ²	C-statistic	Chi-square	DF ³	P-value	AIC	C-statistic	Chi-square	DF	P-value	AIC	C-statistic	Chi-square	DF	P-value
Surgery															
Age group (years)															
Spinal fusion (all levels)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All ages	33,703.7	0.595	9	8	0.3382	33,708.7	0.592	2.4	8	0.9678	33,387.0	0.586	6.8	8	0.5625
18-40	3,267.8	0.637	3.9	8	0.869	3,216.1	0.63	7.1	8	0.5305	3,175.9	0.634	3.4	8	0.9042
41-64	14,990.9	0.608	11	8	0.202	14,872.8	0.609	3.6	8	0.8927	14,607.0	0.605	4.1	8	0.8496
65+	15,240.1	0.579	3.9	8	0.8644	15,400.0	0.577	8.2	8	0.4179	15,392.0	0.565	10.1	8	0.261
Spinal fusion (1-3 levels)															
All ages	23,419.8	0.586	10.2	8	0.253	23,469.0	0.585	5.6	8	0.6867	23,300.3	0.577	9.9	8	0.2719
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	10,330.3	0.599	9.3	8	0.3148	10,240.2	0.603	5.8	8	0.6698	10,089.2	0.597	7.1	8	0.5261
65+	10,947.4	0.579	2.3	8	0.9705	11,090.8	0.577	10.9	8	0.208	11,101.9	0.564	12.9	8	0.1136
Spinal fusion (4+ levels)															
All ages	8,630.5	0.603	6.3	8	0.6123	8,562.7	0.6	3.2	8	0.9201	8,610.4	0.592	9.3	8	0.3187
18-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41-64	3,910.4	0.609	10.6	8	0.2226	3,867.9	0.611	9	8	0.3414	3,860.7	0.599	13.2	8	0.1061
65+	3,576.7	0.596	9.1	8	0.332	3,586.7	0.592	4.2	8	0.8394	3,628.8	0.583	9.5	8	0.3051
Tooth extraction															
All ages	96,120.0	0.607	29.9	8	0.0002	99,505.2	0.604	29.5	8	0.0003	97,084.4	0.603	34.4	8	<.0001
18-40	75,387.2	0.595	5.2	8	0.7329	77,791.3	0.592	16.2	8	0.04	75,908.6	0.589	11.9	8	0.157
41-64	18,724.7	0.58	508.6	8	<.0001	19,566.1	0.577	477.4	8	<.0001	19,094.2	0.581	444.1	8	<.0001
65+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

¹Dashes indicate that a model was not run due to lack of sufficient outcome events.

²AIC: Akaike information criterion

³DF: Degrees of freedom

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
All surgeries	All Age Groups	Sex	1	47.65	<.0001	1	37.85	<.0001	1	43.78	<.0001
		Age Group	2	2,483.66	<.0001	2	2,329.50	<.0001	2	2,218.02	<.0001
		Baseline Medications	1	1,350.04	<.0001	1	1,352.02	<.0001	1	1,284.25	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	136.26	<.0001	4	135.47	<.0001	4	128.05	<.0001
		Data Partner	16	957.45	<.0001	16	816.02	<.0001	16	827.38	<.0001
		Independent Variable	5	1,526.70	<.0001	6	299.1	<.0001	6	77.02	<.0001
		Year	6	474.03	<.0001	6	592.4	<.0001	6	728.35	<.0001
		Schedule	1	947.17	<.0001	1	664.57	<.0001	1	467.81	<.0001
		Surgery	16	65,282.81	<.0001	16	53,371.28	<.0001	16	48,983.12	<.0001
		Length of Stay	3	593.54	<.0001	3	506.7	<.0001	3	447.43	<.0001
	18-40	Sex	1	33.43	<.0001	1	34.1	<.0001	1	37.02	<.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	657.95	<.0001	1	669.1	<.0001	1	653.98	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	151.67	<.0001	4	144.47	<.0001	4	145.99	<.0001
		Data Partner	16	754.48	<.0001	16	790.29	<.0001	16	771.65	<.0001
		Independent Variable	6	734.74	<.0001	5	89.03	<.0001	6	39.98	<.0001
		Year	6	301.22	<.0001	6	361.21	<.0001	6	378.27	<.0001
		Schedule	1	948.04	<.0001	1	839.5	<.0001	1	721.95	<.0001
		Surgery	16	7,676.05	<.0001	16	5,977.05	<.0001	16	5,007.15	<.0001
		Length of Stay	3	71.36	<.0001	3	59.96	<.0001	3	47.9	<.0001
	41-64	Sex	1	2.5	0.1136	1	1.83	0.1761	1	2.29	0.1305
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	512.85	<.0001	1	531.4	<.0001	1	504.48	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	27.61	<.0001	4	20.93	0.0003	4	19.77	0.0006
		Data Partner	16	216.18	<.0001	16	156.57	<.0001	16	158.11	<.0001
		Independent Variable	6	230.52	<.0001	6	65.44	<.0001	6	42.88	<.0001
		Year	6	125.84	<.0001	6	148.64	<.0001	6	172.1	<.0001
		Schedule	1	99.27	<.0001	1	63.55	<.0001	1	58.37	<.0001
		Surgery	16	22,867.98	<.0001	16	17,668.20	<.0001	16	16,043.77	<.0001
		Length of Stay	3	224.28	<.0001	3	192.53	<.0001	3	181.47	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Surgery	65+	Sex	1	25.6	<.0001	1	15.3	<.0001	1	15.13	0.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	281.64	<.0001	1	257.87	<.0001	1	235.69	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	58.81	<.0001	4	61.81	<.0001	4	56.16	<.0001
		Data Partner	15	161.39	<.0001	15	60.73	<.0001	15	75.03	<.0001
		Independent Variable	6	761.4	<.0001	6	317.62	<.0001	6	201.52	<.0001
		Year	6	74.23	<.0001	6	108.97	<.0001	6	194.52	<.0001
		Schedule	1	127.64	<.0001	1	30.36	<.0001	1	0.26	0.6108
		Surgery	15	22,184.67	<.0001	15	19,577.24	<.0001	15	18,580.31	<.0001
		Length of Stay	3	278.14	<.0001	3	252.85	<.0001	3	224.6	<.0001
Appendectomy (laparoscopic)	All Age Groups	Sex	1	1.73	0.1878	1	3.43	0.0638	1	3.05	0.0808
		Age Group	2	55.66	<.0001	2	59.21	<.0001	2	56.31	<.0001
		Baseline Medications	1	100.18	<.0001	1	97.44	<.0001	1	104.63	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	3.81	0.4325	4	3.52	0.4742	4	4.09	0.3945
		Data Partner	16	56.88	<.0001	16	42.91	0.0003	16	40.25	0.0007
		Independent Variable	6	38.69	<.0001	5	15.15	0.0098	6	9.99	0.125
		Year	6	25.26	0.0003	6	30.56	<.0001	6	34.88	<.0001
		Schedule	1	76.44	<.0001	1	61.88	<.0001	1	51.2	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	78.78	<.0001	3	67.47	<.0001	3	71.39	<.0001
	18-40	Sex	1	1.62	0.2038	1	3.42	0.0644	1	3.28	0.0702
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	72.36	<.0001	1	75.86	<.0001	1	81.85	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	2.1	0.7176	4	2.53	0.639	4	1.51	0.8246
		Data Partner	16	33.48	0.0064	16	23.72	0.0958	16	19.54	0.2415
		Independent Variable	6	42.72	<.0001	5	18.03	0.0029	6	8.25	0.2203
		Year	6	26.9	0.0002	6	31.44	<.0001	6	37.54	<.0001
		Schedule	1	45.45	<.0001	1	36.14	<.0001	1	25.2	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	30.32	<.0001	3	28.78	<.0001	3	27.51	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	41-64	Sex	1	1.28	0.2582	1	1.95	0.1626	1	1.39	0.2385
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	41.99	<.0001	1	35.77	<.0001	1	40.17	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	2.35	0.6718	4	3.09	0.5434	4	2.74	0.6023
		Data Partner	16	32.93	0.0076	16	29.22	0.0225	16	33.1	0.0072
		Independent Variable	6	2.74	0.8402	5	2.25	0.814	6	4	0.677
		Year	6	11.64	0.0705	6	10.73	0.0969	6	12.92	0.0444
		Schedule	1	17.68	<.0001	1	16.02	<.0001	1	11.58	0.0007
		Surgery	-	-	-	-	-	-	-	-	-
	65+	Length of Stay	3	32.48	<.0001	3	28.2	<.0001	3	32.81	<.0001
		Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
	Appendectomy (nonspecific)	All Age Groups	Surgery	-	-	-	-	-	-	-	-
Length of Stay			-	-	-	-	-	-	-	-	-
Sex			1	0.12	0.7308	1	0.04	0.8498	1	0.01	0.9202
Age Group			2	20.85	<.0001	2	20.37	<.0001	2	14.51	0.0007
Baseline Medications			1	17.87	<.0001	1	12.09	0.0005	1	7.59	0.0059
Charlson/Elixhauser Combined Comorbidity Score			4	5.77	0.2168	4	6.51	0.1643	4	6.27	0.18
Data Partner			16	27.98	0.0318	16	32.56	0.0085	16	28.48	0.0277
Independent Variable			6	8.64	0.1946	6	11.91	0.0641	6	22.01	0.0012
Year			6	2.32	0.8878	6	5.43	0.4904	6	3.66	0.7222
Schedule			1	0.89	0.3457	1	1.55	0.2124	1	6.44	0.0112
Surgery			-	-	-	-	-	-	-	-	-
Length of Stay			3	73.63	<.0001	3	68.95	<.0001	3	56.11	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹									
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents			
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value	
	18-40	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-
	41-64	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-
	65+	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Bunionectomy	All Age Groups	Sex	1	21.24	<.0001	1	22.87	<.0001	1	22.21	<.0001
		Age Group	2	382.44	<.0001	2	402.38	<.0001	2	370.36	<.0001
		Baseline Medications	1	123.32	<.0001	1	139.33	<.0001	1	126.97	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	8.44	0.0767	4	12.98	0.0114	4	10.62	0.0312
		Data Partner	16	117.22	<.0001	16	135.79	<.0001	16	148.99	<.0001
		Independent Variable	6	24.16	0.0005	5	45.18	<.0001	6	84.99	<.0001
		Year	6	39.15	<.0001	6	42.68	<.0001	6	35.59	<.0001
		Schedule	1	27.87	<.0001	1	20.2	<.0001	1	2.75	0.0971
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	28.02	<.0001	3	24.67	<.0001	3	24.98	<.0001
	18-40	Sex	1	3.11	0.078	1	2.52	0.1125	1	4.38	0.0363
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	23.3	<.0001	1	27.31	<.0001	1	27.11	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	2.51	0.6423	4	3.92	0.417	4	4.19	0.3803
		Data Partner	16	33.59	0.0062	16	31.07	0.0132	16	36.87	0.0022
		Independent Variable	6	14.14	0.0281	5	9.22	0.1007	6	23.49	0.0006
		Year	6	30.64	<.0001	6	30.53	<.0001	6	31.68	<.0001
		Schedule	1	16.13	<.0001	1	12.24	0.0005	1	7.86	0.0051
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	8.99	0.0295	3	5.22	0.1565	3	3.68	0.2978
	41-64	Sex	1	16.49	<.0001	1	17.65	<.0001	1	15.01	0.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	90.22	<.0001	1	99.06	<.0001	1	90.64	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	4.84	0.3042	4	7.72	0.1024	4	7.34	0.1189
		Data Partner	16	80.35	<.0001	16	106.08	<.0001	16	107.06	<.0001
		Independent Variable	6	14.39	0.0256	5	27.54	<.0001	6	54.07	<.0001
		Year	6	17.85	0.0066	6	19.86	0.0029	6	15.38	0.0175
		Schedule	1	11.85	0.0006	1	5.92	0.015	1	0.05	0.8159
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	5.26	0.1534	3	4.01	0.2605	3	7.69	0.0231

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹									
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents			
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value	
Surgery	65+	Sex	1	3.55	0.0595	1	4.52	0.0336	1	3.69	0.0548	
		Age Group	-	-	-	-	-	-	-	-	-	
		Baseline Medications	1	13.01	0.0003	1	15.92	<.0001	1	14.63	0.0001	
		Charlson/Elixhauser Combined Comorbidity Score	4	4.17	0.3839	4	6.07	0.194	4	4.76	0.3133	
		Data Partner	15	51.15	<.0001	15	56.58	<.0001	15	52.75	<.0001	
		Independent Variable	6	10.5	0.1051	5	16.47	0.0056	6	25.65	0.0003	
		Year	6	12.14	0.0589	6	15.63	0.0159	6	16.51	0.0113	
		Schedule	1	2.83	0.0925	1	4.27	0.0387	1	1.01	0.3158	
		Surgery	-	-	-	-	-	-	-	-	-	
		Length of Stay	3	20.87	0.0001	3	19.4	0.0002	3	20.81	0.0001	
Cesarean section	All Age Groups	Sex	-	-	-	-	-	-	-	-	-	
		Age Group	1	1.49	0.2215	1	1.22	0.2693	1	1.25	0.2633	
		Baseline Medications	1	291	<.0001	1	292.45	<.0001	1	282.19	<.0001	
		Charlson/Elixhauser Combined Comorbidity Score	4	66.86	<.0001	4	61.84	<.0001	4	59.51	<.0001	
		Data Partner	16	605.74	<.0001	16	617.9	<.0001	16	618.7	<.0001	
		Independent Variable	6	357.99	<.0001	5	17.58	0.0035	5	30.83	<.0001	
		Year	6	75.86	<.0001	6	106.72	<.0001	6	128.43	<.0001	
		Schedule	1	838.05	<.0001	1	787.8	<.0001	1	617.22	<.0001	
		Surgery	-	-	-	-	-	-	-	-	-	
	Length of Stay	3	29.8	<.0001	3	21.91	<.0001	3	21.75	<.0001		
	18-40	18-40	Sex	-	-	-	-	-	-	-	-	-
			Age Group	-	-	-	-	-	-	-	-	-
			Baseline Medications	1	269.96	<.0001	1	273.5	<.0001	1	267.03	<.0001
			Charlson/Elixhauser Combined Comorbidity Score	4	75.07	<.0001	4	68.36	<.0001	4	65.71	<.0001
			Data Partner	16	590.15	<.0001	16	601.56	<.0001	16	604.72	<.0001
			Independent Variable	6	340.57	<.0001	5	16.15	0.0064	5	31.55	<.0001
			Year	6	79.49	<.0001	6	108.24	<.0001	6	130.93	<.0001
			Schedule	1	815.18	<.0001	1	772.12	<.0001	1	606.2	<.0001
			Surgery	-	-	-	-	-	-	-	-	-
Length of Stay			3	29.02	<.0001	3	20.99	0.0001	3	20.53	0.0001	

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	41-64	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	21.27	<.0001	1	18.87	<.0001	1	14.47	0.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	4.41	0.3538	4	3.12	0.5382	4	2.61	0.6247
		Data Partner	16	30.19	0.0171	16	37.22	0.0019	16	35.63	0.0033
		Independent Variable	6	22.87	0.0008	5	9.8	0.0812	5	4.89	0.4292
		Year	6	5.02	0.5411	6	6.45	0.3752	6	5.1	0.5314
		Schedule	1	21.58	<.0001	1	16.11	<.0001	1	12.11	0.0005
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	1.26	0.7392	3	1.5	0.6816	3	1.48	0.6859
	65+	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-
Cholecystectomy (laparoscopic)	All Age Groups	Sex	1	1.02	0.3127	1	0.3	0.5858	1	0.23	0.6348
		Age Group	2	452.64	<.0001	2	463.23	<.0001	2	455.94	<.0001
		Baseline Medications	1	230.93	<.0001	1	217.56	<.0001	1	216.7	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	39.7	<.0001	4	36.74	<.0001	4	37.4	<.0001
		Data Partner	16	135.37	<.0001	16	119.7	<.0001	16	120.82	<.0001
		Independent Variable	6	144.21	<.0001	5	122.76	<.0001	6	91.89	<.0001
		Year	6	39.66	<.0001	6	47.54	<.0001	6	56.43	<.0001
		Schedule	1	236.82	<.0001	1	200.43	<.0001	1	139.92	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	102.02	<.0001	3	77.63	<.0001	3	72.81	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	18-40	Sex	1	1.14	0.2866	1	1.08	0.2994	1	1.01	0.3154
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	117.14	<.0001	1	95.88	<.0001	1	94.64	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	29.02	<.0001	4	29.22	<.0001	4	32.11	<.0001
		Data Partner	16	81.58	<.0001	16	73.06	<.0001	16	73.17	<.0001
		Independent Variable	6	76.93	<.0001	5	46.06	<.0001	6	35.84	<.0001
		Year	6	23.11	0.0008	6	26.78	0.0002	6	32.15	<.0001
		Schedule	1	94.27	<.0001	1	80.69	<.0001	1	49.24	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
	41-64	Length of Stay	3	7.48	0.058	3	3.45	0.3268	3	4.16	0.2449
		Sex	1	3.37	0.0665	1	2.04	0.1528	1	1.75	0.1858
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	68.98	<.0001	1	69.67	<.0001	1	72.07	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	13.82	0.0079	4	14.06	0.0071	4	10.61	0.0314
		Data Partner	16	75.47	<.0001	16	65.67	<.0001	16	66.3	<.0001
		Independent Variable	6	34.59	<.0001	5	18.27	0.0026	6	21.27	0.0016
		Year	6	18.8	0.0045	6	28.41	<.0001	6	30.71	<.0001
		Schedule	1	101.97	<.0001	1	86.55	<.0001	1	66.62	<.0001
	65+	Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	39.38	<.0001	3	38.35	<.0001	3	40.47	<.0001
		Sex	1	1.28	0.2585	1	2.21	0.1374	1	1.98	0.1589
Age Group		-	-	-	-	-	-	-	-	-	
Baseline Medications		1	58.06	<.0001	1	58.83	<.0001	1	57.38	<.0001	
Charlson/Elixhauser Combined Comorbidity Score		4	9.5	0.0498	4	7.23	0.124	4	8.72	0.0684	
Data Partner		15	13.23	0.5846	15	17.71	0.2782	15	16.66	0.3394	
Independent Variable		6	71.42	<.0001	5	79.47	<.0001	5	47.22	<.0001	
Year		6	10.06	0.1221	6	6.97	0.3235	6	9.78	0.1342	
Schedule	1	43.51	<.0001	1	36.39	<.0001	1	25.57	<.0001		
	Surgery	-	-	-	-	-	-	-	-	-	
	Length of Stay	3	75.88	<.0001	3	66.85	<.0001	3	67.98	<.0001	

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Cholecystectomy (nonspecific)	All Age Groups	Sex	1	1.38	0.2403	1	0.81	0.3673	1	1.11	0.291
		Age Group	2	36.4	<.0001	2	39	<.0001	2	41.76	<.0001
		Baseline Medications	1	8.38	0.0038	1	9.71	0.0018	1	10.44	0.0012
		Charlson/Elixhauser Combined Comorbidity Score	4	1.42	0.8409	4	2.51	0.6424	4	3.49	0.48
		Data Partner	16	20.1	0.2158	16	16.28	0.4336	16	17.89	0.3304
		Independent Variable	5	7.5	0.1862	6	9.53	0.146	6	13.7	0.0331
		Year	6	15.12	0.0193	6	15.41	0.0173	6	15.91	0.0142
		Schedule	1	5.38	0.0203	1	5.97	0.0145	1	7.55	0.006
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	2.14	0.5442	3	2.22	0.529	3	1.61	0.658
	18-40	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-
	41-64	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
Schedule		-	-	-	-	-	-	-	-	-	
Surgery		-	-	-	-	-	-	-	-	-	
Length of Stay		-	-	-	-	-	-	-	-	-	

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹									
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents			
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value	
	65+	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-
Coronary artery bypass graft	All Age Groups	Sex	1	23.47	<.0001	1	13.25	0.0003	1	17.32	<.0001	
		Age Group	2	349.57	<.0001	2	375.67	<.0001	2	352.8	<.0001	
		Baseline Medications	1	91.68	<.0001	1	89.27	<.0001	1	92.88	<.0001	
		Charlson/Elixhauser Combined	4	31.9	<.0001	4	26.91	<.0001	4	31.35	<.0001	
		Comorbidity Score	-	-	-	-	-	-	-	-	-	
		Data Partner	16	67.08	<.0001	16	77.11	<.0001	16	71.92	<.0001	
		Independent Variable	5	91.43	<.0001	6	81.93	<.0001	6	58.09	<.0001	
		Year	6	32.47	<.0001	6	45.84	<.0001	6	61.52	<.0001	
		Schedule	1	71.66	<.0001	1	46.44	<.0001	1	17.1	<.0001	
		Surgery	-	-	-	-	-	-	-	-	-	
		Length of Stay	3	4.57	0.2063	3	3.6	0.3075	3	3.06	0.3824	
	18-40	Sex	-	-	-	-	-	-	-	-	-	
		Age Group	-	-	-	-	-	-	-	-	-	
		Baseline Medications	-	-	-	-	-	-	-	-	-	
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	
		Comorbidity Score	-	-	-	-	-	-	-	-	-	
		Data Partner	-	-	-	-	-	-	-	-	-	
		Independent Variable	-	-	-	-	-	-	-	-	-	
		Year	-	-	-	-	-	-	-	-	-	
		Schedule	-	-	-	-	-	-	-	-	-	
		Surgery	-	-	-	-	-	-	-	-	-	
		Length of Stay	-	-	-	-	-	-	-	-	-	

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Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	41-64	Sex	1	0.42	0.5149	1	0	0.9938	1	0.36	0.55
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	47.85	<.0001	1	51.88	<.0001	1	49.31	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	14.7	0.0054	4	7.83	0.0981	4	10.93	0.0274
		Data Partner	16	46.7	<.0001	16	49.79	<.0001	16	45.86	0.0001
		Independent Variable	5	20.44	0.001	6	17.18	0.0087	6	9.27	0.1591
		Year	6	33.23	<.0001	6	31.7	<.0001	6	38.04	<.0001
		Schedule	1	21.01	<.0001	1	16.2	<.0001	1	9.87	0.0017
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	5.98	0.1124	3	4.26	0.2346	3	3.48	0.324
	65+	Sex	1	30.6	<.0001	1	20.16	<.0001	1	21.85	<.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	42.72	<.0001	1	36.39	<.0001	1	42.92	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	19.93	0.0005	4	21.62	0.0002	4	23.6	<.0001
		Data Partner	15	33.66	0.0038	15	37.77	0.001	15	35.5	0.0021
		Independent Variable	5	72.1	<.0001	6	75.77	<.0001	6	58.64	<.0001
		Year	6	6.4	0.3803	6	18	0.0062	6	26.9	0.0002
		Schedule	1	53.11	<.0001	1	30.89	<.0001	1	6.85	0.0089
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	8.3	0.0402	3	9.43	0.0241	3	7.32	0.0623
Hip fracture treatment	All Age Groups	Sex	1	5.97	0.0145	1	5.96	0.0147	1	5.09	0.0241
		Age Group	2	108.06	<.0001	2	112.54	<.0001	2	106.03	<.0001
		Baseline Medications	1	15.26	<.0001	1	16.4	<.0001	1	15.12	0.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	3.72	0.4455	4	5.58	0.2324	4	4.18	0.3822
		Data Partner	16	30.14	0.0173	16	25.28	0.0651	16	26.67	0.0453
		Independent Variable	6	76.27	<.0001	6	71.26	<.0001	6	40.82	<.0001
		Year	6	11.18	0.0829	6	13.32	0.0382	6	13.65	0.0339
		Schedule	1	2.39	0.1225	1	6.29	0.0121	1	8.95	0.0028
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	22.89	<.0001	3	20.65	0.0001	3	20.83	0.0008

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Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	18-40	Sex	1	0.06	0.8038	1	0	0.9544	1	0.04	0.8352
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	4.26	0.039	1	4.9	0.0269	1	3.91	0.048
		Charlson/Elixhauser Combined Comorbidity Score	4	0.9	0.9243	4	1.66	0.7973	4	1.04	0.9033
		Data Partner	16	20.21	0.2111	16	24.03	0.0889	16	20.62	0.1935
		Independent Variable	6	14.27	0.0268	6	9.9	0.1289	6	5.19	0.5192
		Year	6	9.44	0.1503	6	9.05	0.171	6	9.04	0.1715
		Schedule	1	0.39	0.5314	1	0.26	0.6131	1	0.03	0.8575
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	9.92	0.0193	3	10.77	0.013	3	6.77	0.0796
	41-64	Sex	1	6.99	0.0082	1	7.3	0.0069	1	4.1	0.043
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	0.75	0.3856	1	0.79	0.3746	1	0.08	0.7797
		Charlson/Elixhauser Combined Comorbidity Score	4	1.21	0.8768	4	1.22	0.8742	4	1.23	0.8735
		Data Partner	16	22.16	0.1381	16	20.06	0.2173	16	20.81	0.1858
		Independent Variable	6	10.28	0.1132	6	18.85	0.0044	6	12.18	0.058
		Year	6	11.87	0.0648	6	12.2	0.0577	6	13.71	0.0331
		Schedule	1	0.73	0.3931	1	1.77	0.1839	1	1.7	0.1921
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	26.43	<.0001	3	24.76	<.0001	3	21.75	<.0001
	65+	Sex	1	0.47	0.4944	1	0.74	0.3907	1	0.92	0.3383
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	14.4	0.0001	1	15.84	<.0001	1	17.33	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	4.95	0.2923	4	7.17	0.1271	4	5.86	0.2096
		Data Partner	15	16.46	0.3521	15	16.25	0.3659	15	15.56	0.4116
		Independent Variable	6	60.9	<.0001	6	69.43	<.0001	6	44.84	<.0001
		Year	6	9.63	0.141	6	10.12	0.1196	6	8.46	0.2064
		Schedule	1	2.06	0.1512	1	3.32	0.0686	1	7.64	0.0057
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	2.4	0.4934	3	1.88	0.5966	3	8.6431	0.6508

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Hip replacement	All Age Groups	Sex	1	6.86	0.0088	1	3.32	0.0683	1	2.14	0.1431
		Age Group	2	147.67	<.0001	2	169.73	<.0001	2	140.4	<.0001
		Baseline Medications	1	107.6	<.0001	1	124.48	<.0001	1	118.33	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	5.34	0.2542	4	11.62	0.0204	4	9.77	0.0444
		Data Partner	16	152.74	<.0001	16	87.52	<.0001	16	95	<.0001
		Independent Variable	6	321.67	<.0001	6	471.22	<.0001	6	201.41	<.0001
		Year	6	63.74	<.0001	6	83.94	<.0001	6	136.54	<.0001
		Schedule	1	99.74	<.0001	1	22.39	<.0001	1	2.29	0.1302
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	3.19	0.3638	3	9.57	0.0226	3	9.21	0.0267
	18-40	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-
	41-64	Sex	1	2.89	0.0892	1	4.26	0.039	1	4.07	0.0436
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	29.41	<.0001	1	39.03	<.0001	1	39.75	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	2.47	0.6504	4	1.52	0.823	4	0.98	0.9126
		Data Partner	16	62.71	<.0001	16	40.9	0.0006	16	36.62	0.0024
		Independent Variable	6	129.45	<.0001	6	177.38	<.0001	6	72.39	<.0001
		Year	6	38.06	<.0001	6	45.85	<.0001	6	68.37	<.0001
		Schedule	1	36.07	<.0001	1	7.68	0.0056	1	1.48	0.224
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	2.04	0.5643	3	2.46	0.4824	3	8.0831	0.2746

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	65+	Sex	1	21.16	<.0001	1	16.14	<.0001	1	12.01	0.0005
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	78.05	<.0001	1	84.63	<.0001	1	76.48	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	6.53	0.1632	4	11.98	0.0175	4	10.75	0.0295
		Data Partner	15	98.93	<.0001	15	58.11	<.0001	15	70.66	<.0001
		Independent Variable	6	188.58	<.0001	6	298.59	<.0001	6	142.93	<.0001
		Year	6	29.13	<.0001	6	39.23	<.0001	6	67.1	<.0001
		Schedule	1	62.24	<.0001	1	14.35	0.0002	1	0.94	0.3324
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	5.92	0.1157	3	13.43	0.0038	3	11.76	0.0083
Hysterectomy (laparoscopic)	All Age Groups	Sex	-	-	-	-	-	-	-	-	-
		Age Group	2	89.53	<.0001	2	86.21	<.0001	2	84.75	<.0001
		Baseline Medications	1	40.77	<.0001	1	36.5	<.0001	1	33.07	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	10.14	0.0381	4	9.17	0.057	4	11.35	0.0229
		Data Partner	16	14.68	0.5485	16	17.42	0.3589	16	13.08	0.6672
		Independent Variable	6	1.93	0.9264	5	12.32	0.0307	5	10.95	0.0524
		Year	6	7.23	0.3005	6	12.28	0.056	6	9.75	0.1355
		Schedule	1	17.17	<.0001	1	16.88	<.0001	1	25.65	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	6.61	0.0854	3	9.85	0.0199	3	7.72	0.0521
	18-40	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	19.38	<.0001	1	19.43	<.0001	1	17.28	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	6.2	0.1844	4	3.82	0.4303	4	4.76	0.3133
		Data Partner	16	16.87	0.394	16	18.18	0.3134	16	19.61	0.2382
		Independent Variable	6	3.95	0.6828	5	7.1	0.2131	5	13.06	0.0228
		Year	6	5.17	0.5226	6	9.26	0.1595	6	8.04	0.2351
		Schedule	1	5.62	0.0178	1	6.34	0.0118	1	7.52	0.0061
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	7.95	0.0472	3	4.15	0.246	3	8.08 ³¹	0.108

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹									
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents			
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value	
	41-64	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-
	65+	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-
Hysterectomy (non-laparoscopic)	All Age Groups	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	2	143.35	<.0001	2	145.31	<.0001	2	132.53	<.0001	<.0001
		Baseline Medications	1	73.42	<.0001	1	76.83	<.0001	1	76.85	<.0001	<.0001
		Charlson/Elixhauser Combined	4	7.46	0.1133	4	5.44	0.2447	4	7.46	0.1135	0.1135
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	16	18.15	0.3151	16	21.41	0.1634	16	23.85	0.0929	0.0929
		Independent Variable	6	12.22	0.0572	5	38.61	<.0001	6	44.61	<.0001	<.0001
		Year	6	9.27	0.1588	6	9.67	0.1392	6	18.75	0.0046	0.0046
		Schedule	1	19.39	<.0001	1	18.69	<.0001	1	31.83	<.0001	<.0001
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	3	39.82	<.0001	3	47.2	<.0001	3	40.1231	<.0001	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹									
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents			
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value	
	18-40	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-
	41-64	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	42.39	<.0001	1	37.28	<.0001	1	32.73	<.0001	
		Charlson/Elixhauser Combined	4	3.86	0.4256	4	5.79	0.2156	4	5	0.2877	
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	16	18.79	0.2794	16	20.74	0.1887	16	20.33	0.2058	
		Independent Variable	6	3.77	0.7075	5	5.82	0.3241	5	18.17	0.0027	
		Year	6	4.33	0.6324	6	6.4	0.3803	6	13.59	0.0345	
		Schedule	1	9.84	0.0017	1	11.19	0.0008	1	19.1	<.0001	
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	3	26.09	<.0001	3	33.4	<.0001	3	27.33	<.0001	
	65+	Sex	-	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined	-	-	-	-	-	-	-	-	-	-
		Comorbidity Score	-	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-	-

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Knee arthroplasty	All Age Groups	Sex	1	0.52	0.4701	1	0	0.9909	1	1.53	0.216
		Age Group	2	355.68	<.0001	2	404.38	<.0001	2	415.33	<.0001
		Baseline Medications	1	109.58	<.0001	1	109.26	<.0001	1	111.73	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	71.38	<.0001	4	87.5	<.0001	4	86.36	<.0001
		Data Partner	16	133.76	<.0001	16	123.41	<.0001	16	110.78	<.0001
		Independent Variable	6	738.15	<.0001	6	847.45	<.0001	6	437.58	<.0001
		Year	6	69.48	<.0001	6	98.27	<.0001	6	161.03	<.0001
		Schedule	1	39.94	<.0001	1	2.25	0.1333	1	13.66	0.0002
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	288.35	<.0001	3	334.07	<.0001	3	321.05	<.0001
	18-40	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-
	41-64	Sex	1	1.97	0.1604	1	1.38	0.2394	1	2.36	0.1242
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	32.32	<.0001	1	43.46	<.0001	1	35.21	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	6.59	0.1595	4	4.34	0.362	4	3.97	0.4097
		Data Partner	16	65.32	<.0001	16	61.65	<.0001	16	61.29	<.0001
		Independent Variable	6	140.07	<.0001	6	167.21	<.0001	6	101.31	<.0001
		Year	6	32.11	<.0001	6	31.39	<.0001	6	42	<.0001
		Schedule	1	14	0.0002	1	0.14	0.7116	1	0.07	0.795
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	63.55	<.0001	3	81.11	<.0001	3	82.1731	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Laminectomy/ discectomy	65+	Sex	1	2.51	0.1128	1	0.32	0.5732	1	0.45	0.5026
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	77.78	<.0001	1	69.19	<.0001	1	78.86	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	67.66	<.0001	4	84.34	<.0001	4	85.16	<.0001
		Data Partner	15	80.63	<.0001	15	88.36	<.0001	15	75.05	<.0001
		Independent Variable	6	616.52	<.0001	6	687.73	<.0001	6	350.72	<.0001
		Year	6	43.02	<.0001	6	72.22	<.0001	6	124.88	<.0001
		Schedule	1	27.14	<.0001	1	3.47	0.0625	1	16.55	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	200	<.0001	3	223.5	<.0001	3	223.08	<.0001
	All Age Groups	Sex	1	4.07	0.0435	1	4.61	0.0317	1	5.27	0.0217
		Age Group	2	9.98	0.0068	2	11.42	0.0033	2	8.89	0.0117
		Baseline Medications	1	33.16	<.0001	1	34.62	<.0001	1	24.64	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	14.36	0.0062	4	16.41	0.0025	4	15.47	0.0038
		Data Partner	16	32.26	0.0092	16	23.73	0.0956	16	30.38	0.0161
		Independent Variable	6	51.28	<.0001	5	47.36	<.0001	6	34.24	<.0001
		Year	6	1.28	0.9729	6	1.97	0.9225	6	2.15	0.9055
		Schedule	1	8.22	0.0041	1	4.86	0.0275	1	2.75	0.0972
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	43.17	<.0001	3	35.94	<.0001	3	28.81	<.0001
18-40	Sex	-	-	-	-	-	-	-	-	-	
	Age Group	-	-	-	-	-	-	-	-	-	
	Baseline Medications	-	-	-	-	-	-	-	-	-	
	Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-	
	Data Partner	-	-	-	-	-	-	-	-	-	
	Independent Variable	-	-	-	-	-	-	-	-	-	
	Year	-	-	-	-	-	-	-	-	-	
	Schedule	-	-	-	-	-	-	-	-	-	
	Surgery	-	-	-	-	-	-	-	-	-	
	Length of Stay	-	-	-	-	-	-	-	-	-	

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	41-64	Sex	1	1.01	0.3151	1	1.48	0.224	1	1.44	0.2306
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	25.52	<.0001	1	21.86	<.0001	1	18.02	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	11.67	0.02	4	10.47	0.0332	4	10.41	0.034
		Data Partner	16	54.73	<.0001	16	47.83	<.0001	16	51.44	<.0001
		Independent Variable	6	21.95	0.0012	5	20.32	0.0011	6	17.88	0.0065
		Year	6	2.18	0.9025	6	3.78	0.7068	6	3.76	0.7095
		Schedule	1	2.29	0.1302	1	1.03	0.3098	1	0.26	0.6087
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	6.73	0.0812	3	6.98	0.0724	3	6.75	0.0802
	65+	Sex	1	2.98	0.0842	1	1.27	0.2588	1	3.54	0.0599
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	5.12	0.0236	1	10.25	0.0014	1	5.38	0.0204
		Charlson/Elixhauser Combined Comorbidity Score	4	4.26	0.3714	4	3.97	0.4104	4	5.82	0.2132
		Data Partner	15	10.91	0.7586	15	8.74	0.8906	15	13.87	0.5354
		Independent Variable	6	19.75	0.0031	5	38.34	<.0001	6	26.51	0.0002
		Year	6	3.6	0.7312	6	2.93	0.8178	6	3.3	0.771
		Schedule	1	4.29	0.0384	1	4.12	0.0424	1	2.08	0.1491
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	26.41	<.0001	3	21.56	<.0001	3	14.32	0.0025
Spinal fusion (all levels)	All Age Groups	Sex	1	44.02	<.0001	1	43.21	<.0001	1	39.79	<.0001
		Age Group	2	37.85	<.0001	2	32.05	<.0001	2	31.13	<.0001
		Baseline Medications	1	35.79	<.0001	1	42.06	<.0001	1	36	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	15.8	0.0033	4	17.35	0.0017	4	18.5	0.001
		Data Partner	16	46.87	<.0001	16	39.51	0.0009	16	41.21	0.0005
		Independent Variable	6	94.94	<.0001	6	52.93	<.0001	6	8.6	0.1977
		Year	6	6.93	0.3278	6	8.15	0.2272	6	10.14	0.1188
		Schedule	1	0.29	0.589	1	0.46	0.4984	1	0.1	0.7499
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	451.51	<.0001	3	424.47	<.0001	3	396.93	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	18-40	Sex	1	2.63	0.1049	1	3.28	0.0701	1	3.52	0.0608
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	5.9	0.0151	1	6.75	0.0094	1	8.22	0.0042
		Charlson/Elixhauser Combined Comorbidity Score	4	17.69	0.0014	4	19.85	0.0005	4	17.04	0.0019
		Data Partner	16	15.03	0.5226	16	15.81	0.4664	16	19.49	0.244
		Independent Variable	6	18.76	0.0046	6	9.1	0.1681	6	4.14	0.6575
		Year	6	4.63	0.5918	6	5.41	0.4928	6	6.93	0.3273
		Schedule	1	2.21	0.1373	1	1.91	0.1667	1	1.04	0.3075
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	63.56	<.0001	3	52.21	<.0001	3	57.36	<.0001
	41-64	Sex	1	10.69	0.0011	1	12.54	0.0004	1	10.1	0.0015
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	30.08	<.0001	1	42.15	<.0001	1	34.2	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	3.25	0.5173	4	3.04	0.5512	4	3.86	0.4253
		Data Partner	16	40.59	0.0006	16	38.64	0.0012	16	38.23	0.0014
		Independent Variable	6	23.61	0.0006	6	9.64	0.1405	6	5.99	0.4241
		Year	6	12.7	0.0481	6	10.4	0.1087	6	11.67	0.0698
		Schedule	1	1.28	0.2575	1	0.5	0.4804	1	2.63	0.1051
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	283.51	<.0001	3	276.86	<.0001	3	248.21	<.0001
	65+	Sex	1	33.69	<.0001	1	29.01	<.0001	1	27.34	<.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	5.96	0.0147	1	4.53	0.0332	1	4.06	0.0439
		Charlson/Elixhauser Combined Comorbidity Score	4	7.67	0.1046	4	9.87	0.0427	4	9.94	0.0415
		Data Partner	15	9.3	0.8611	15	9.09	0.873	15	5.8	0.9829
		Independent Variable	6	66.17	<.0001	6	51.31	<.0001	6	12.38	0.0539
		Year	6	3.87	0.6937	6	8.76	0.1876	6	8.84	0.1827
		Schedule	1	0.19	0.6652	1	0.91	0.3392	1	0.33	0.564
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	91.96	<.0001	3	86.74	<.0001	3	81.5231	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
Spinal fusion (1-3 levels)	All Age Groups	Sex	1	42.95	<.0001	1	39.88	<.0001	1	37.45	<.0001
		Age Group	2	32.83	<.0001	2	29.08	<.0001	2	25.33	<.0001
		Baseline Medications	1	25.28	<.0001	1	28.48	<.0001	1	25.22	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	10.23	0.0367	4	11.27	0.0237	4	10.75	0.0296
		Data Partner	16	32.38	0.0089	16	32.71	0.0081	16	31.57	0.0114
		Independent Variable	6	74.78	<.0001	6	56.24	<.0001	6	8.01	0.2373
		Year	6	9.18	0.1637	6	10.49	0.1054	6	11.96	0.0629
		Schedule	1	0.73	0.3926	1	0.04	0.8508	1	0.07	0.7931
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	170.27	<.0001	3	166.53	<.0001	3	152.05	<.0001
	18-40	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-
	41-64	Sex	1	13.27	0.0003	1	13.45	0.0002	1	12.26	0.0005
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	24.25	<.0001	1	32.75	<.0001	1	27.6	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	2.39	0.6644	4	3.73	0.4435	4	2.48	0.6491
		Data Partner	16	30.76	0.0145	16	34.5	0.0046	16	31.76	0.0107
		Independent Variable	6	21.29	0.0016	6	14.08	0.0288	6	3.34	0.7654
		Year	6	7.13	0.3086	6	6.31	0.3896	6	7.35	0.2895
		Schedule	1	1.31	0.2516	1	0.29	0.593	1	0.81	0.369
Surgery		-	-	-	-	-	-	-	-	-	
Length of Stay		3	105	<.0001	3	104.69	<.0001	3	89.131	<.0001	

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	65+	Sex	1	29.83	<.0001	1	25.54	<.0001	1	24.91	<.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	2.18	0.1398	1	1.15	0.2834	1	1.07	0.3003
		Charlson/Elixhauser Combined Comorbidity Score	4	7.99	0.0918	4	9.2	0.0564	4	9.08	0.059
		Data Partner	15	6.63	0.9671	15	9	0.8773	15	6.78	0.9635
		Independent Variable	6	49.06	<.0001	6	43.85	<.0001	6	8.16	0.2266
		Year	6	7.32	0.2927	6	8.51	0.2032	6	9.2	0.1627
		Schedule	1	0.32	0.5728	1	0.19	0.6626	1	0.11	0.742
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	47.69	<.0001	3	47.62	<.0001	3	44.12	<.0001
Spinal fusion (4+ levels)	All Age Groups	Sex	1	5.41	0.02	1	6.61	0.0101	1	4.79	0.0286
		Age Group	2	12.17	0.0023	2	10.43	0.0054	2	13.16	0.0014
		Baseline Medications	1	11.23	0.0008	1	14.52	0.0001	1	12.48	0.0004
		Charlson/Elixhauser Combined Comorbidity Score	4	10.44	0.0336	4	11.12	0.0252	4	9.83	0.0434
		Data Partner	16	35.22	0.0037	16	32.88	0.0077	16	30.19	0.017
		Independent Variable	6	34.13	<.0001	6	16.46	0.0115	6	2.75	0.8395
		Year	6	9.55	0.1451	6	10.67	0.0991	6	10.81	0.0945
		Schedule	1	0.07	0.786	1	0.71	0.401	1	0.05	0.8222
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	71.55	<.0001	3	66.16	<.0001	3	63.49	<.0001
	18-40	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	41-64	Sex	1	1.05	0.3065	1	2.45	0.1174	1	1.03	0.3102
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	4.66	0.0309	1	7.78	0.0053	1	5.74	0.0166
		Charlson/Elixhauser Combined Comorbidity Score	4	2.54	0.6375	4	3.43	0.4891	4	2.28	0.6837
		Data Partner	16	35.16	0.0038	16	29.35	0.0217	16	29.56	0.0204
		Independent Variable	6	10	0.1245	6	7.96	0.2407	6	6.59	0.3609
		Year	6	9.57	0.1438	6	10.19	0.1167	6	10.75	0.0963
		Schedule	1	0.15	0.6974	1	0.02	0.891	1	1.98	0.159
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	52.65	<.0001	3	51.44	<.0001	3	42.62	<.0001
	65+	Sex	1	3.68	0.055	1	3.74	0.0533	1	2.28	0.131
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	5.88	0.0153	1	6.3	0.0121	1	6.71	0.0096
		Charlson/Elixhauser Combined Comorbidity Score	4	1.93	0.7493	4	4.67	0.3224	4	4.96	0.2913
		Data Partner	15	11.56	0.7118	15	14.47	0.4899	15	10.58	0.782
		Independent Variable	6	21.8	0.0013	6	14.58	0.0237	6	10.89	0.0917
		Year	6	9.27	0.159	6	9.04	0.1715	6	6.12	0.4096
		Schedule	1	0	0.9663	1	1.39	0.2392	1	1.06	0.3043
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	15.97	0.0011	3	15.33	0.0016	3	15.82	0.0012
Tooth extraction	All Age Groups	Sex	1	10.34	0.0013	1	13.14	0.0003	1	13.74	0.0002
		Age Group	2	524.1	<.0001	2	489.08	<.0001	2	449.8	<.0001
		Baseline Medications	1	229.27	<.0001	1	247.78	<.0001	1	245.86	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	57.02	<.0001	4	55.47	<.0001	4	52.26	<.0001
		Data Partner	16	222.92	<.0001	16	227.15	<.0001	16	225.55	<.0001
		Independent Variable	4	119.9	<.0001	5	93.77	<.0001	6	12.7	0.048
		Year	6	259.41	<.0001	6	283.83	<.0001	6	260.99	<.0001
		Schedule	1	84.49	<.0001	1	64.35	<.0001	1	81.68	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	52.95	<.0001	3	48.32	<.0001	3	52.19	<.0001

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value
	18-40	Sex	1	21.28	<.0001	1	26.7	<.0001	1	26.79	<.0001
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	131.07	<.0001	1	150.35	<.0001	1	146.52	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	47.28	<.0001	4	48.7	<.0001	4	45.26	<.0001
		Data Partner	16	188.06	<.0001	16	193.97	<.0001	16	190.54	<.0001
		Independent Variable	4	142.48	<.0001	5	107.53	<.0001	6	9.8	0.1334
		Year	6	222.75	<.0001	6	242.92	<.0001	6	230.24	<.0001
		Schedule	1	113.93	<.0001	1	91.39	<.0001	1	96.99	<.0001
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	24.89	<.0001	3	16.52	0.0009	3	14.42	0.0024
	41-64	Sex	1	1.76	0.1852	1	1.99	0.1585	1	1.62	0.2034
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	1	103.2	<.0001	1	102.81	<.0001	1	103.57	<.0001
		Charlson/Elixhauser Combined Comorbidity Score	4	14.89	0.0049	4	12.76	0.0125	4	11.47	0.0217
		Data Partner	15	2,908.35	<.0001	15	3,304.96	<.0001	15	2,955.59	<.0001
		Independent Variable	4	6.52	0.1634	6	9.5	0.1474	6	19.66	0.0032
		Year	6	52.87	<.0001	6	57.42	<.0001	6	46.79	<.0001
		Schedule	1	5.39	0.0203	1	6.73	0.0095	1	0.8	0.3721
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	3	27.15	<.0001	3	21.11	<.0001	3	30.26	<.0001
	65+	Sex	-	-	-	-	-	-	-	-	-
		Age Group	-	-	-	-	-	-	-	-	-
		Baseline Medications	-	-	-	-	-	-	-	-	-
		Charlson/Elixhauser Combined Comorbidity Score	-	-	-	-	-	-	-	-	-
		Data Partner	-	-	-	-	-	-	-	-	-
		Independent Variable	-	-	-	-	-	-	-	-	-
		Year	-	-	-	-	-	-	-	-	-
		Schedule	-	-	-	-	-	-	-	-	-
		Surgery	-	-	-	-	-	-	-	-	-
		Length of Stay	-	-	-	-	-	-	-	-	-

Table 6. Likelihood Ratio Test Results for Model Terms in the Estimation of Re-fill Rates Associated with Initial Prescription Amounts of Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery and Age Group

Surgery	Age group (years)	Model term	Main Independent Variable of Interest ¹								
			Days' supply			Tablets/Capsules dispensed			Morphine milligram equivalents		
			DF ²	Chi-square	P-value	DF	Chi-square	P-value	DF	Chi-square	P-value

¹Dashes indicate that a model was not run due to lack of sufficient outcome events or a term was not included in the model.

²DF: Degrees of freedom

Table 7. Odds Ratios for Re-filling Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery, and Age Group

Surgery Age group (years)	Main independent variable of interest					
	Days' supply		Tablets/Capsules dispensed		Morphine milligram equivalents	
	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI
Appendectomy (laparoscopic)						
All ages	0.86	(0.83, 0.90)	0.85	(0.81, 0.89)	0.83	(0.80, 0.87)
18-40	0.82	(0.78, 0.87)	0.83	(0.79, 0.88)	0.79	(0.75, 0.84)
41-64	1.16	(1.08, 1.26)	1.06	(0.98, 1.16)	1.05	(0.96, 1.14)
65+	0.95	(0.80, 1.14)	0.95	(0.79, 1.14)	0.96	(0.80, 1.15)
Appendectomy (nonspecific)						
All ages	1.75	(1.63, 1.88)	1.7	(1.59, 1.83)	1.66	(1.54, 1.78)
18-40	1.55	(1.39, 1.72)	1.54	(1.38, 1.72)	1.45	(1.30, 1.62)
41-64	2.38	(2.13, 2.67)	2.14	(1.90, 2.41)	2.11	(1.87, 2.37)
65+	1.97	(1.60, 2.43)	1.97	(1.60, 2.43)	1.97	(1.59, 2.43)
Bunionectomy						
All ages	4.3	(4.16, 4.45)	4.05	(3.90, 4.20)	3.81	(3.67, 3.95)
18-40	4.79	(4.52, 5.07)	4.56	(4.29, 4.84)	4.1	(3.86, 4.36)
41-64	4.68	(4.41, 4.96)	4.11	(3.84, 4.39)	3.95	(3.70, 4.21)
65+	4.38	(3.80, 5.06)	4.2	(3.63, 4.87)	4.14	(3.57, 4.80)
Cesarean section						
All ages	1.13	(1.09, 1.17)	1.11	(1.06, 1.15)	1.08	(1.04, 1.13)
18-40	1.31	(1.24, 1.39)	1.32	(1.25, 1.40)	1.25	(1.18, 1.32)
41-64	1.83	(1.67, 2.00)	1.65	(1.50, 1.82)	1.61	(1.46, 1.78)
65+	-	-	-	-	-	-
Cholecystectomy (laparoscopic)						
All ages	0.98	(0.95, 1.01)	0.96	(0.92, 0.99)	0.93	(0.90, 0.96)
18-40	0.94	(0.90, 0.98)	0.94	(0.90, 0.99)	0.89	(0.85, 0.93)
41-64	1.13	(1.06, 1.20)	1.03	(0.96, 1.10)	1.01	(0.95, 1.08)
65+	1.01	(0.88, 1.17)	1.00	(0.87, 1.16)	1.01	(0.87, 1.17)
Cholecystectomy (nonspecific)						
All ages	2.55	(2.34, 2.77)	2.42	(2.22, 2.63)	2.34	(2.14, 2.55)
18-40	3.14	(2.52, 3.90)	3.02	(2.43, 3.76)	2.81	(2.25, 3.50)
41-64	3.14	(2.75, 3.60)	2.82	(2.45, 3.24)	2.75	(2.39, 3.16)
65+	2.17	(1.81, 2.61)	2.07	(1.72, 2.50)	2.08	(1.72, 2.51)

Table 7. Odds Ratios for Re-filling Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery, and Age Group

Surgery Age group (years)	Main independent variable of interest					
	Days' supply		Tablets/Capsules dispensed		Morphine milligram equivalents	
	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI
Coronary artery bypass graft						
All ages	3.83	(3.64, 4.02)	3.65	(3.46, 3.85)	3.39	(3.22, 3.57)
18-40	6.87	(5.31, 8.89)	6.49	(5.00, 8.41)	5.57	(4.27, 7.28)
41-64	4.72	(4.33, 5.14)	4.14	(3.77, 4.55)	3.91	(3.56, 4.30)
65+	3.42	(2.94, 3.99)	3.35	(2.86, 3.92)	3.31	(2.83, 3.88)
Hip fracture treatment						
All ages	8.69	(8.23, 9.17)	8.04	(7.60, 8.51)	7.32	(6.91, 7.75)
18-40	12.47	(11.05, 14.09)	11.92	(10.41, 13.65)	9.67	(8.39, 11.15)
41-64	10.31	(9.32, 11.41)	8.72	(7.81, 9.74)	7.83	(7.00, 8.75)
65+	7.68	(6.59, 8.97)	7.35	(6.28, 8.60)	7.24	(6.18, 8.47)
Hip replacement						
All ages	7.52	(7.20, 7.85)	7.64	(7.28, 8.01)	6.71	(6.39, 7.04)
18-40	7.76	(6.55, 9.19)	7.48	(6.10, 9.18)	6.56	(5.31, 8.10)
41-64	7.94	(7.36, 8.55)	7.62	(6.98, 8.31)	6.82	(6.25, 7.44)
65+	7.17	(6.18, 8.32)	7.33	(6.29, 8.54)	6.96	(5.97, 8.12)
Hysterectomy (laparoscopic)						
All ages	1.62	(1.52, 1.72)	1.57	(1.48, 1.67)	1.52	(1.43, 1.62)
18-40	1.76	(1.61, 1.92)	1.75	(1.60, 1.91)	1.63	(1.49, 1.79)
41-64	1.81	(1.64, 2.00)	1.65	(1.49, 1.83)	1.62	(1.46, 1.79)
65+	1.2	(0.94, 1.53)	1.16	(0.91, 1.48)	1.14	(0.88, 1.46)
Hysterectomy (non-laparoscopic)						
All ages	1.76	(1.65, 1.87)	1.7	(1.59, 1.81)	1.64	(1.54, 1.75)
18-40	2.24	(2.01, 2.49)	2.23	(2.00, 2.48)	2.1	(1.88, 2.34)
41-64	2.13	(1.93, 2.36)	1.92	(1.72, 2.13)	1.87	(1.68, 2.08)
65+	1.25	(1.04, 1.50)	1.21	(1.01, 1.46)	1.2	(1.00, 1.45)
Knee arthroplasty						
All ages	28.69	(27.55, 29.88)	27.94	(26.70, 29.23)	24.9	(23.81, 26.05)
18-40	16.07	(12.56, 20.56)	12.03	(9.22, 15.69)	9.15	(6.89, 12.17)
41-64	33.83	(31.49, 36.35)	31.08	(28.60, 33.79)	29.11	(26.78, 31.63)
65+	25.85	(22.32, 29.94)	25.63	(22.03, 29.81)	24.69	(21.20, 28.74)

Table 7. Odds Ratios for Re-filling Opioid Analgesics for Patients with an Initial Dispensing of 90 Days or Less, in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015, by Independent Variable of Interest, Surgery, and Age Group

Surgery Age group (years)	Main independent variable of interest					
	Days' supply		Tablets/Capsules dispensed		Morphine milligram equivalents	
	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI
Laminectomy/discectomy						
All ages	3.15	(2.98, 3.33)	3.09	(2.91, 3.28)	2.73	(2.57, 2.90)
18-40	2.33	(2.09, 2.59)	2.29	(2.04, 2.57)	1.89	(1.68, 2.13)
41-64	3.23	(2.95, 3.54)	2.85	(2.57, 3.15)	2.53	(2.28, 2.81)
65+	4.48	(3.81, 5.26)	4.58	(3.88, 5.40)	4.39	(3.72, 5.19)
Spinal fusion (all levels)						
All ages	6.32	(5.47, 7.29)	5.52	(4.74, 6.43)	4.95	(4.21, 5.82)
18-40	2.78	(1.88, 4.10)	2.5	(1.65, 3.79)	2.37	(1.55, 3.62)
41-64	5.75	(4.59, 7.19)	4.94	(3.90, 6.24)	4.47	(3.46, 5.76)
65+	10.34	(8.04, 13.29)	8.74	(6.70, 11.42)	8.27	(6.27, 10.91)
Spinal fusion (1-3 levels)						
All ages	6.59	(6.28, 6.91)	6.04	(5.72, 6.37)	5.26	(4.99, 5.56)
18-40	5.79	(5.12, 6.54)	5.09	(4.43, 5.85)	3.92	(3.39, 4.53)
41-64	6.06	(5.60, 6.56)	5.06	(4.62, 5.54)	4.65	(4.25, 5.09)
65+	7.83	(6.71, 9.13)	7.41	(6.32, 8.68)	6.88	(5.86, 8.08)
Spinal fusion (4+ levels)						
All ages	10.96	(10.26, 11.70)	9.88	(9.18, 10.64)	8.15	(7.55, 8.80)
18-40	12.44	(10.56, 14.65)	10.3	(8.54, 12.41)	8.15	(6.66, 9.98)
41-64	11.03	(9.95, 12.23)	9.14	(8.12, 10.28)	7.55	(6.67, 8.54)
65+	11.28	(9.53, 13.35)	10.78	(9.03, 12.87)	9.8	(8.19, 11.73)

¹Odds ratios compare a given surgery vs. tooth extraction and are adjusted for age, sex, comorbidity score, year of opioid initiation, Data Partner, history of comedication use, and independent variable of interest (days' supply, tablets/capsules dispensed, or MMEs in index dispensings).

Figure 1. Re-fill Probability of Initial Dispensings for Patients with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

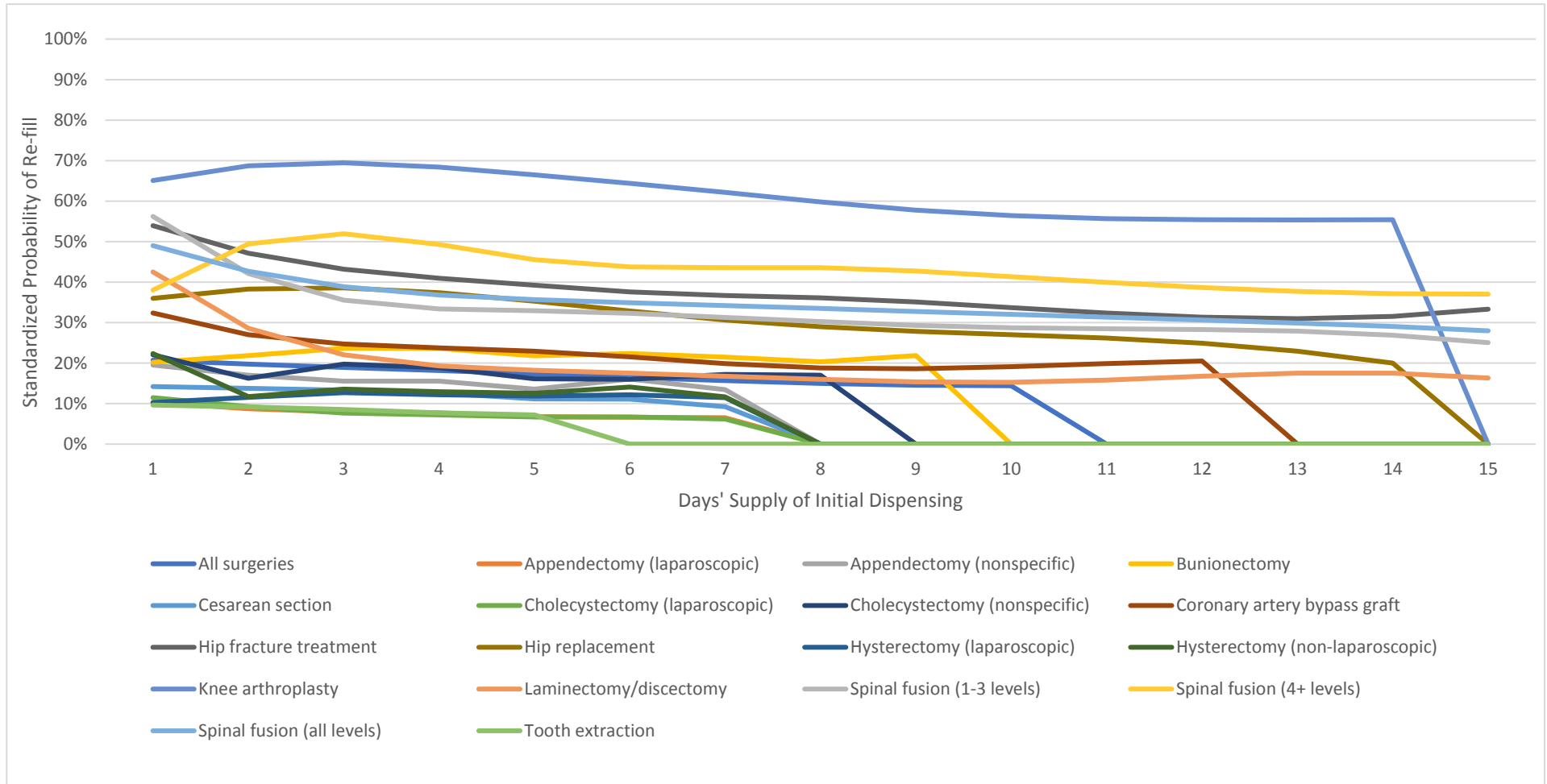


Figure 2. Re-fill Probability of Initial Dispensings for Patients with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

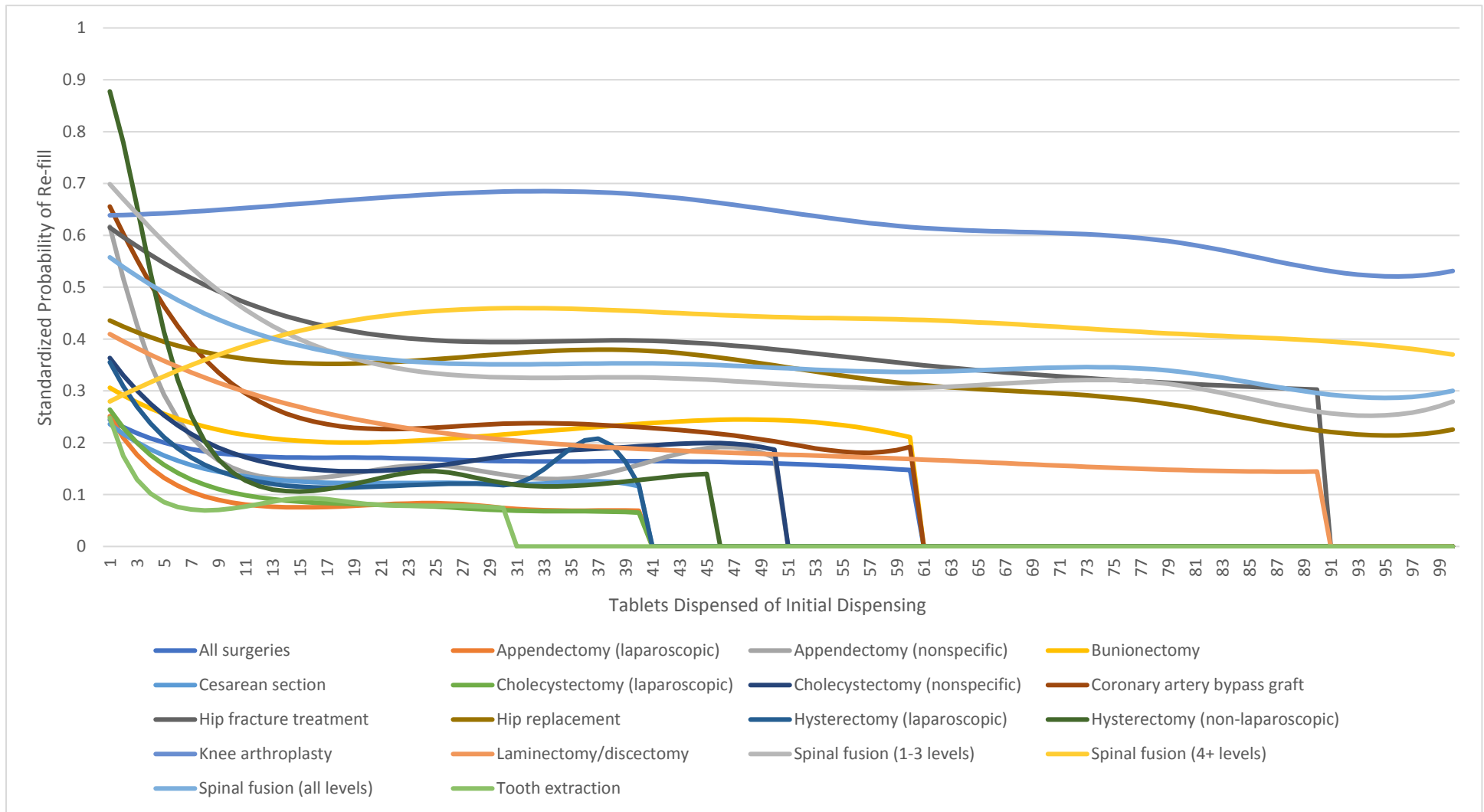


Figure 3. Re-fill Probability of Initial Dispensings for Patients with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

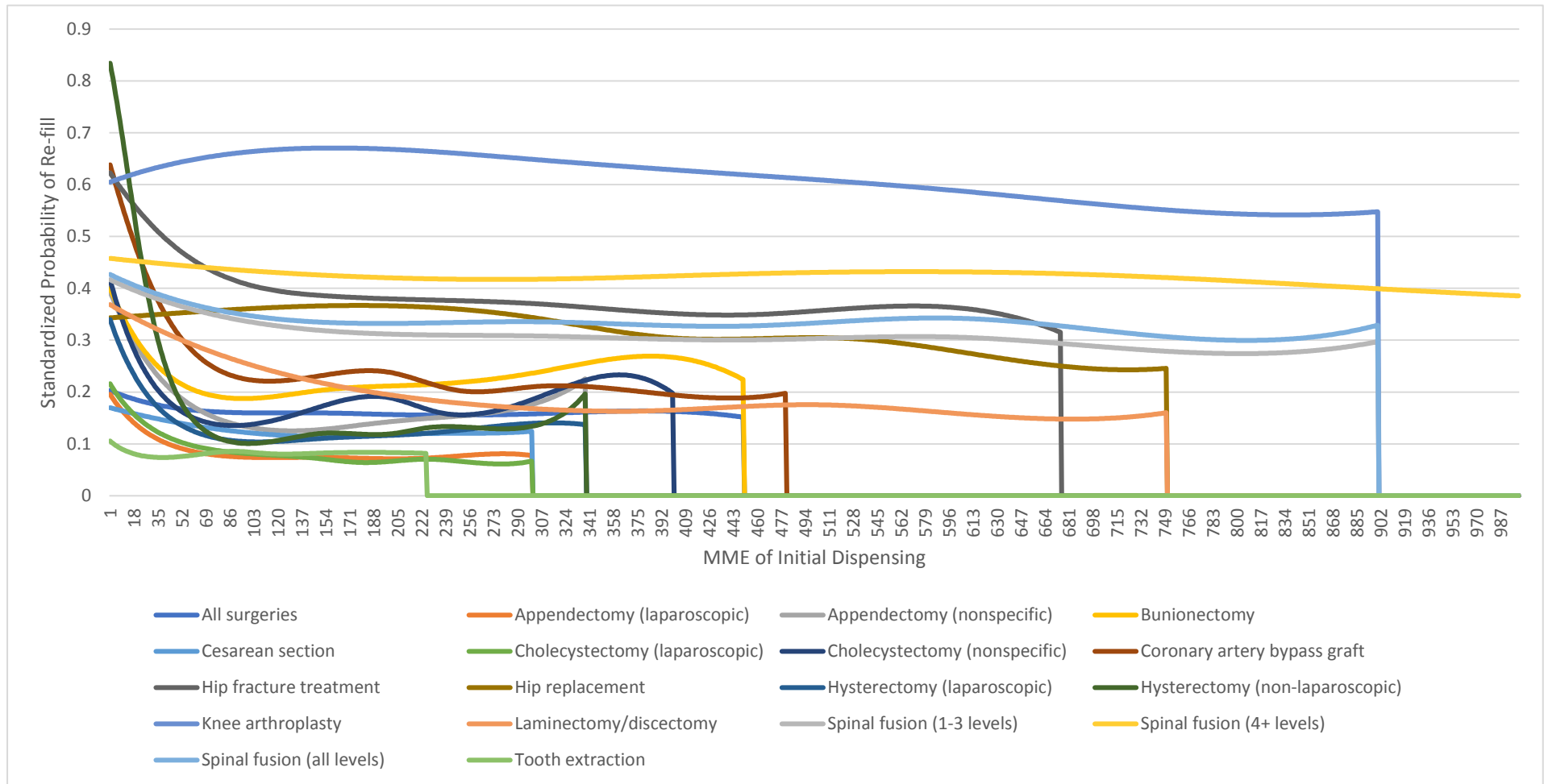


Figure 4. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with an Appendectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

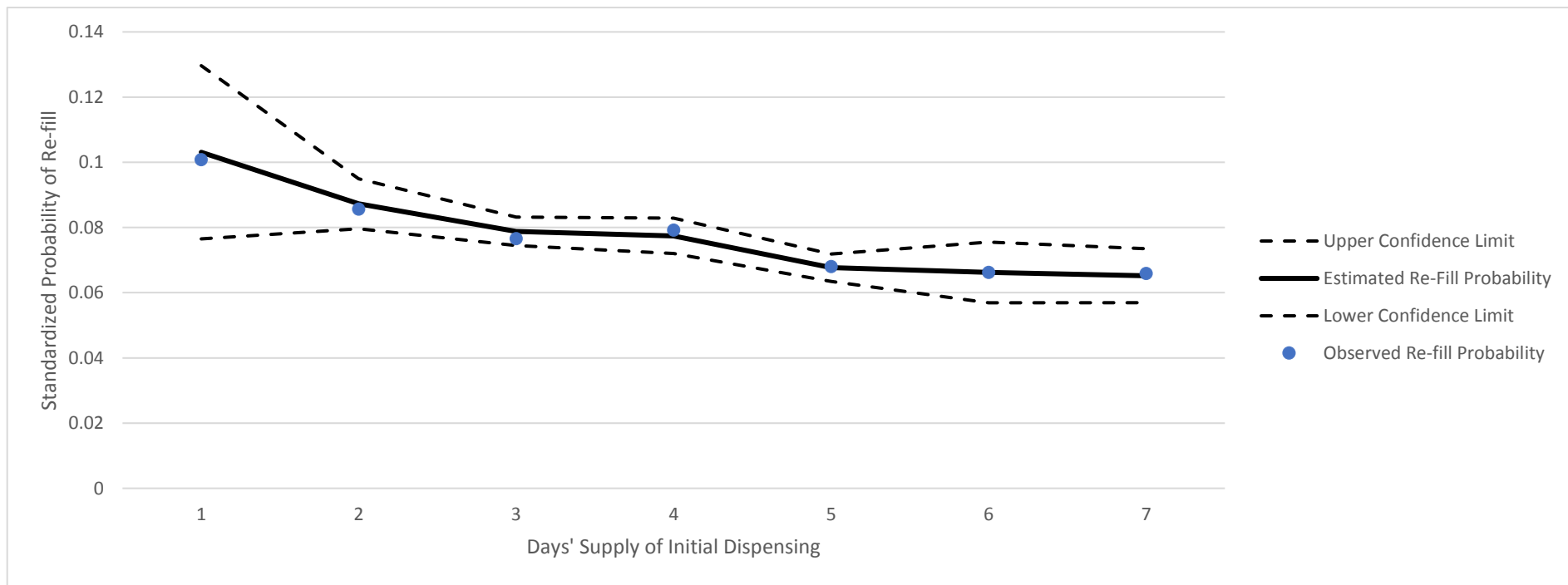


Figure 5. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with an Appendectomy (nonspecific) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

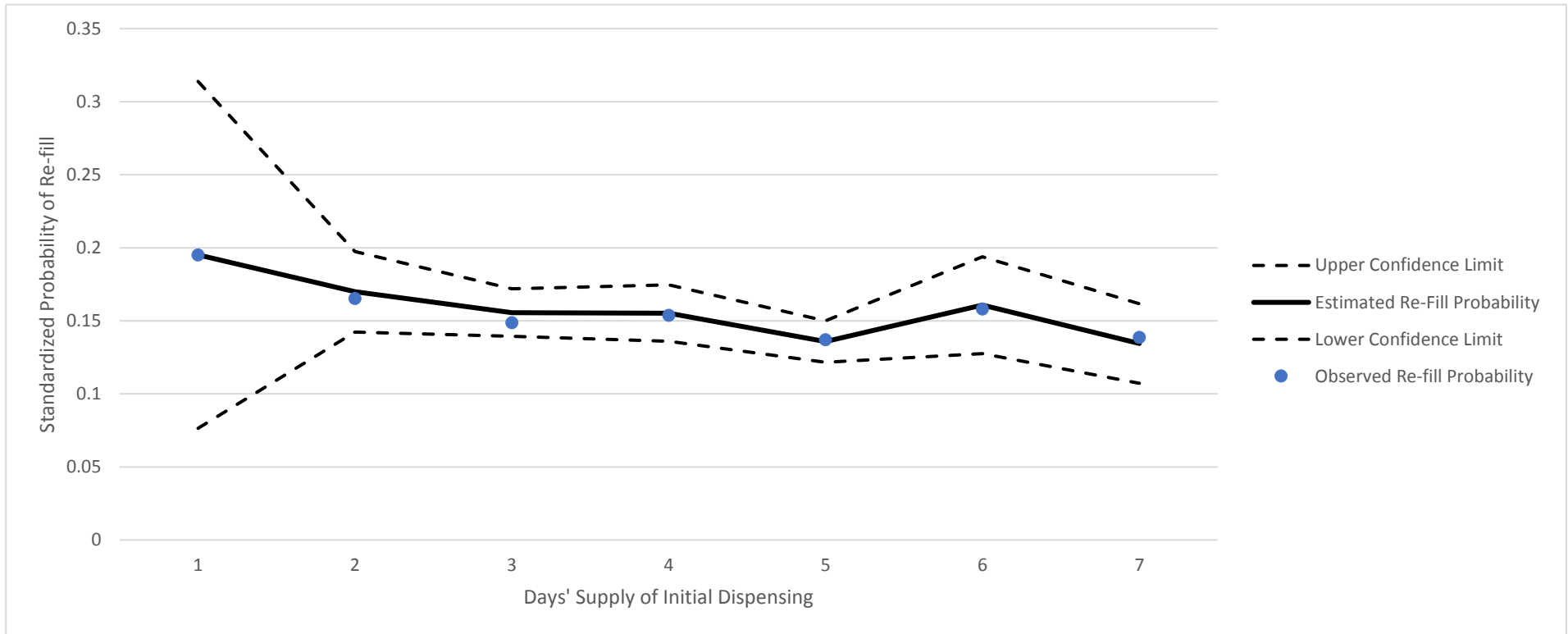


Figure 6. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Bunionectomy with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

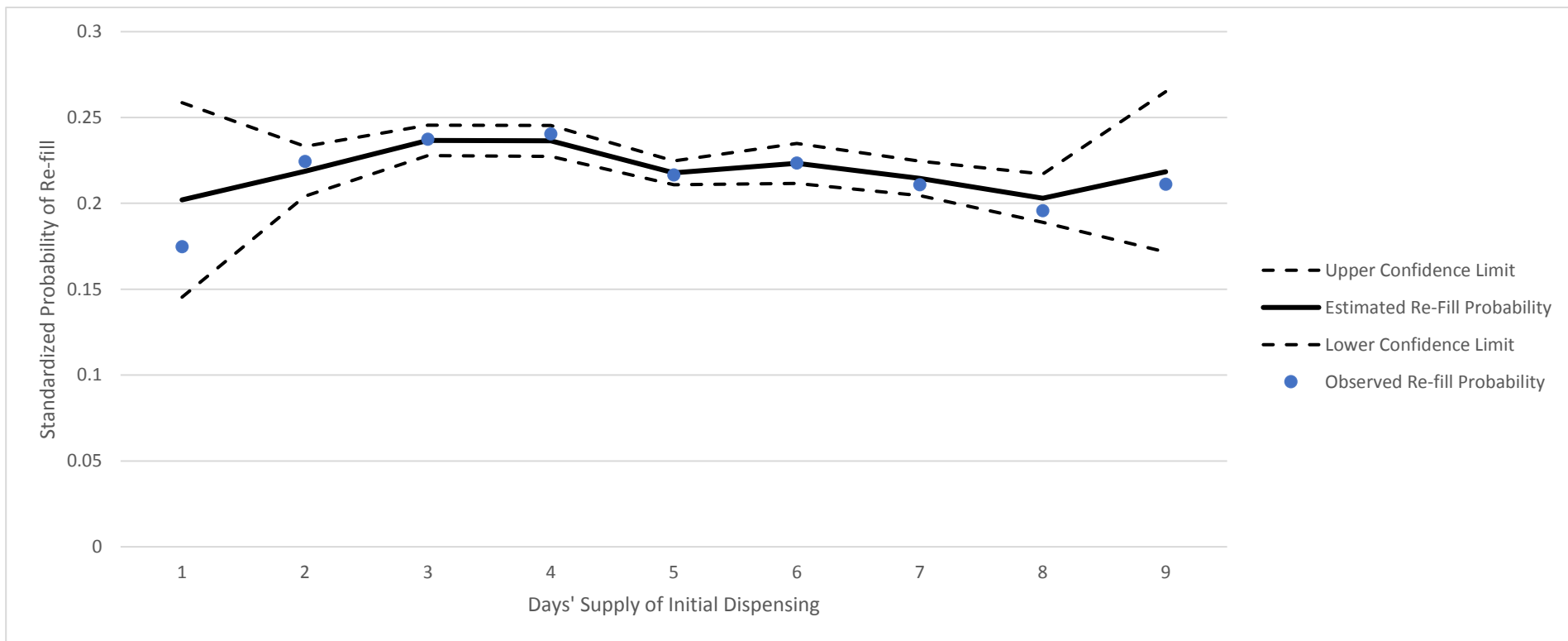


Figure 7. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cesarean Section with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

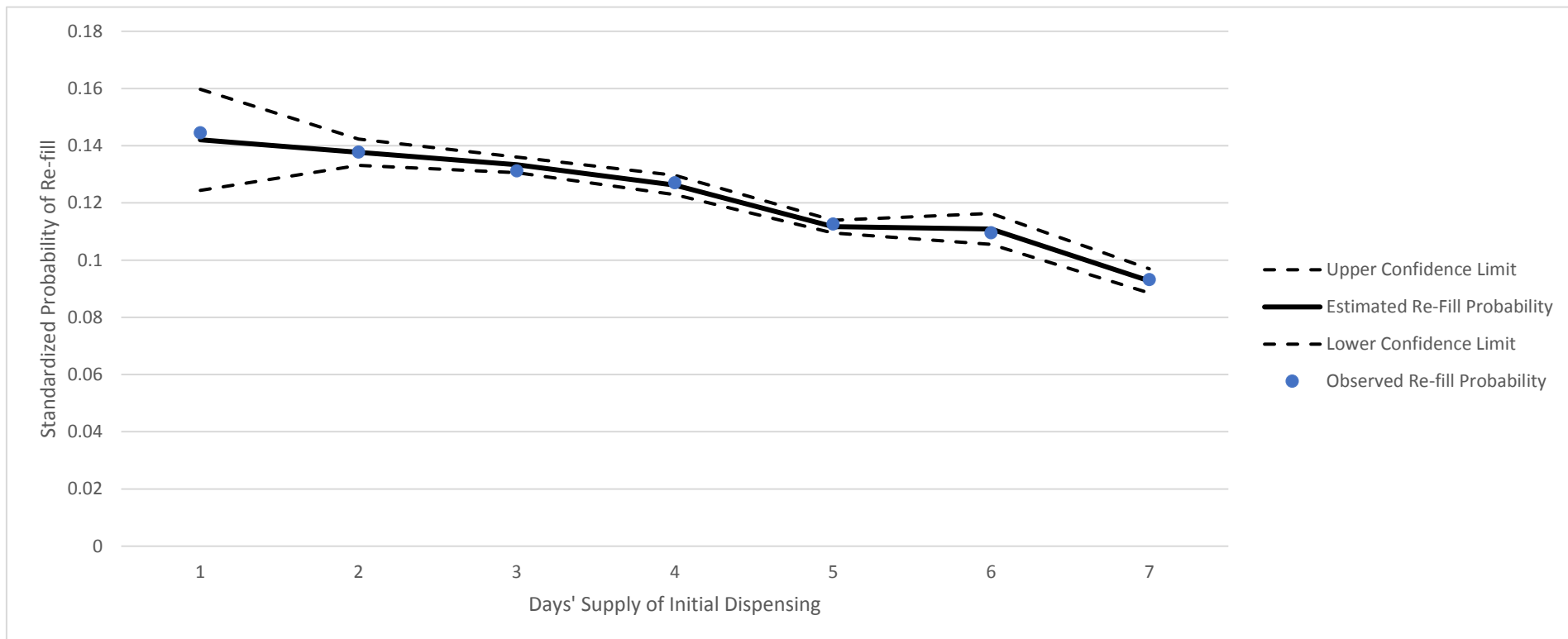


Figure 8. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cholecystectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

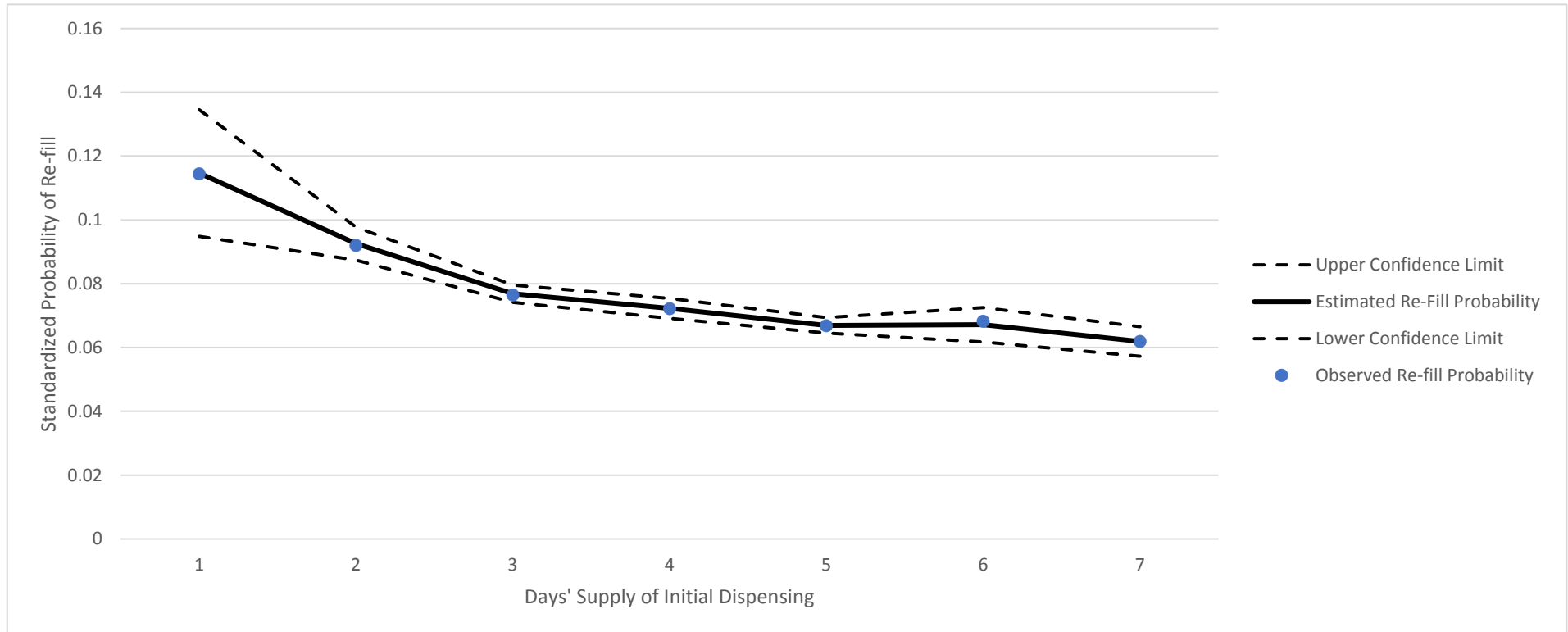


Figure 9. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cholecystectomy (nonspecific) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

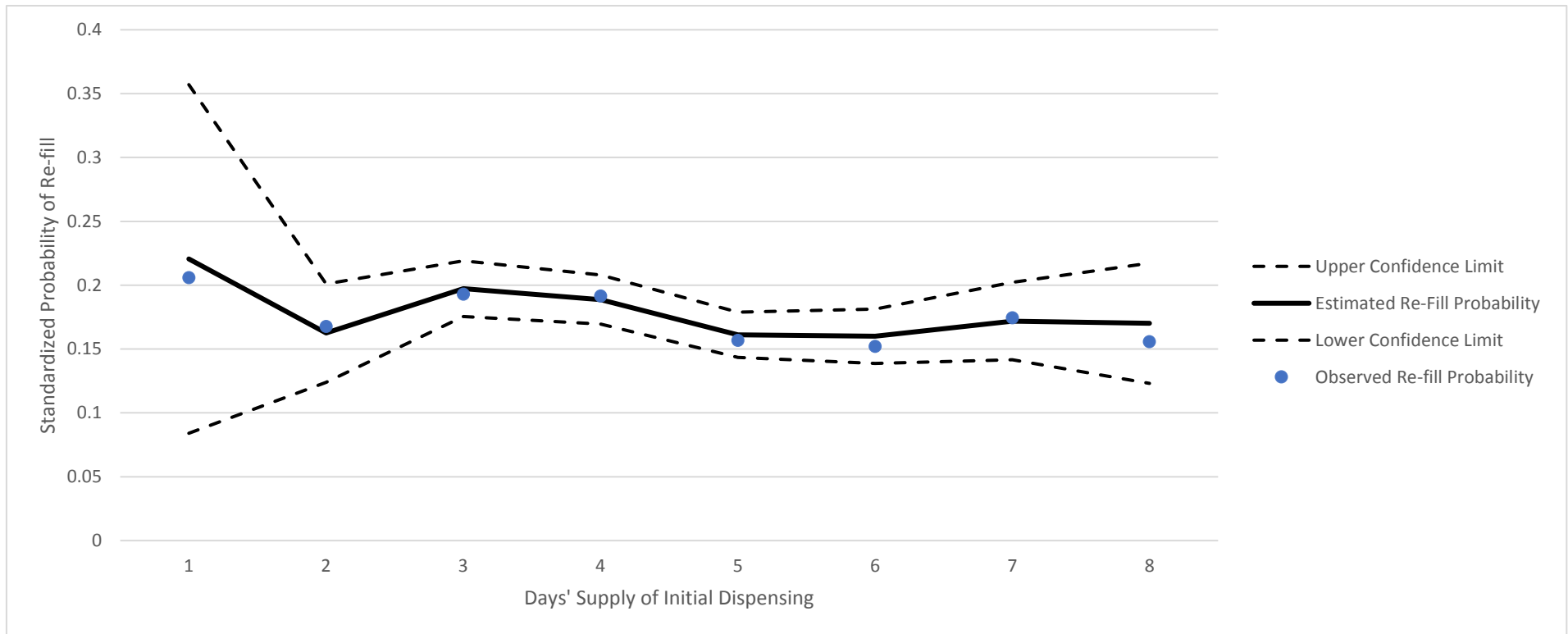


Figure 10. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Coronary Artery Bypass Graft with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

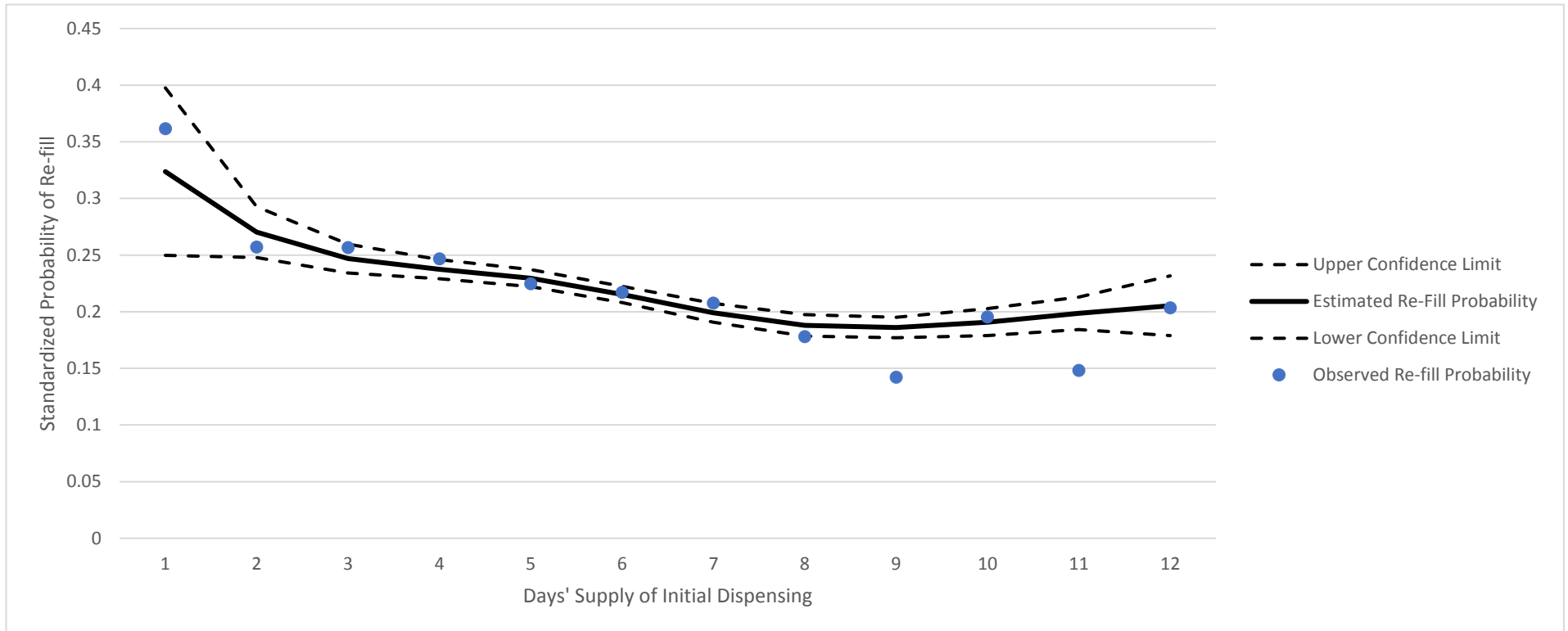


Figure 11. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hip Fracture Treatment with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

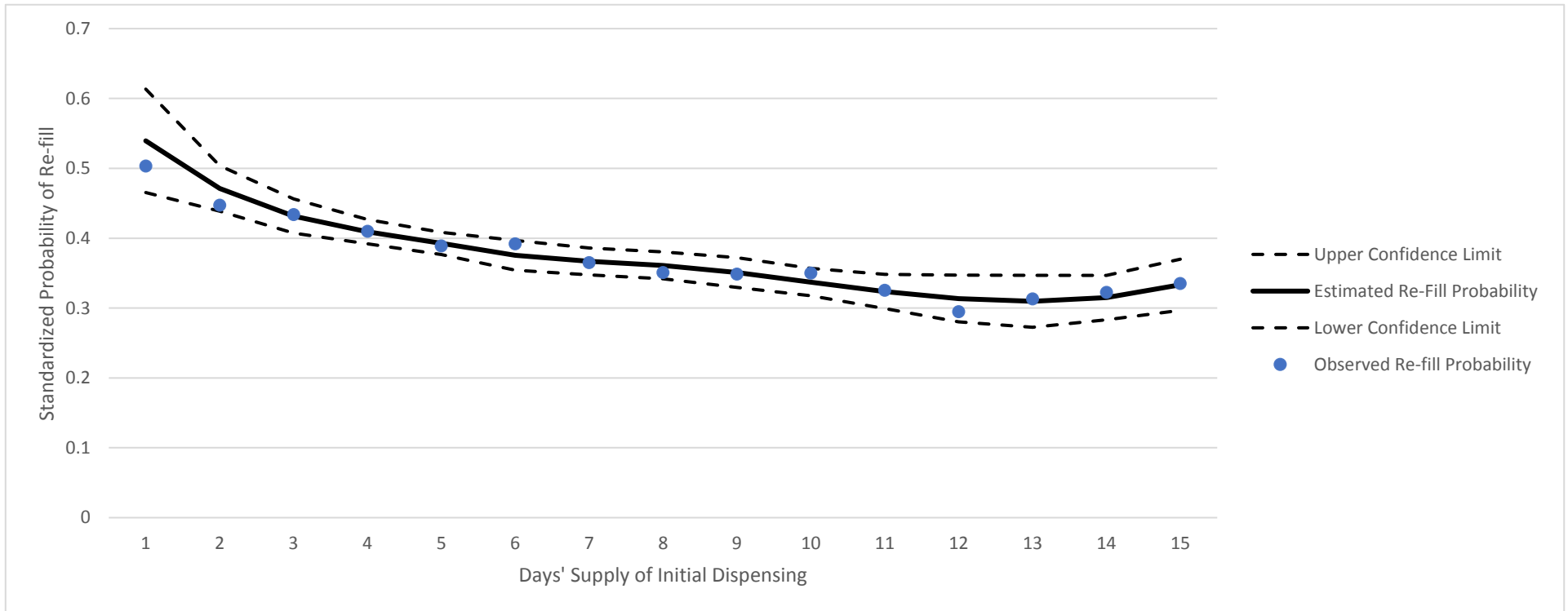


Figure 12. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hip Replacement with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

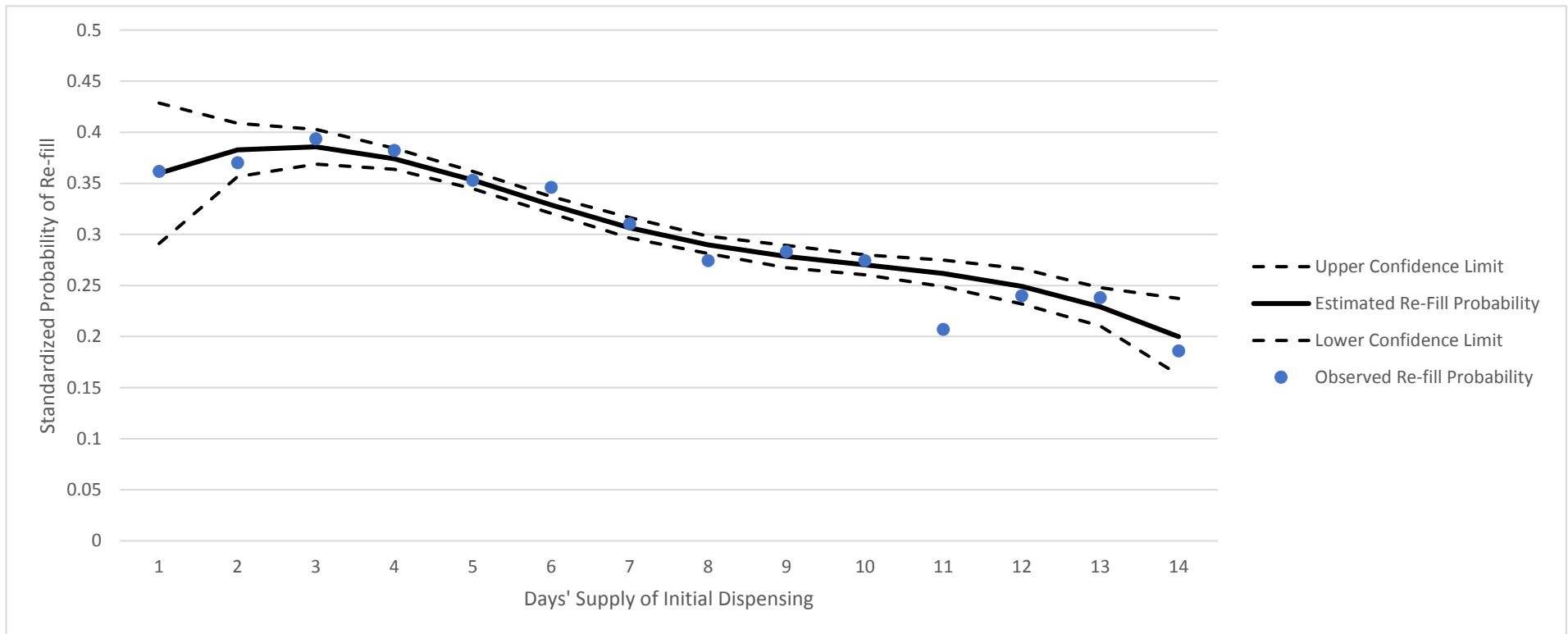


Figure 13. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hysterectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

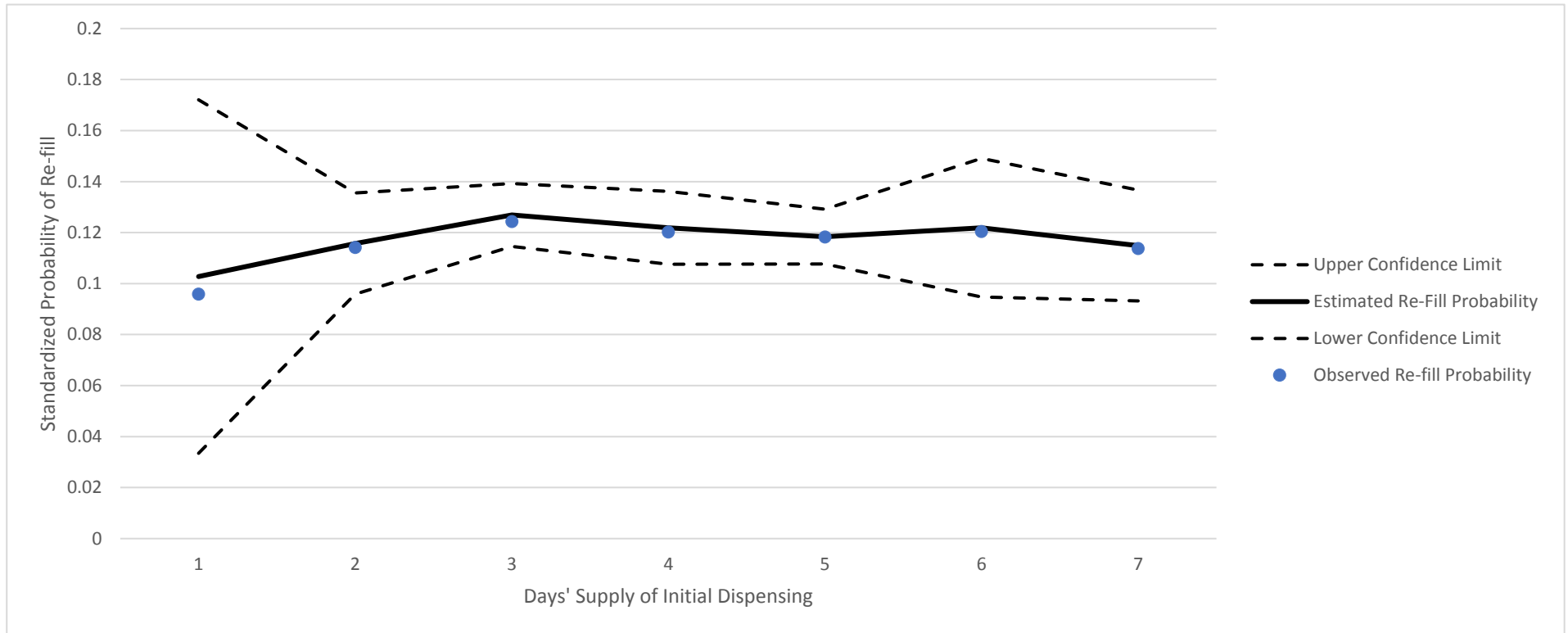


Figure 14. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hysterectomy (non-laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

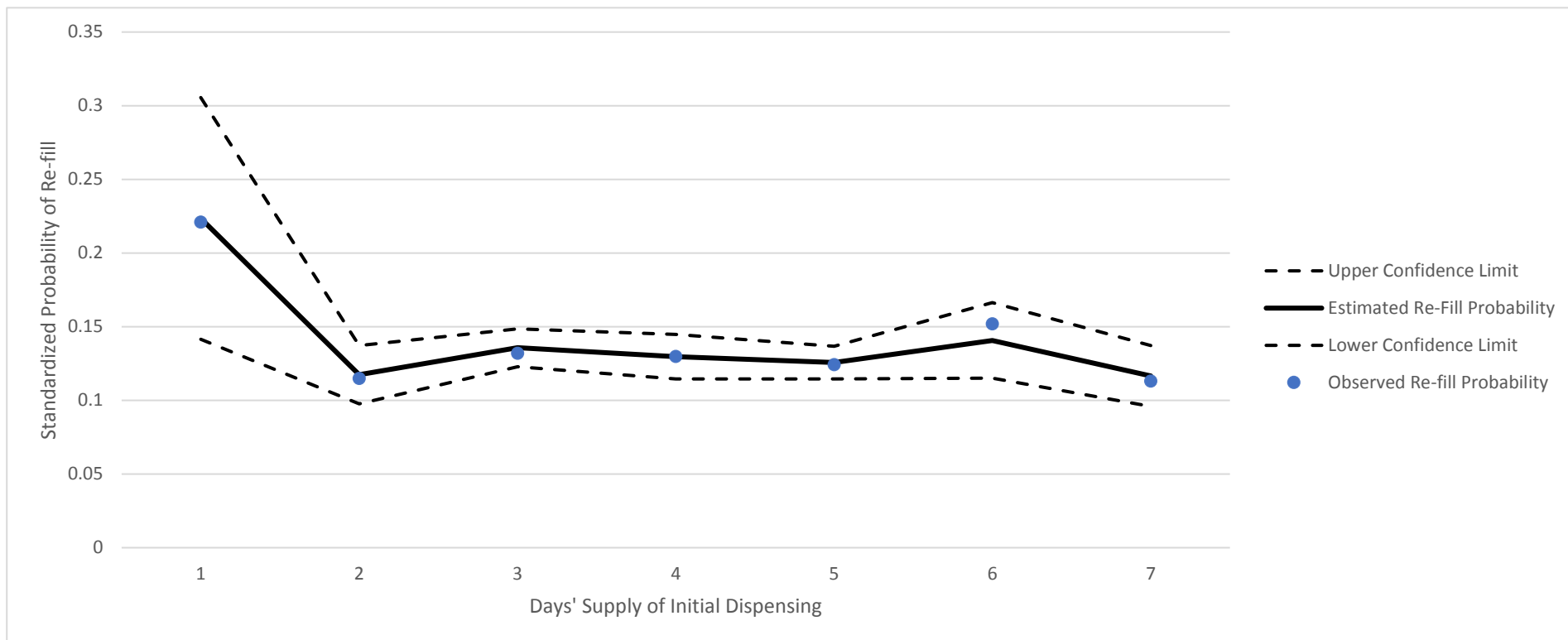


Figure 15. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Knee Arthroplasty with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

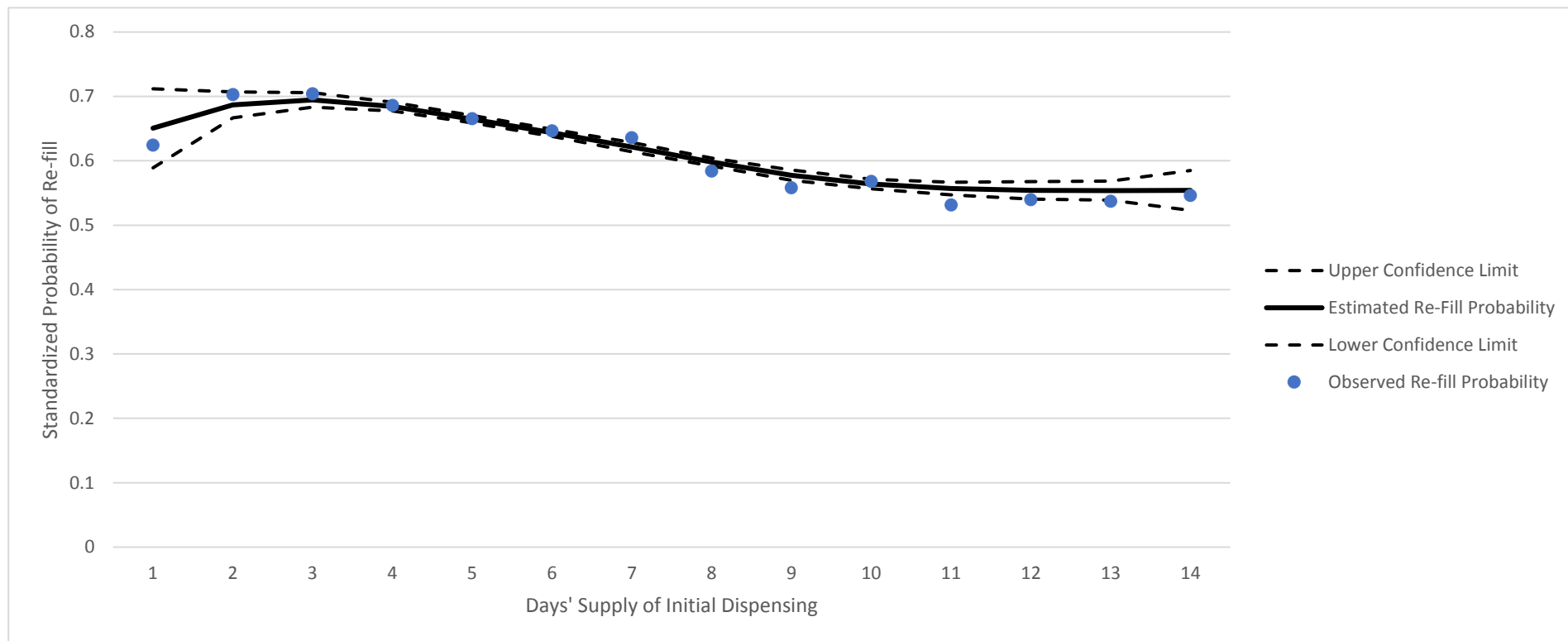


Figure 16. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Laminectomy/Discectomy with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

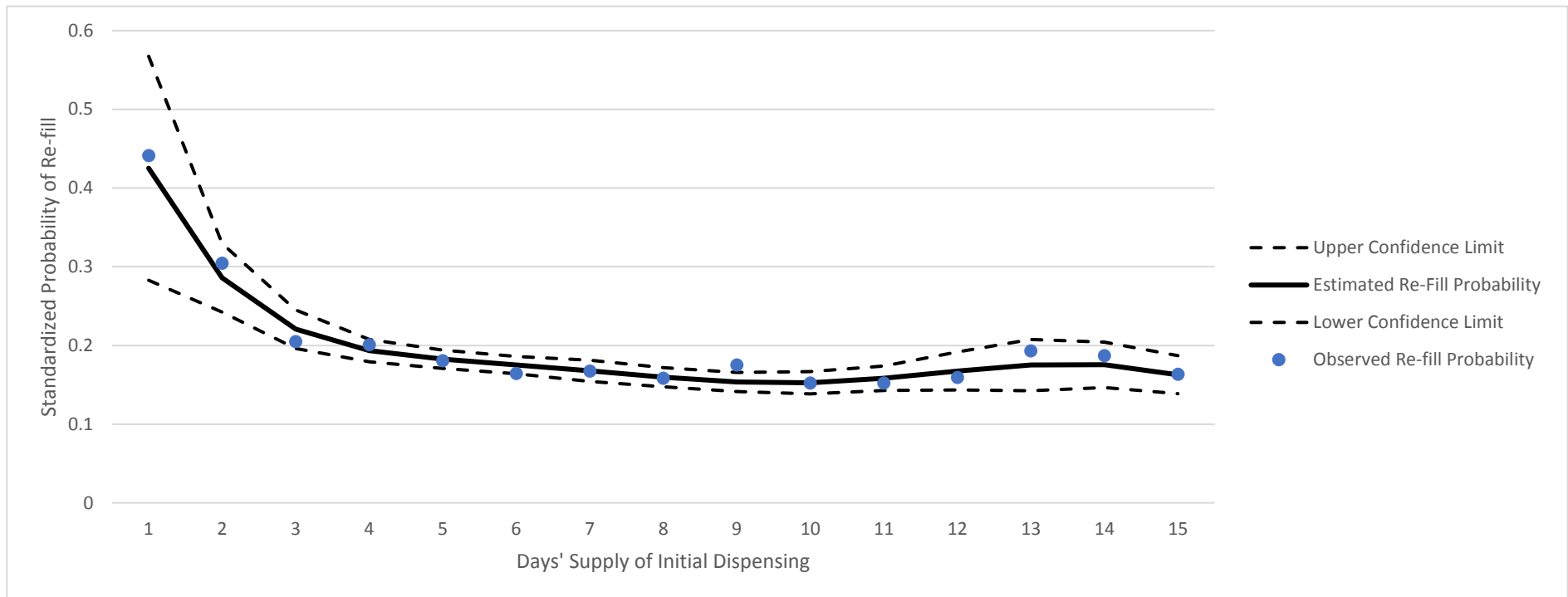


Figure 17. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (1-3 levels) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

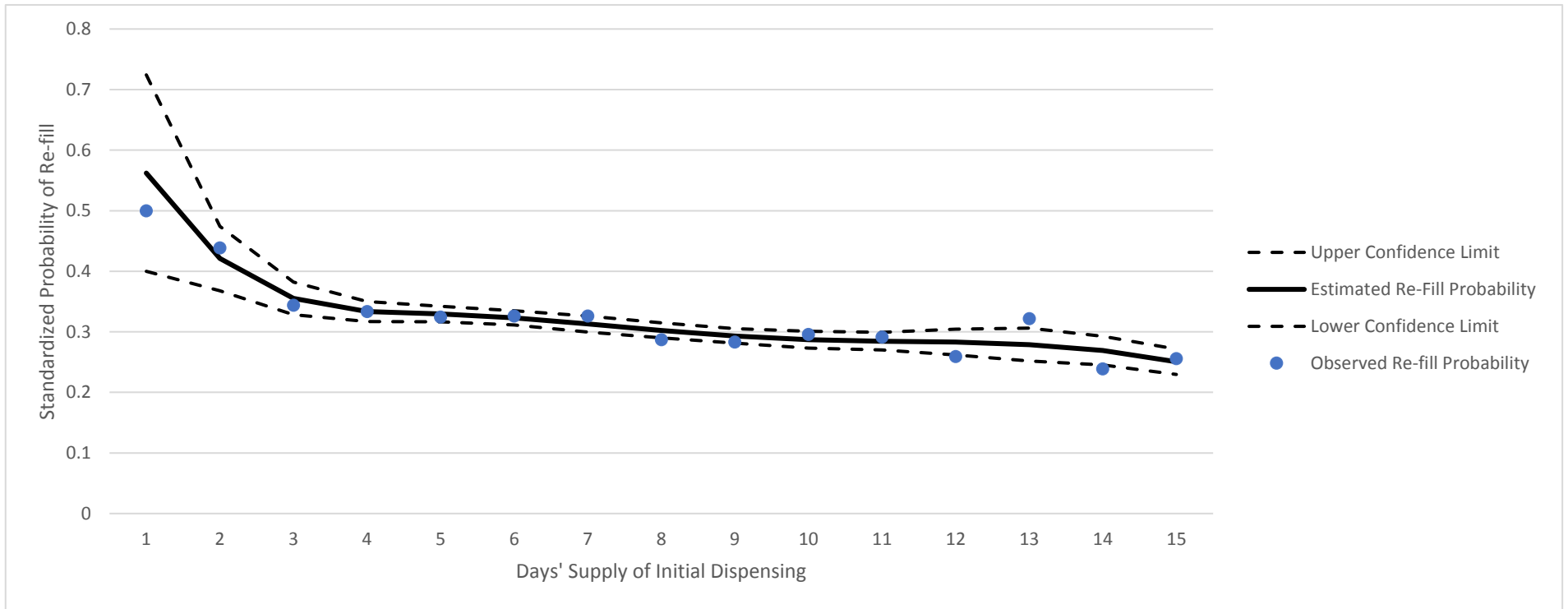


Figure 18. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (4+ levels) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

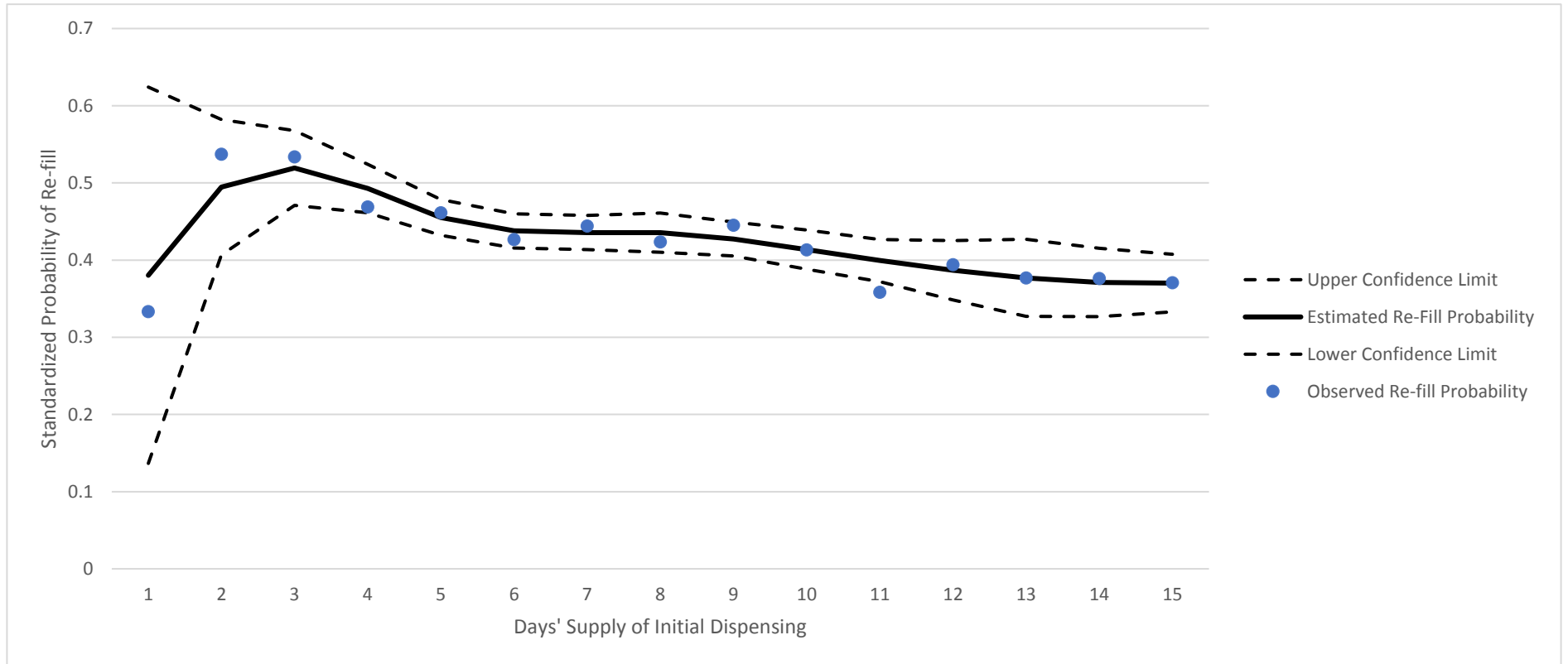


Figure 19. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (all levels) with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

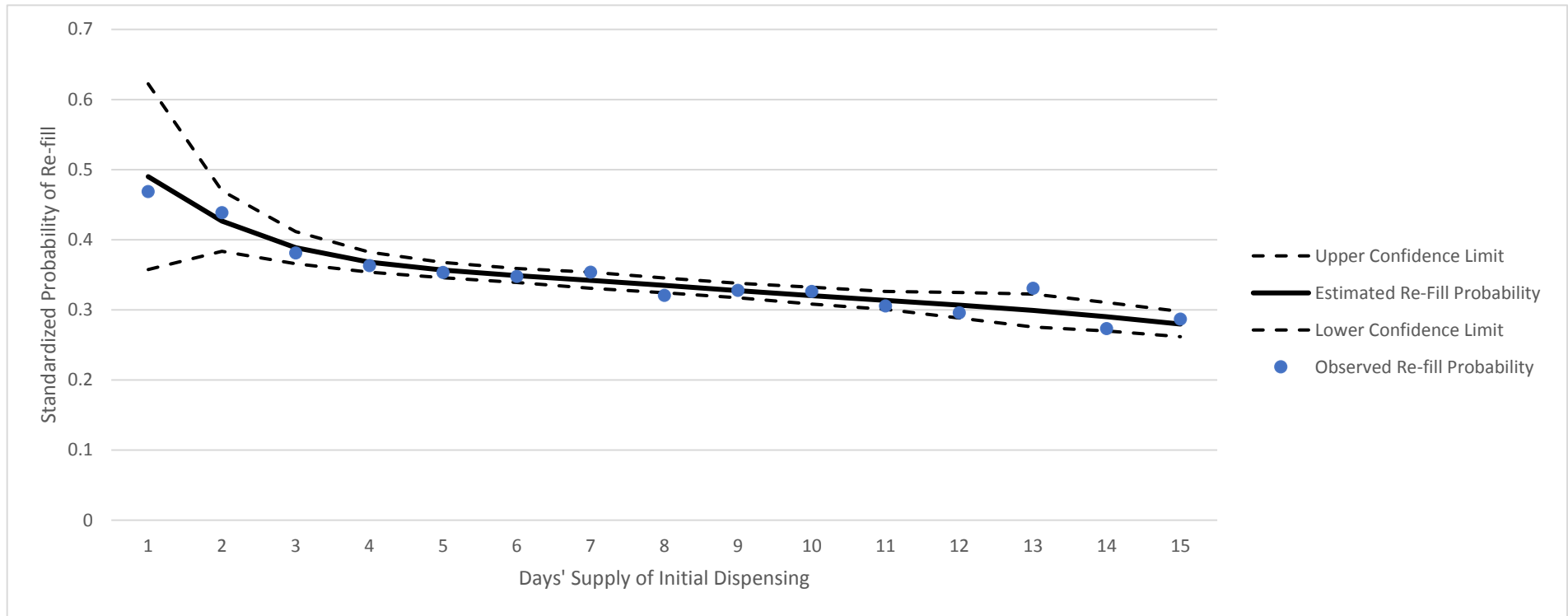


Figure 20. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Tooth Extraction with an Initial Dispensing of 90 Days or Fewer by Days' Supply of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

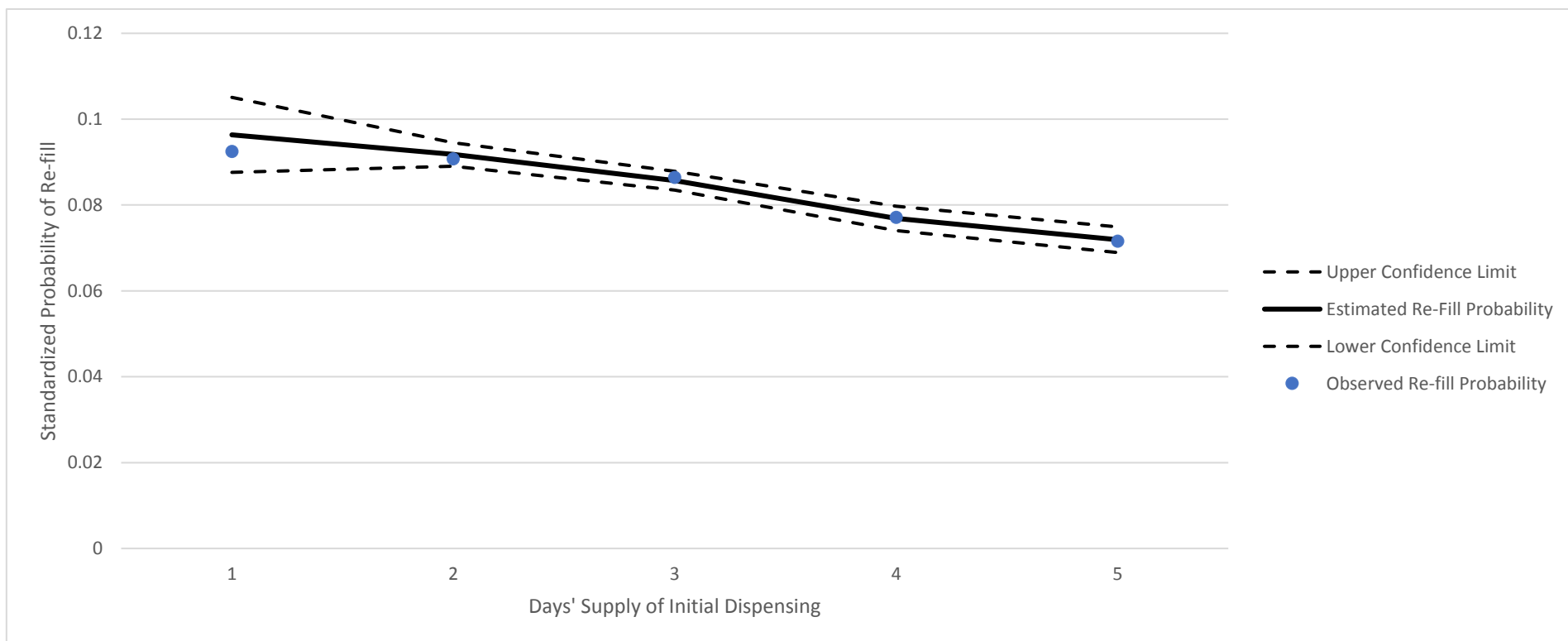


Figure 21. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with an Appendectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

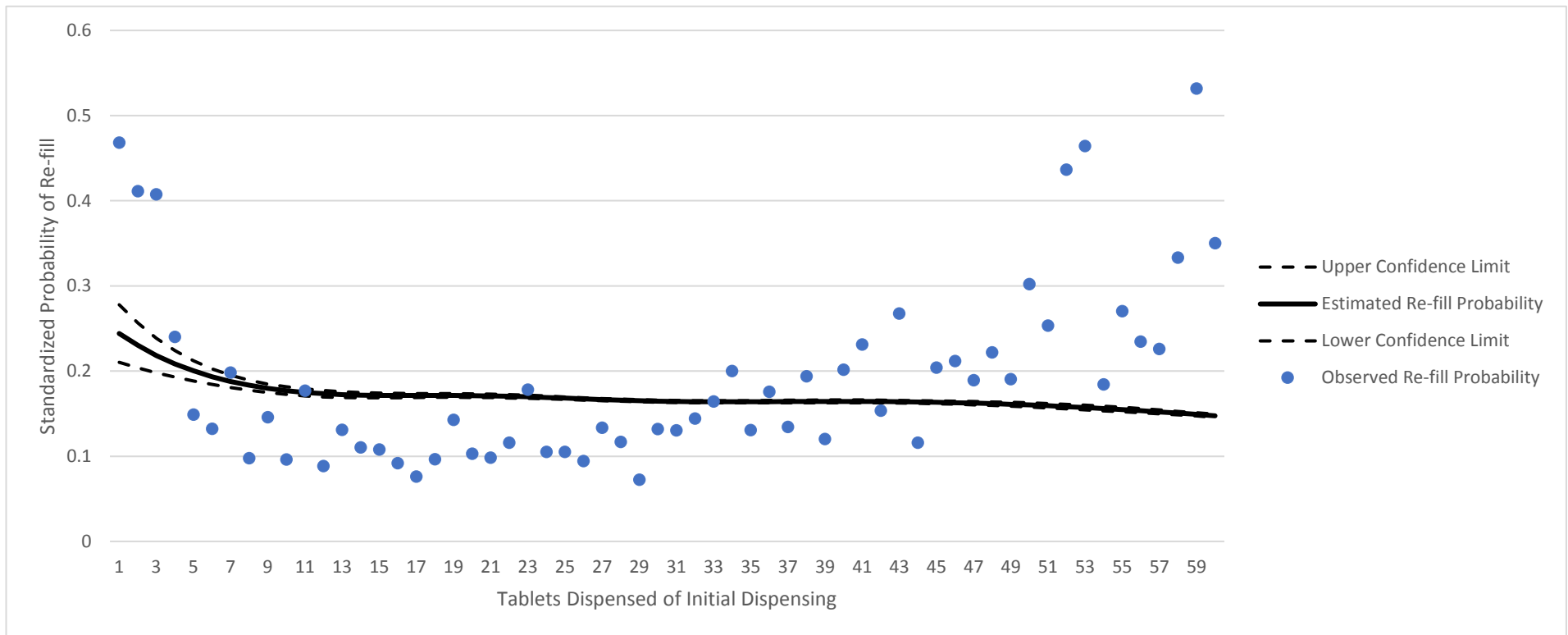


Figure 22. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with an Appendectomy (nonspecific) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

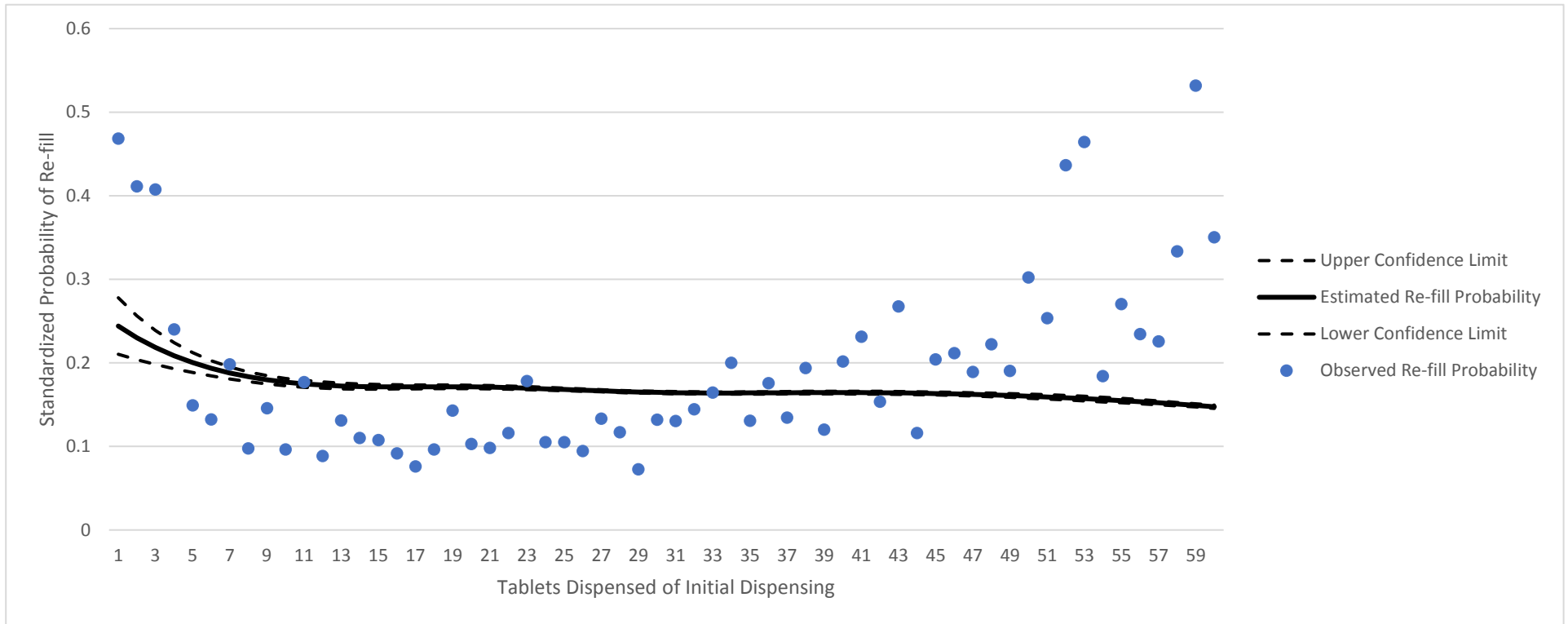


Figure 23. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Bunionectomy with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

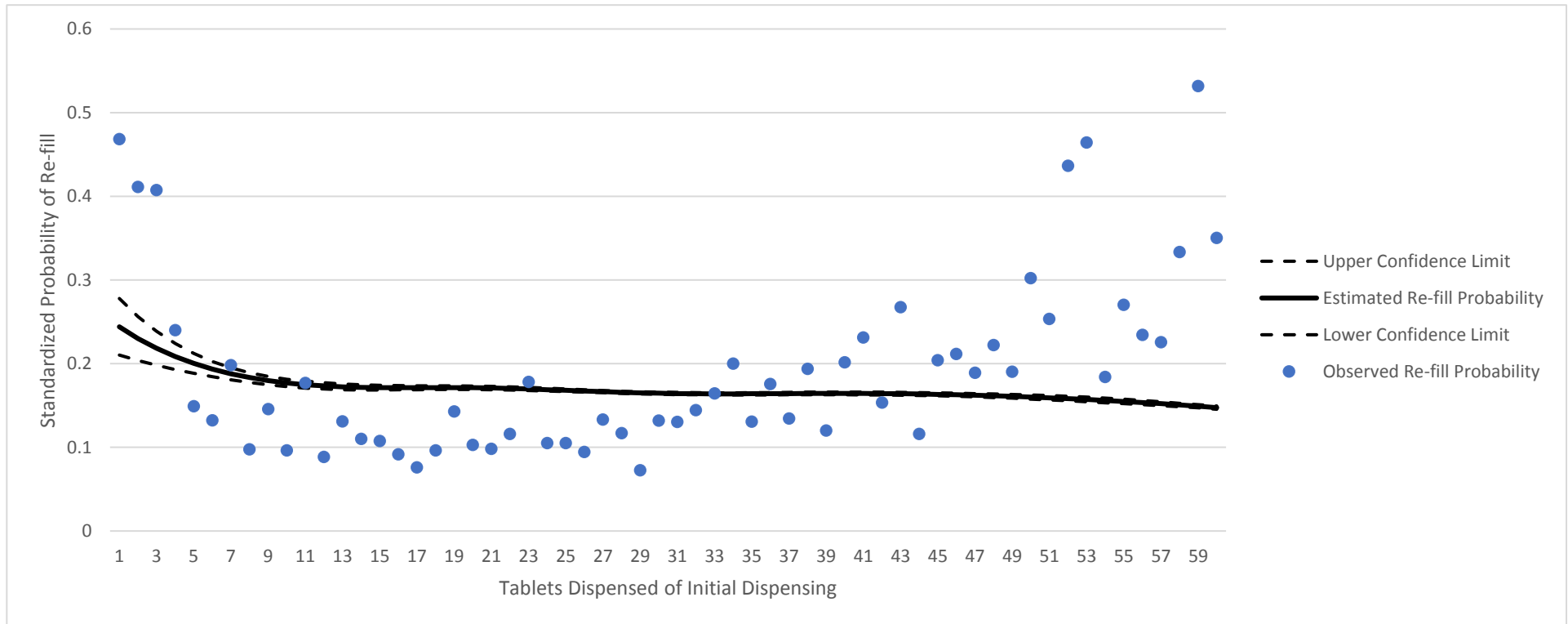


Figure 24. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cesarean Section with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

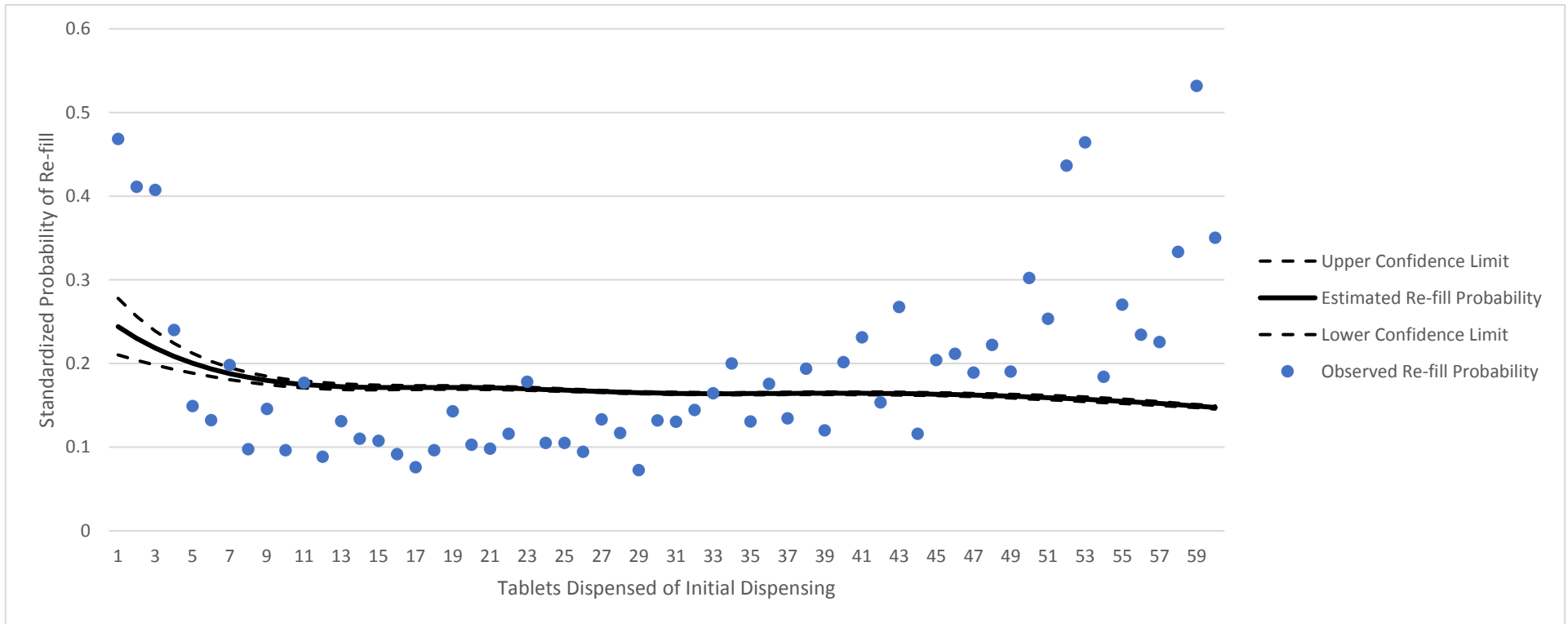


Figure 25. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cholecystectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

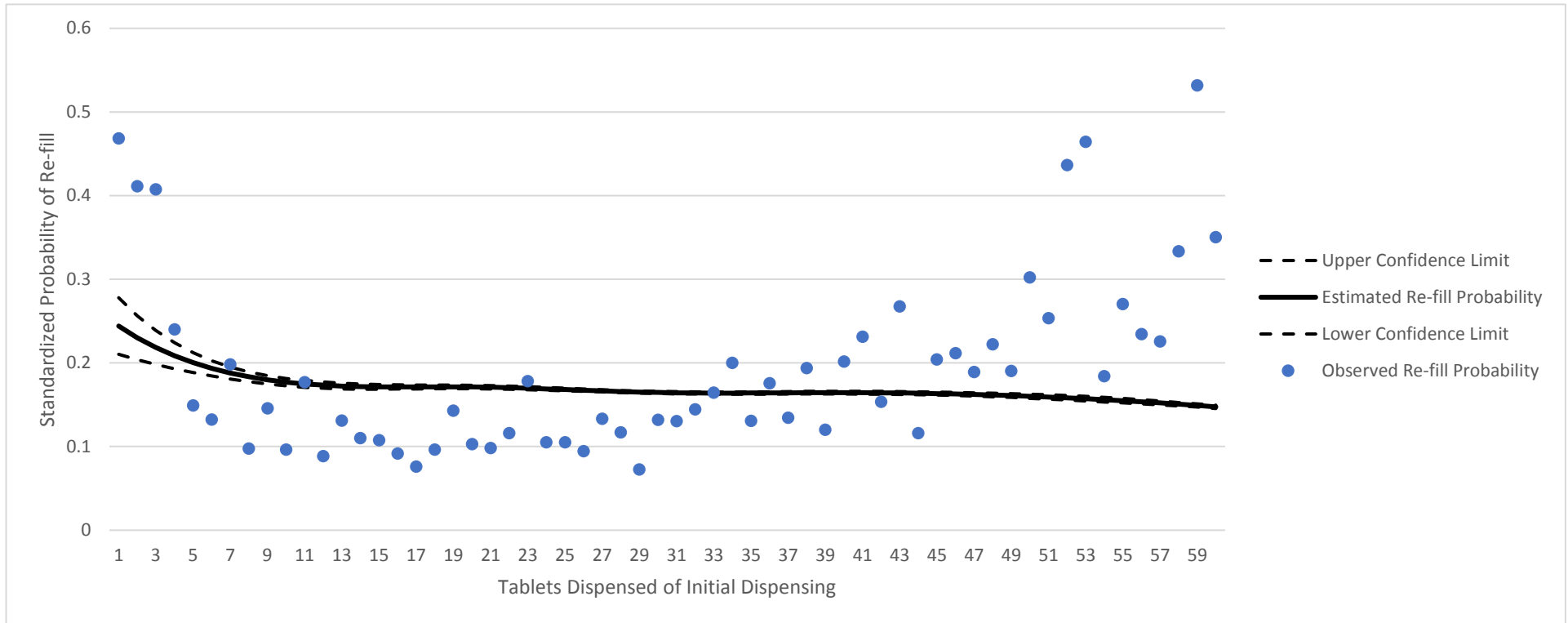


Figure 26. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cholecystectomy (nonspecific) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

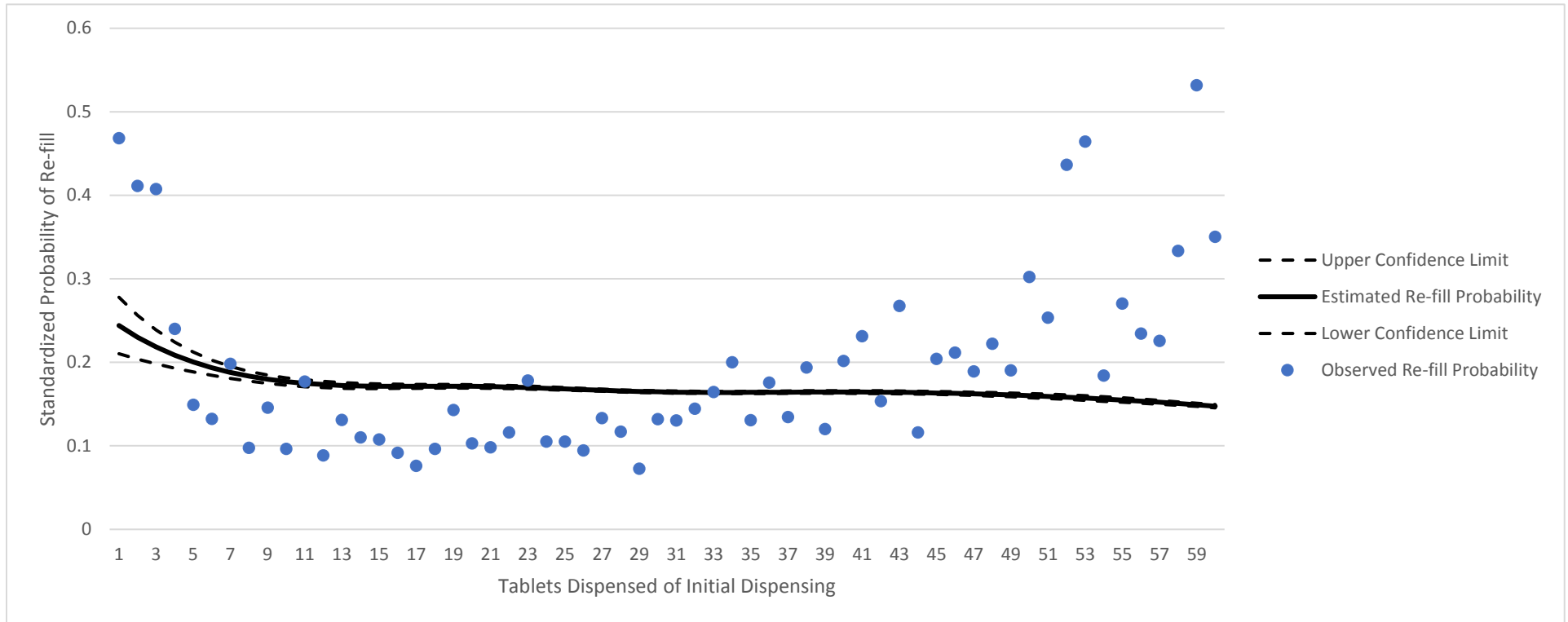


Figure 27. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Coronary Artery Bypass Graft with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

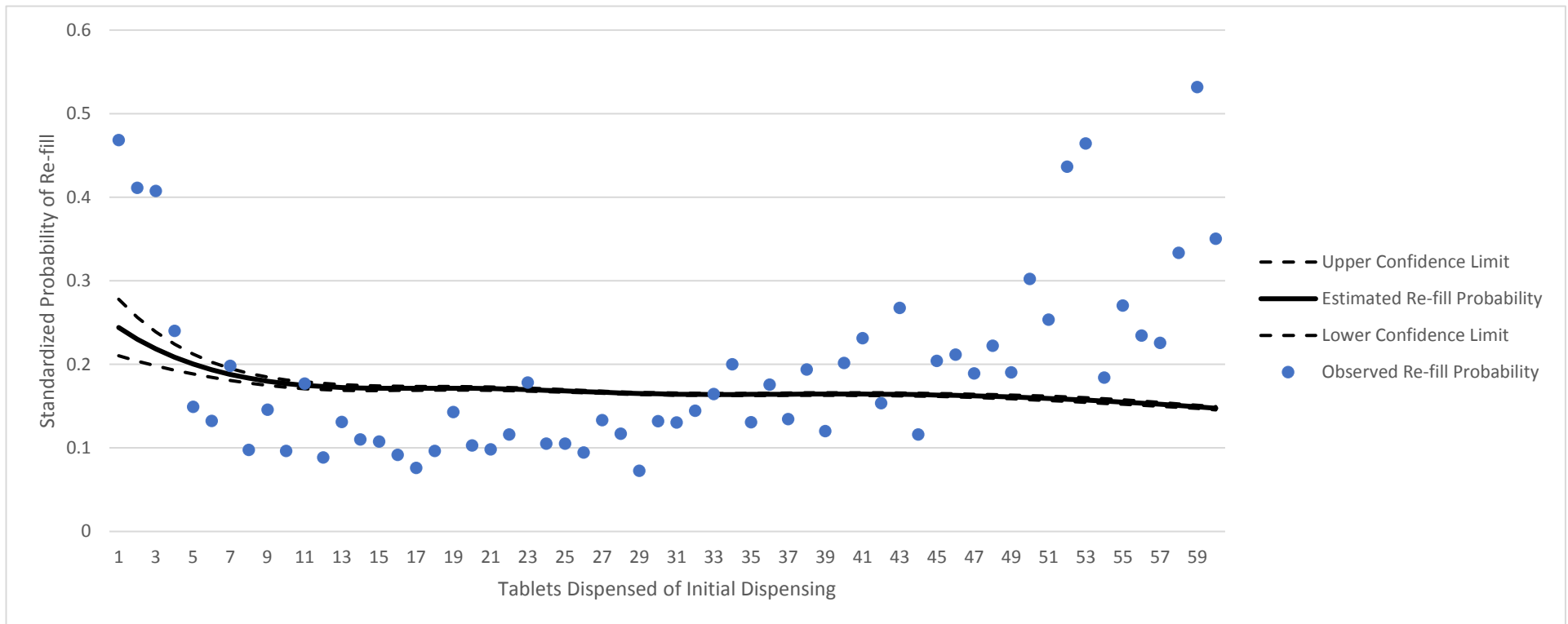


Figure 28. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hip Fracture Treatment with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

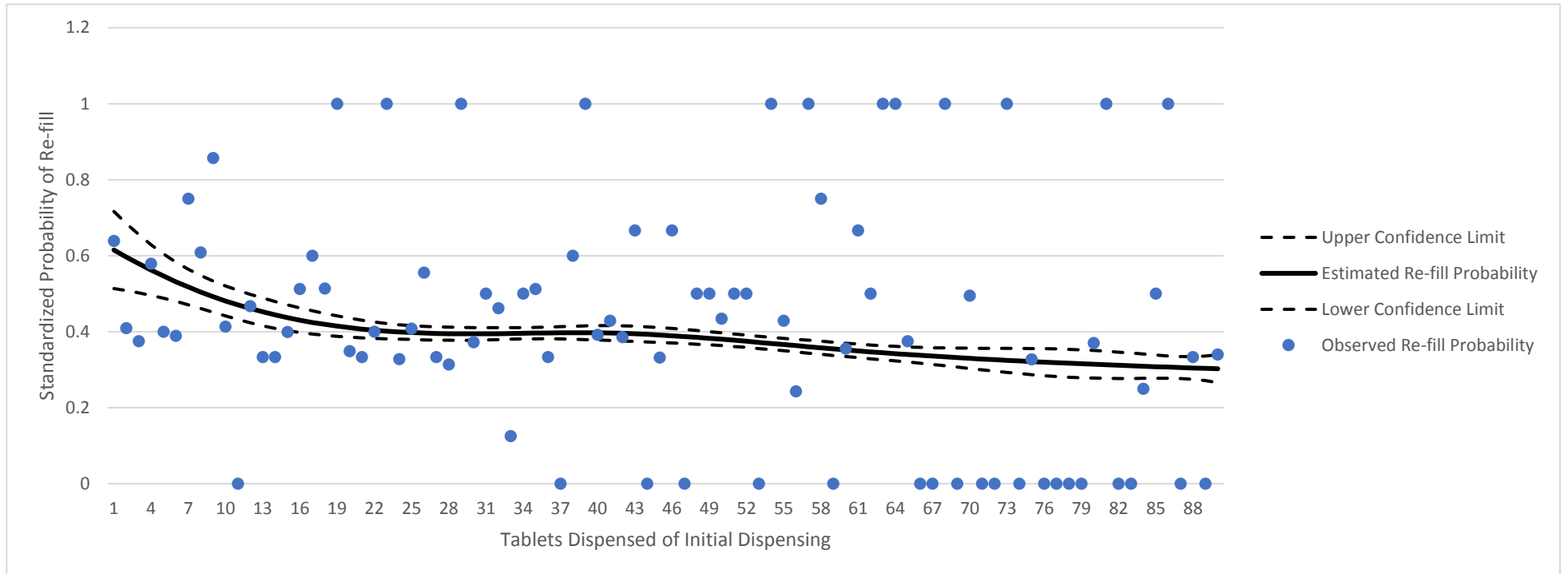


Figure 29. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hip Replacement with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

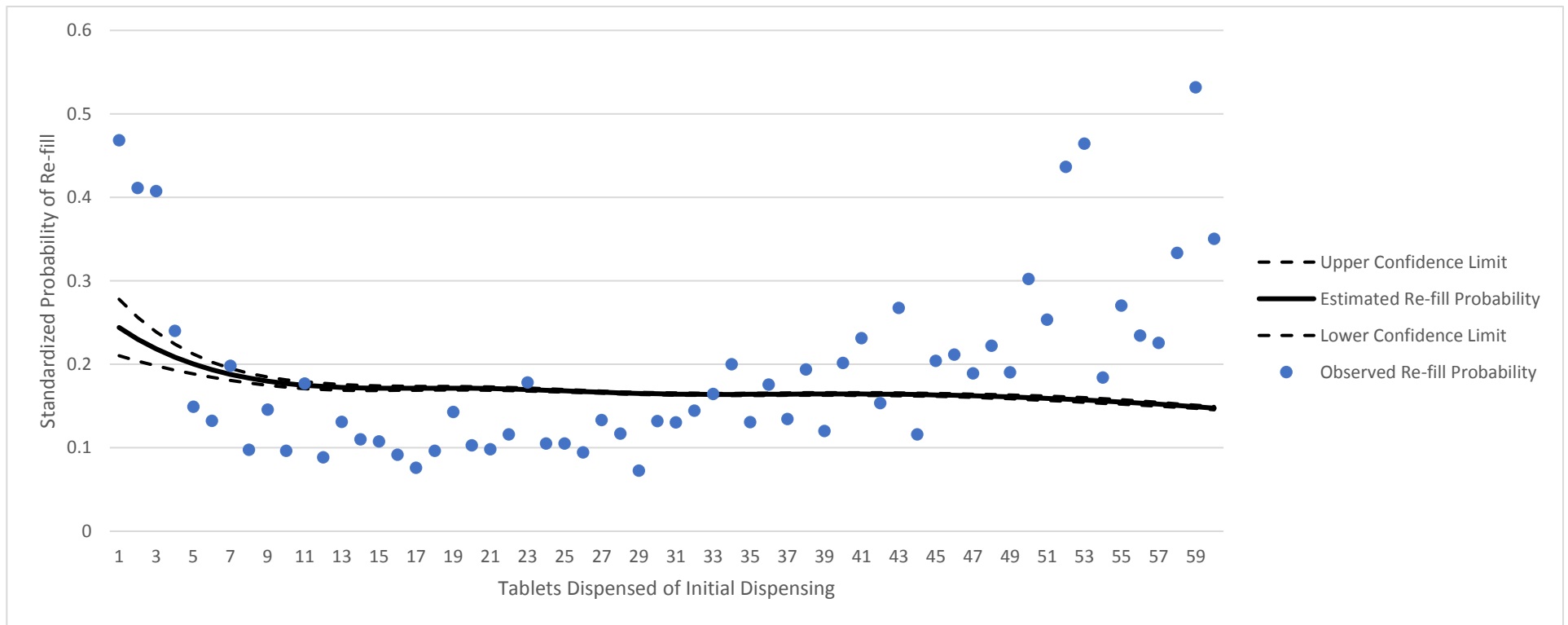


Figure 30. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hysterectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

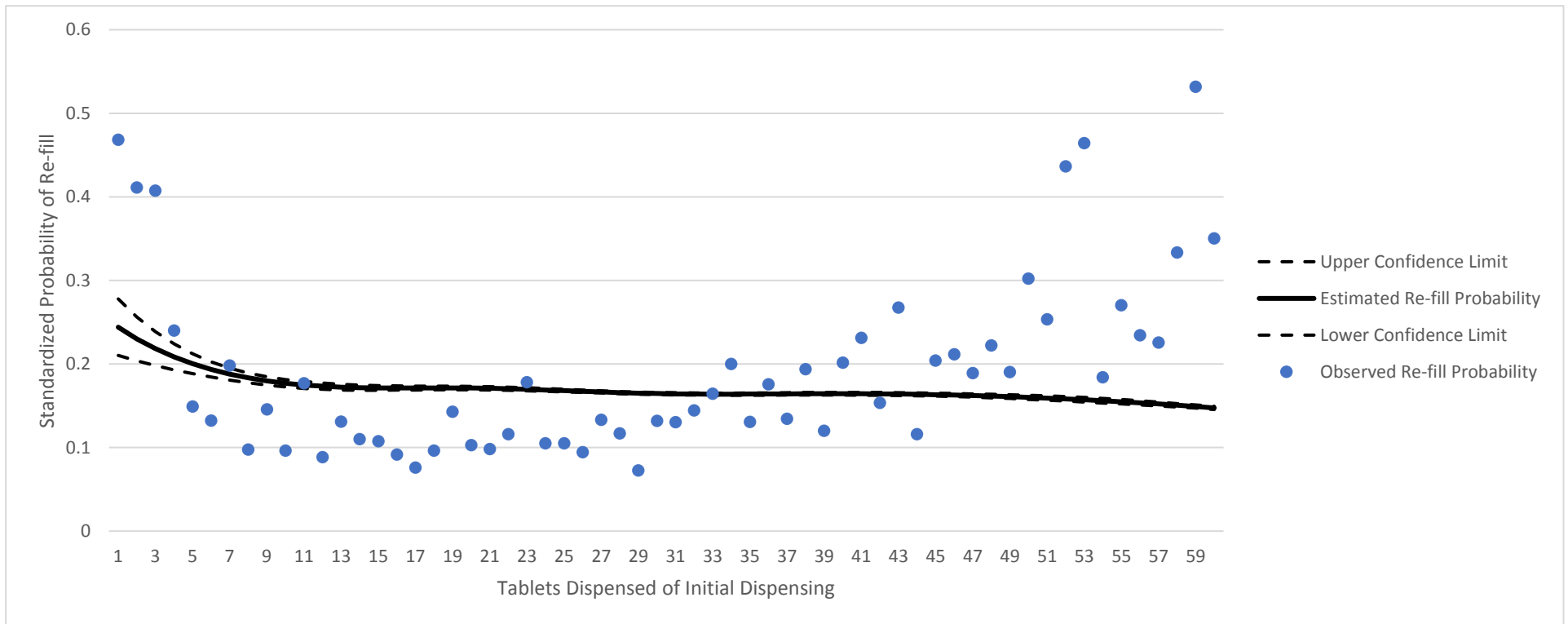


Figure 31. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hysterectomy (non-laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

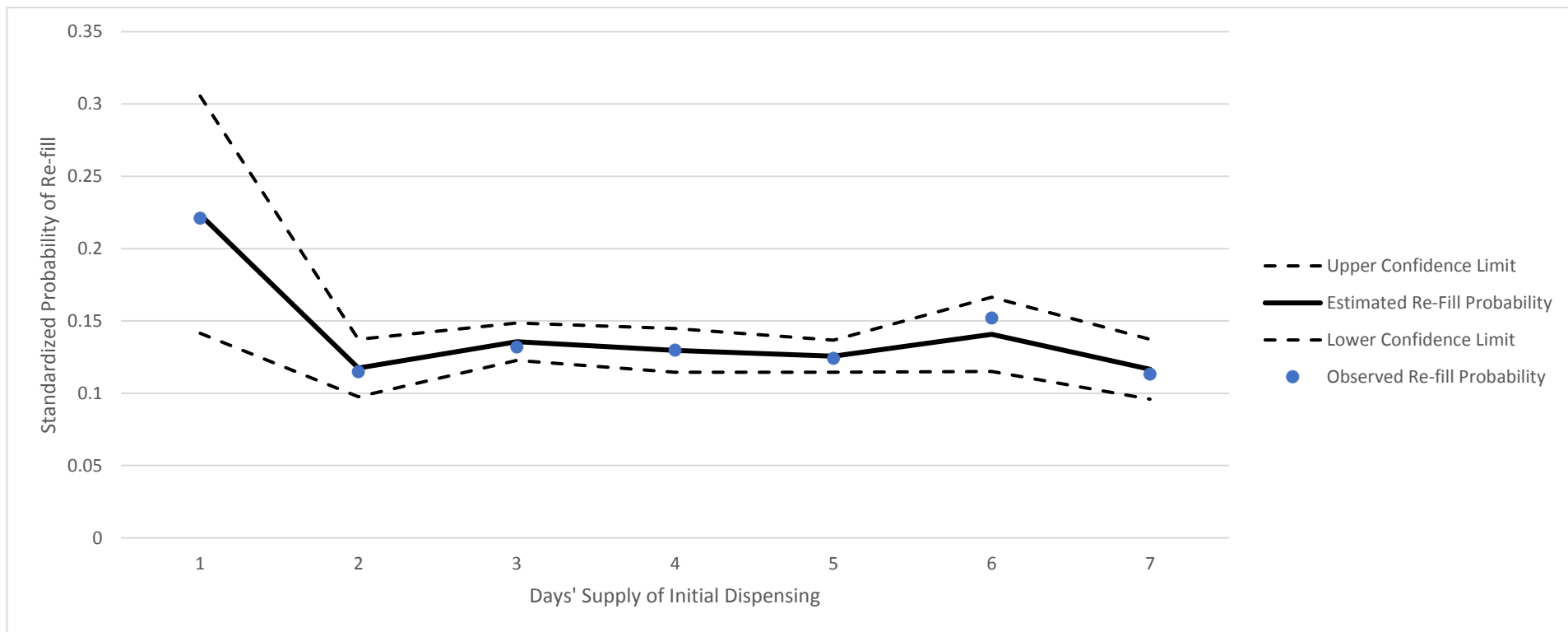


Figure 32. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Knee Arthroplasty with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

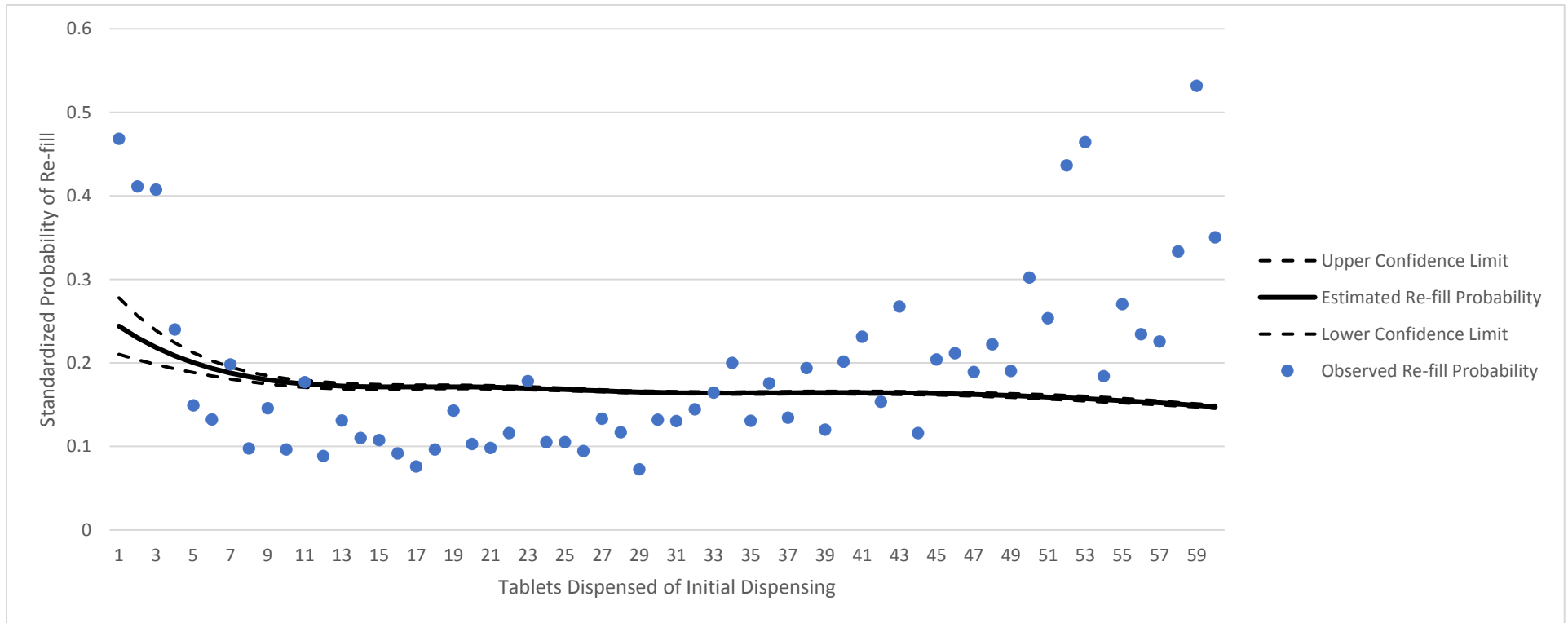


Figure 33. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Laminectomy/Discectomy with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

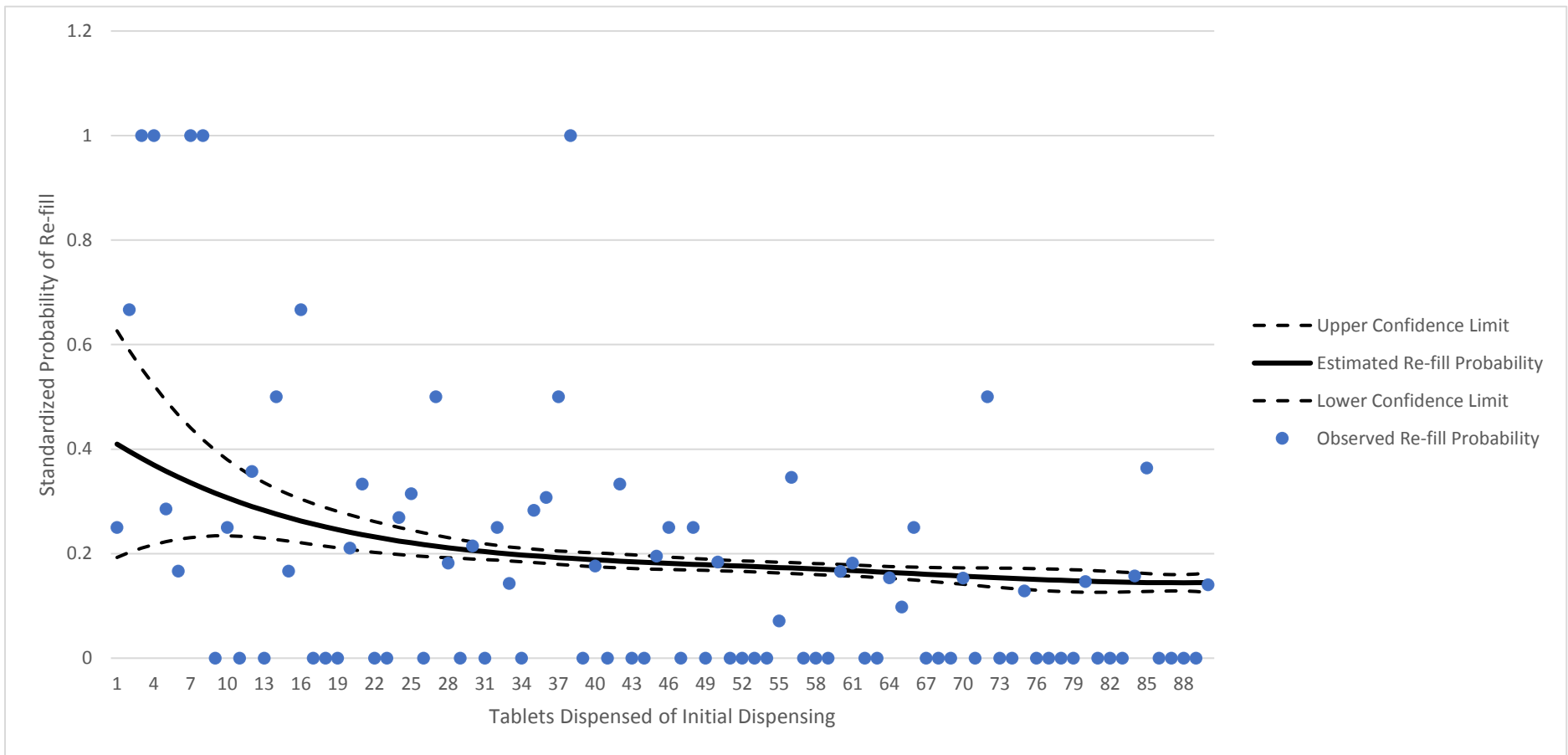


Figure 34. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (1-3 levels) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

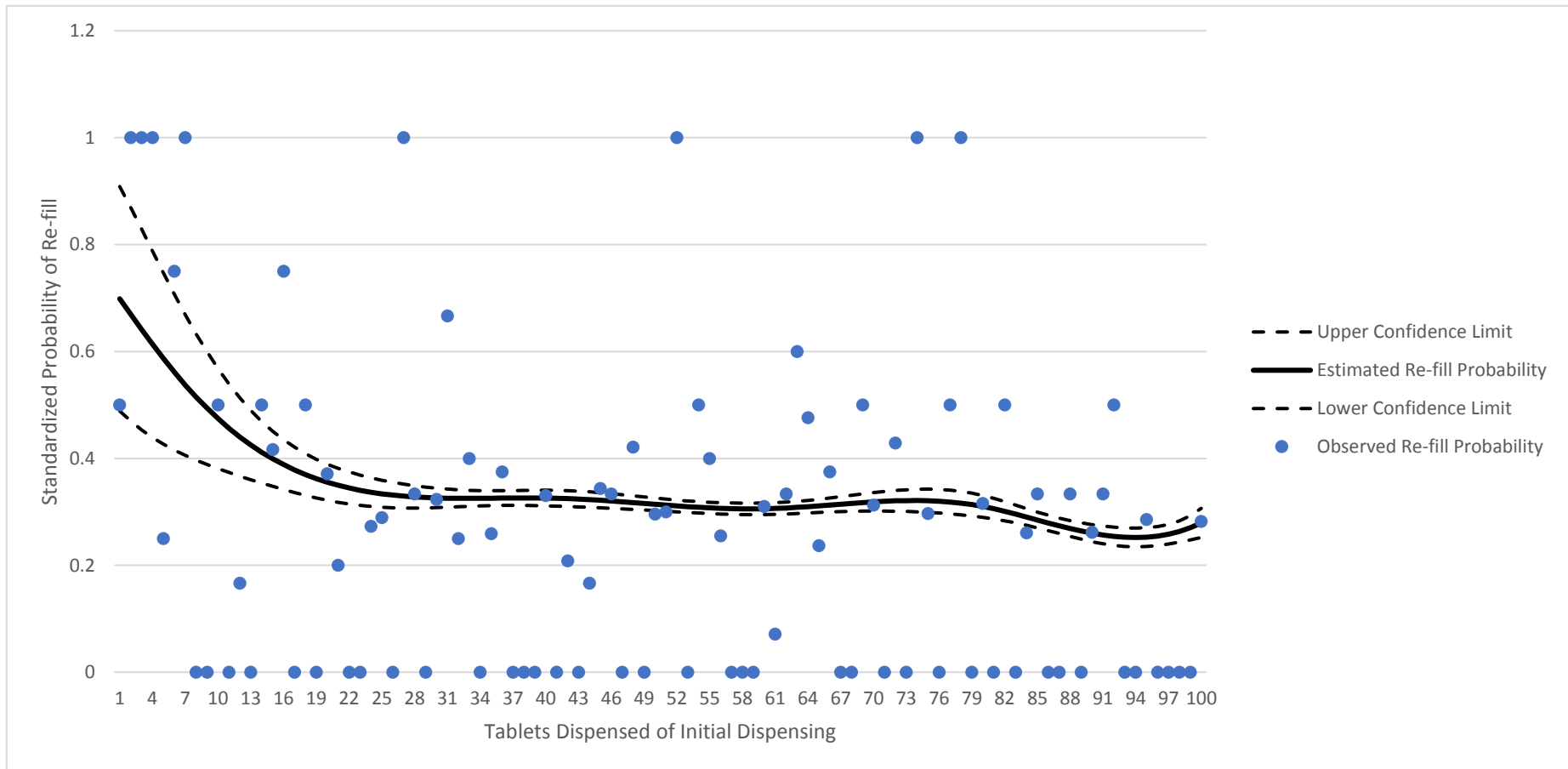


Figure 35. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (4+ levels) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

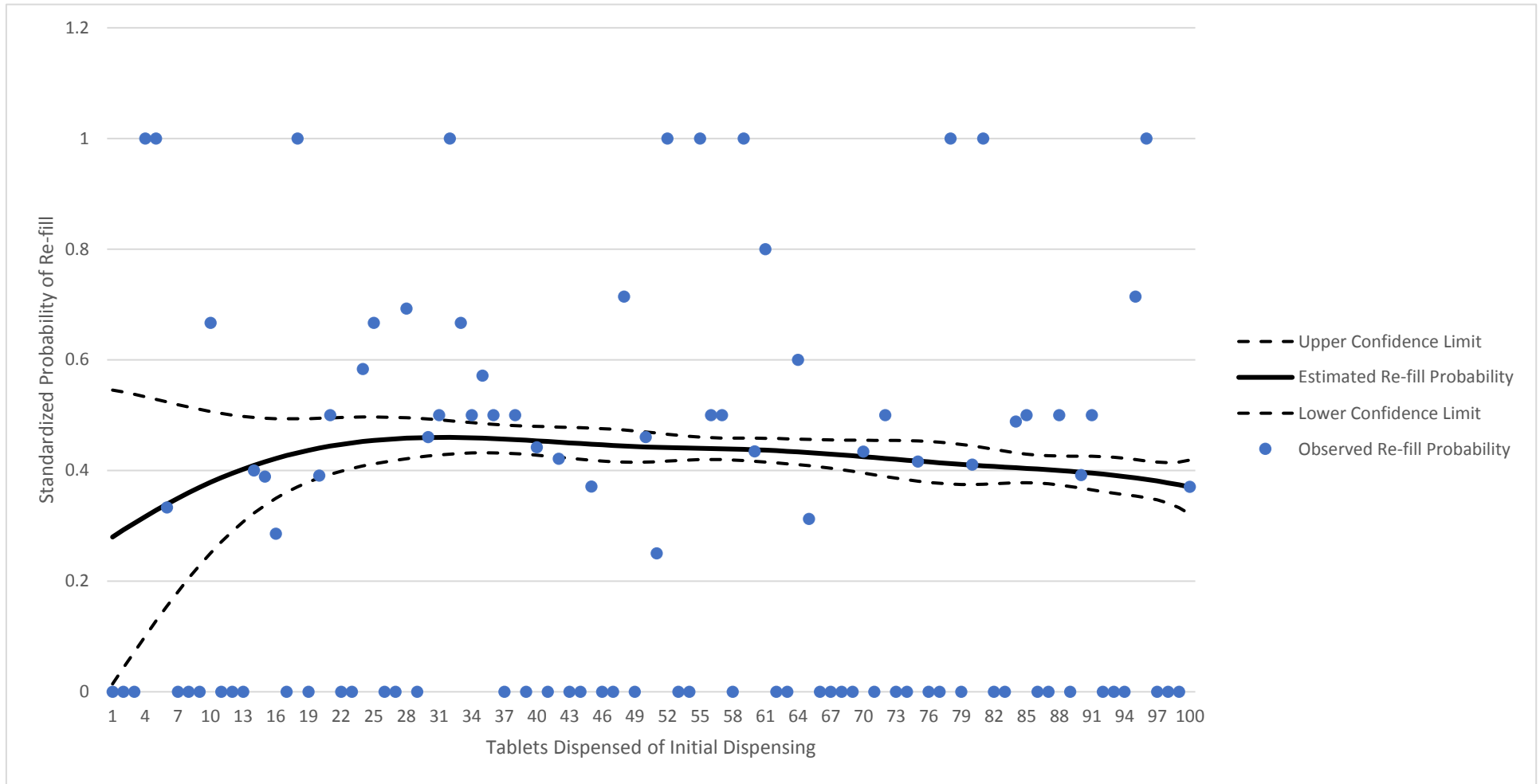


Figure 36. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (all levels) with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

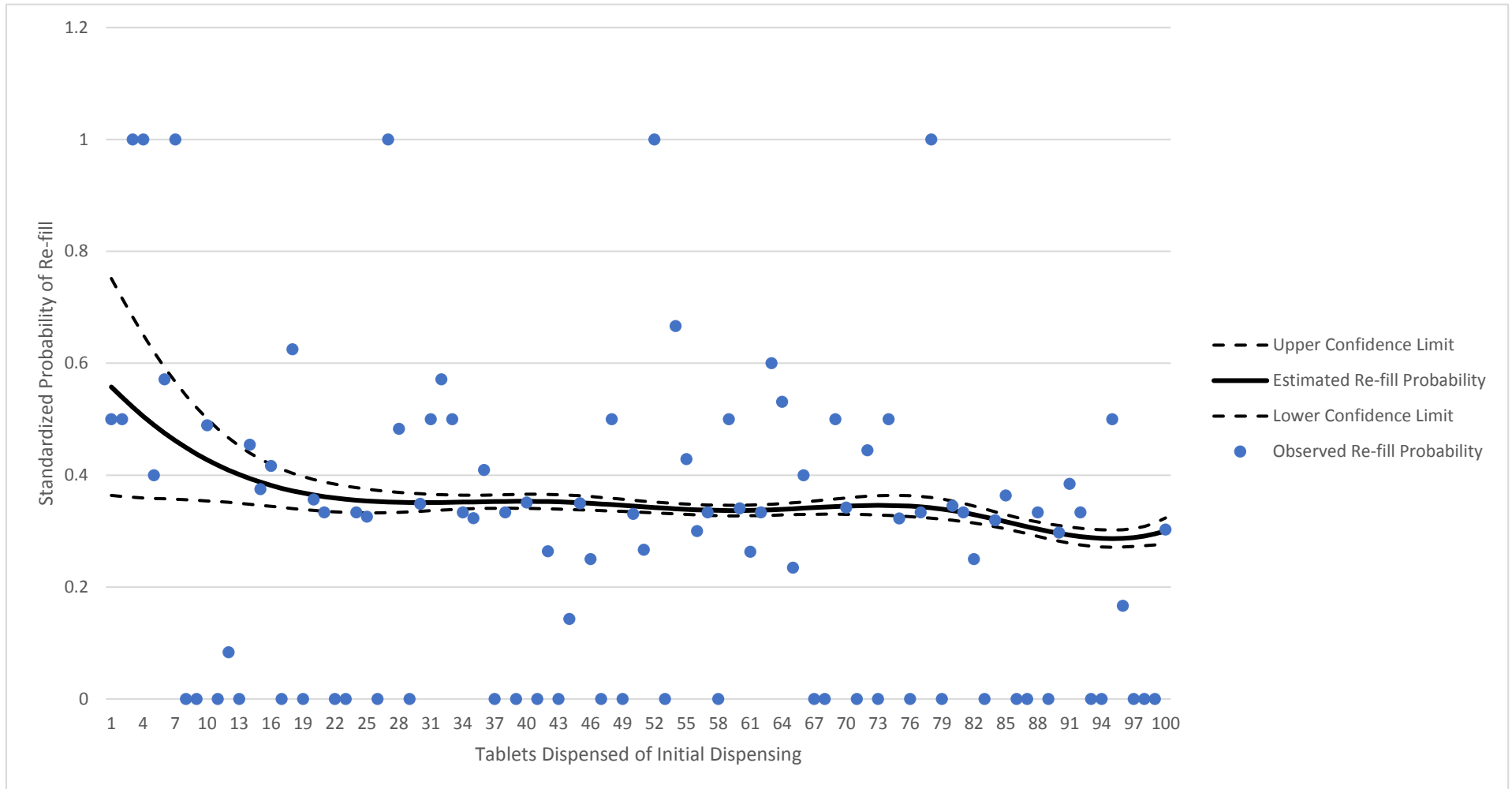


Figure 37. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Tooth Extraction with an Initial Dispensing of 90 Days or Fewer by Tablets/Capsules Dispensed of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

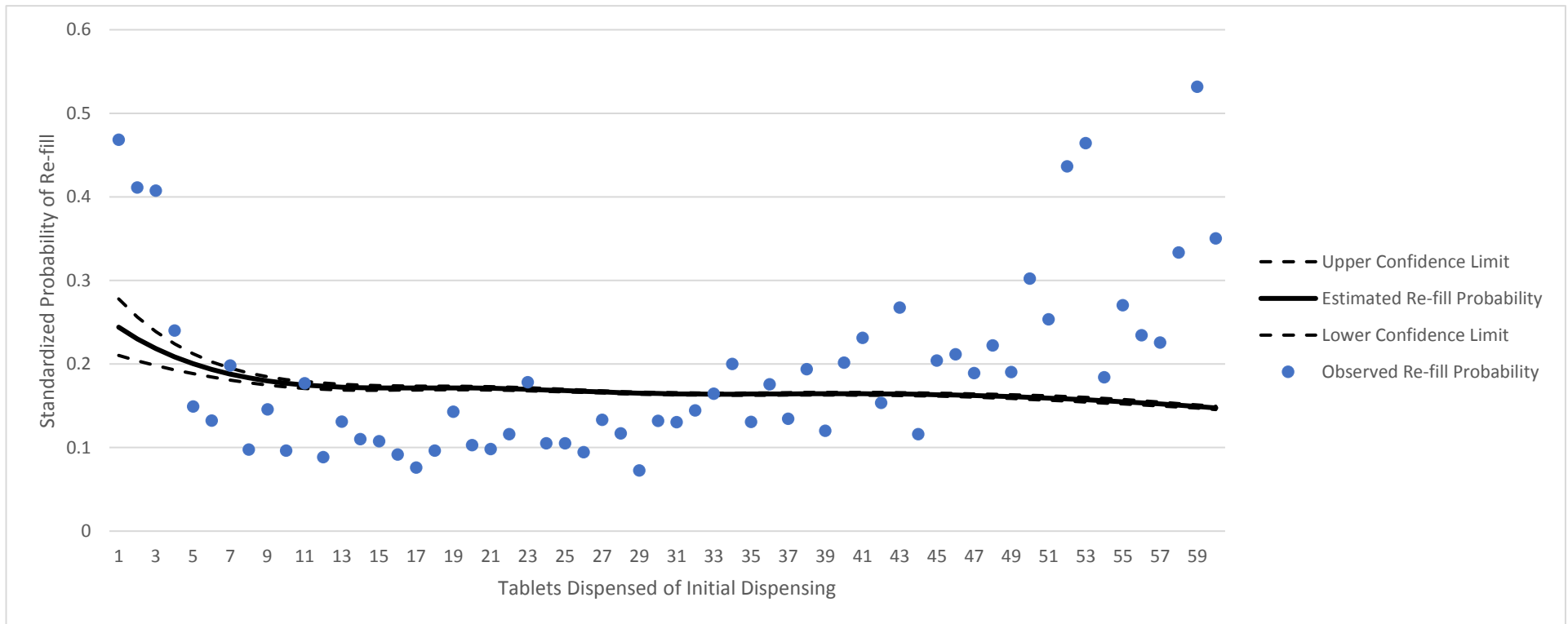


Figure 38. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with an Appendectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

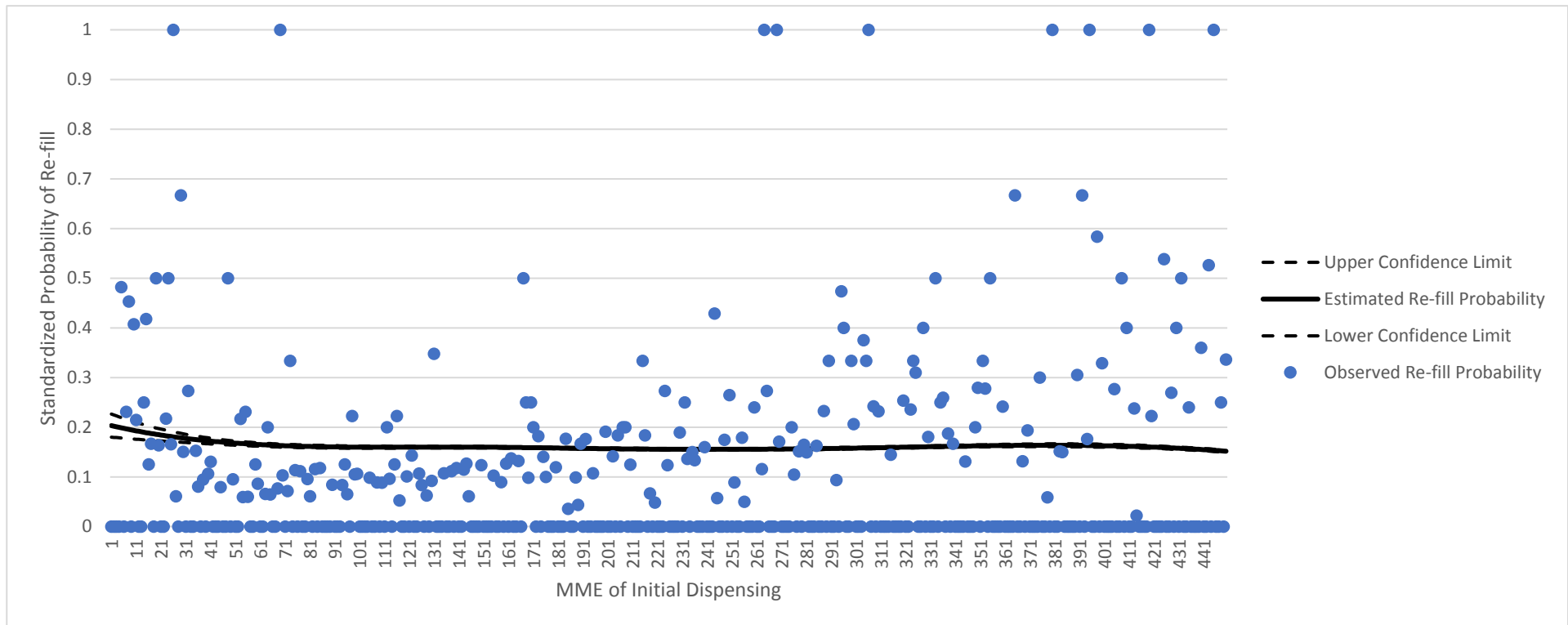


Figure 39. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with an Appendectomy (nonspecific) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

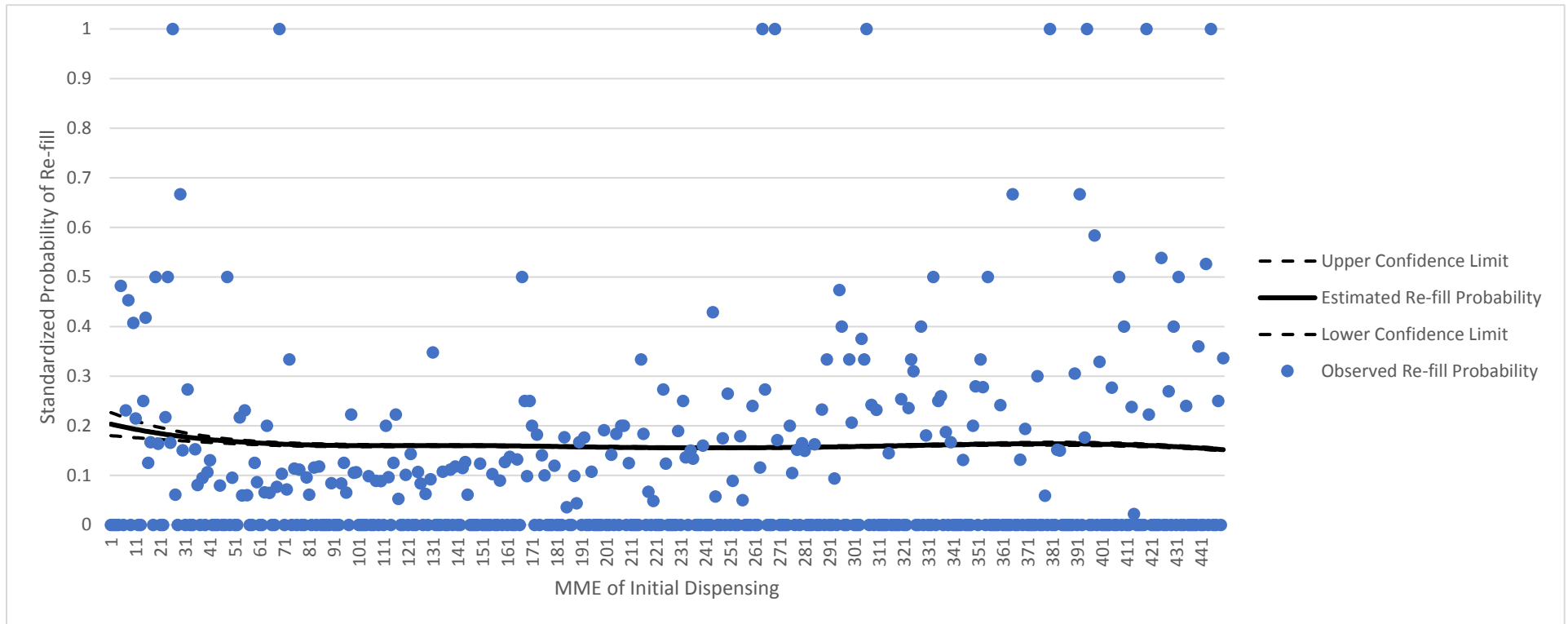


Figure 40. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Bunionectomy with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

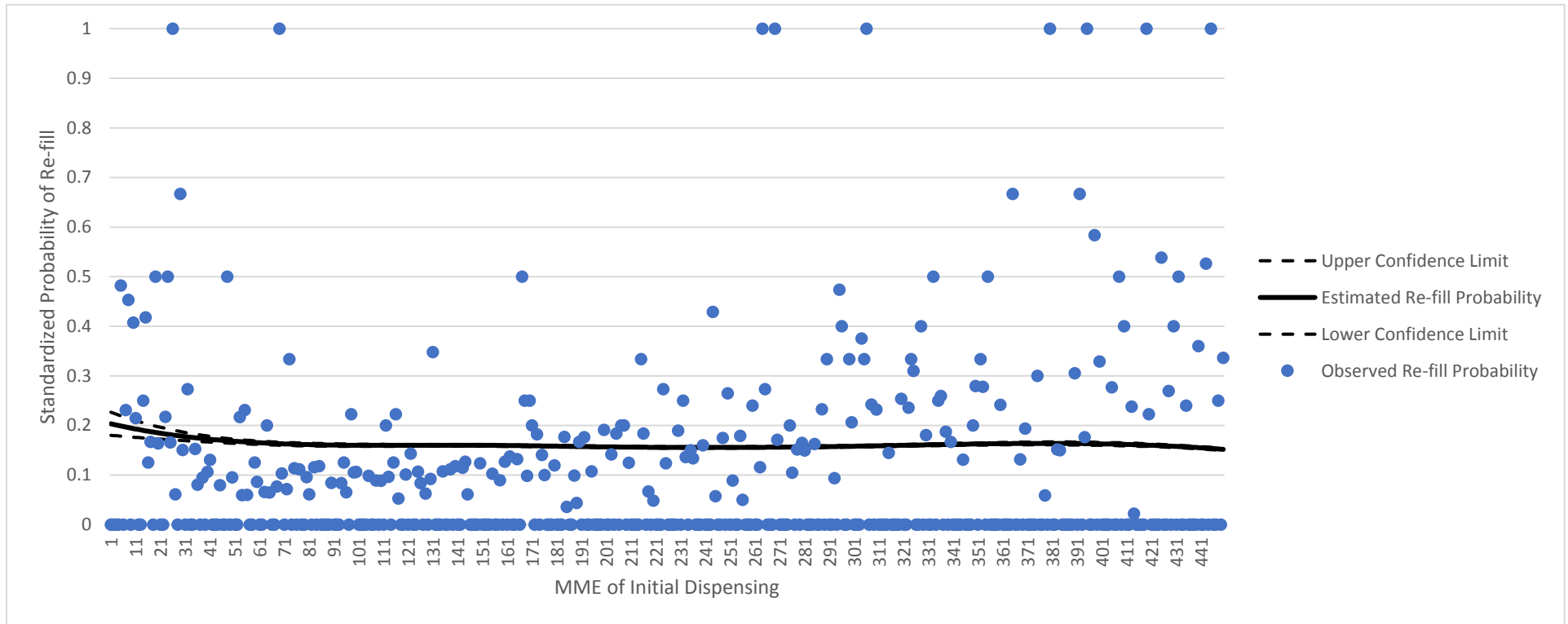


Figure 41. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cesarean Section with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

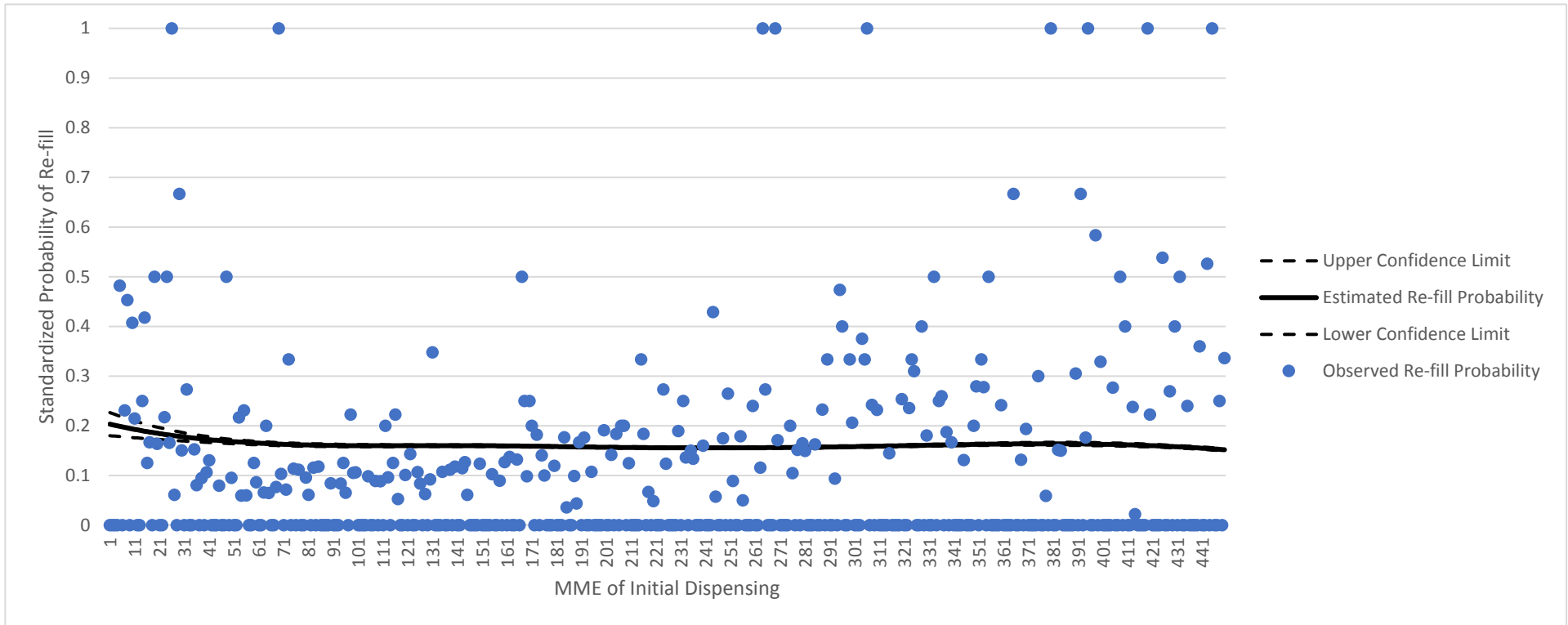


Figure 42. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cholecystectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

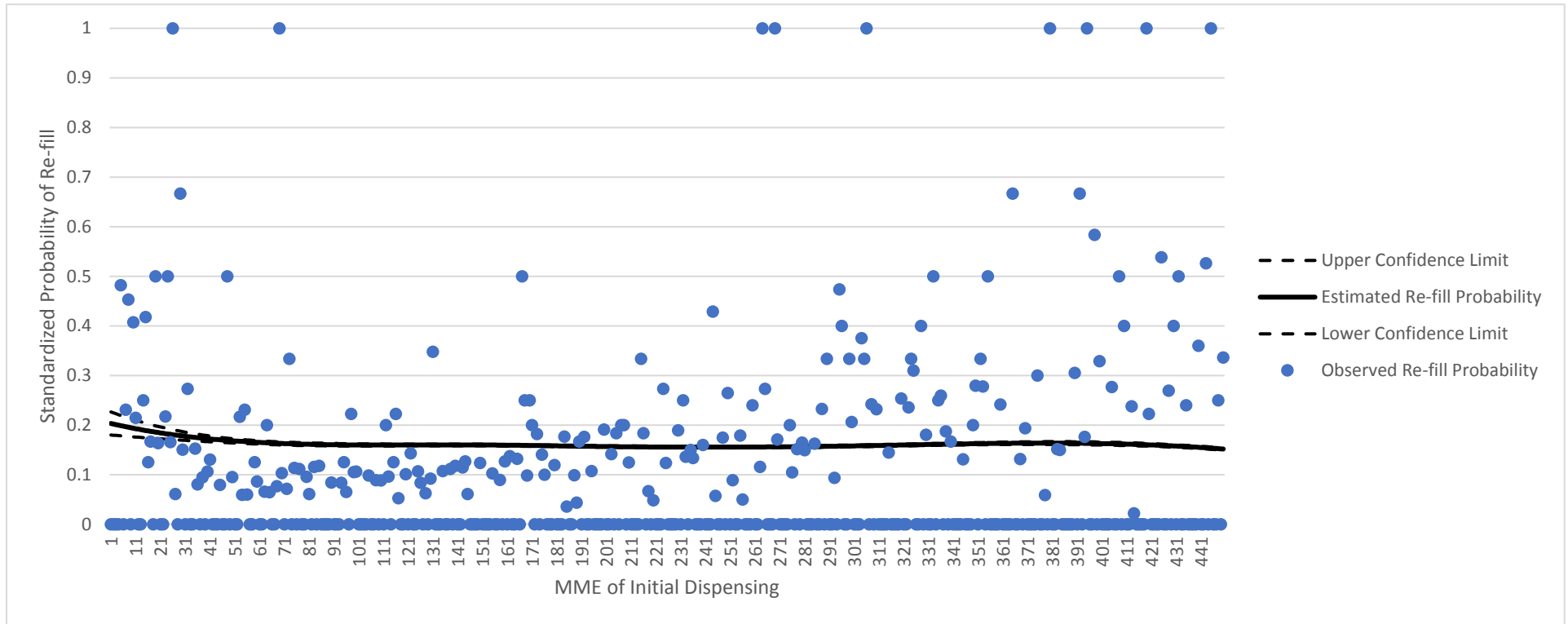


Figure 43. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Cholecystectomy (nonspecific) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

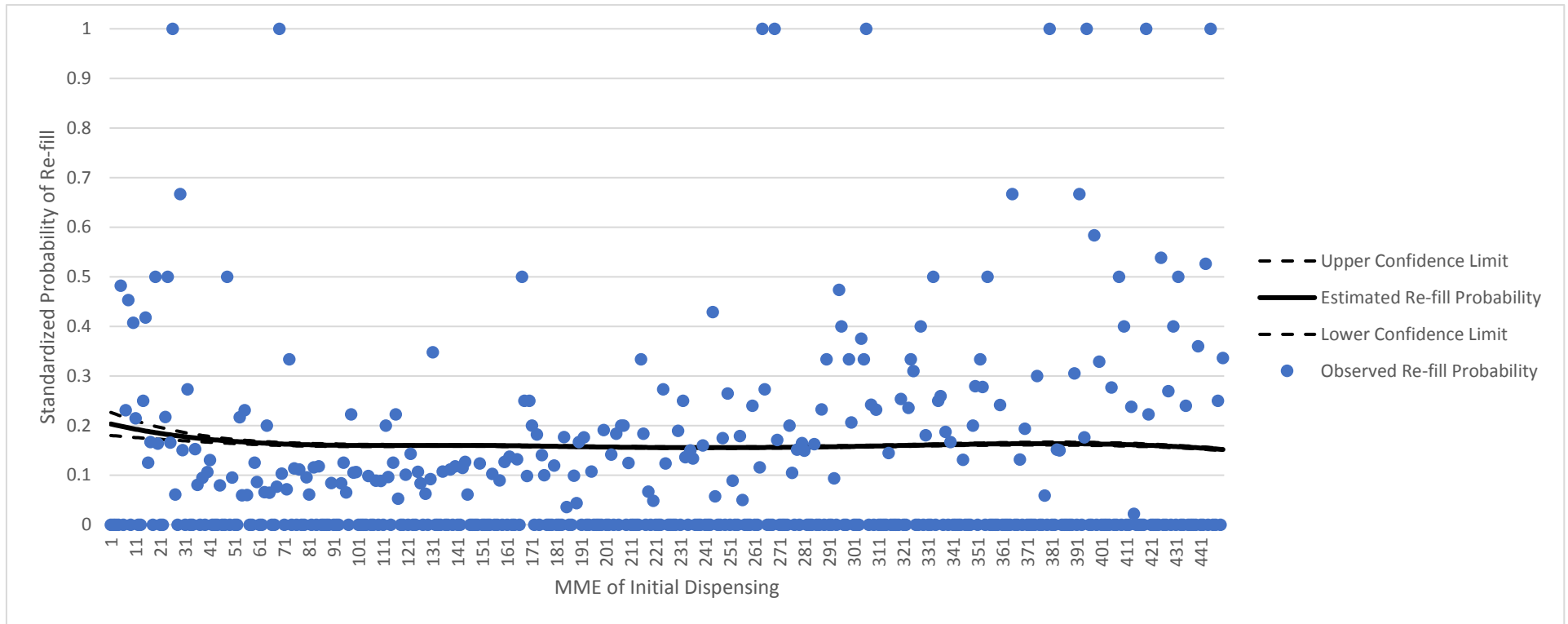


Figure 44. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Coronary Artery Bypass Graft with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

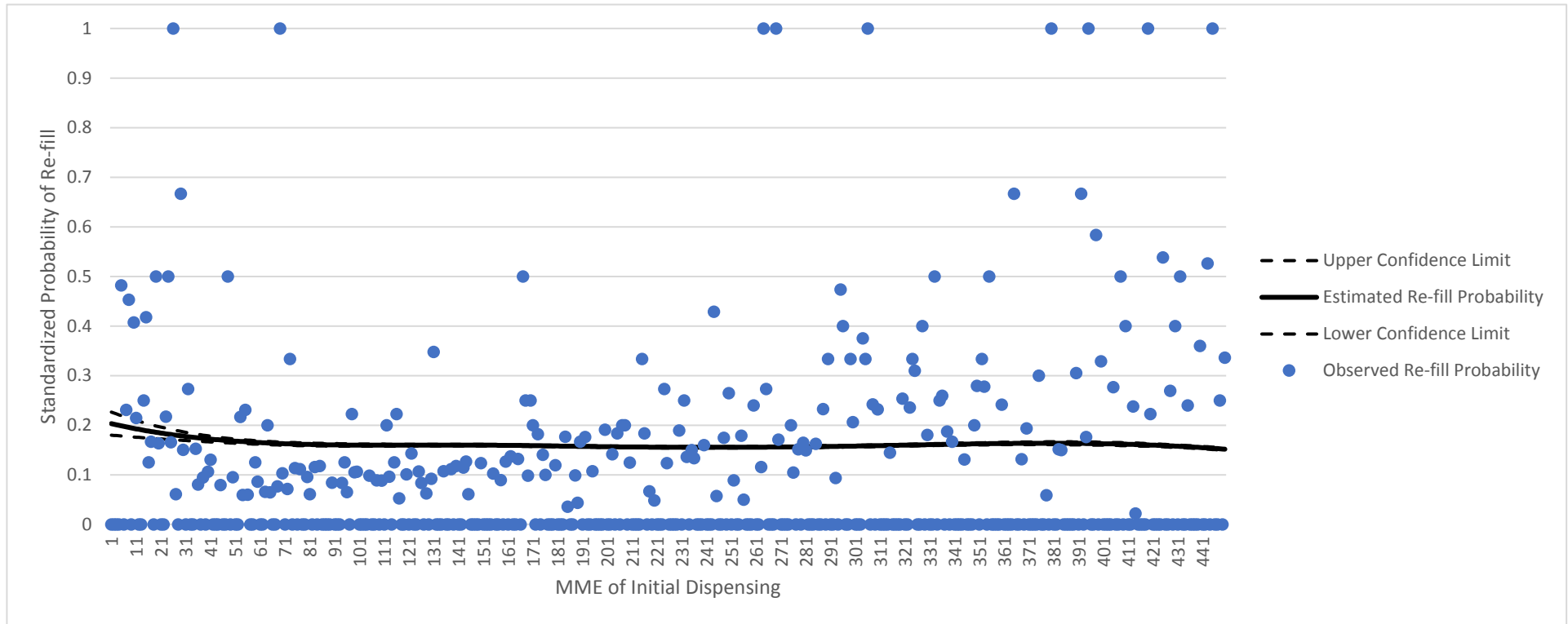


Figure 45. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hip Fracture Treatment with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

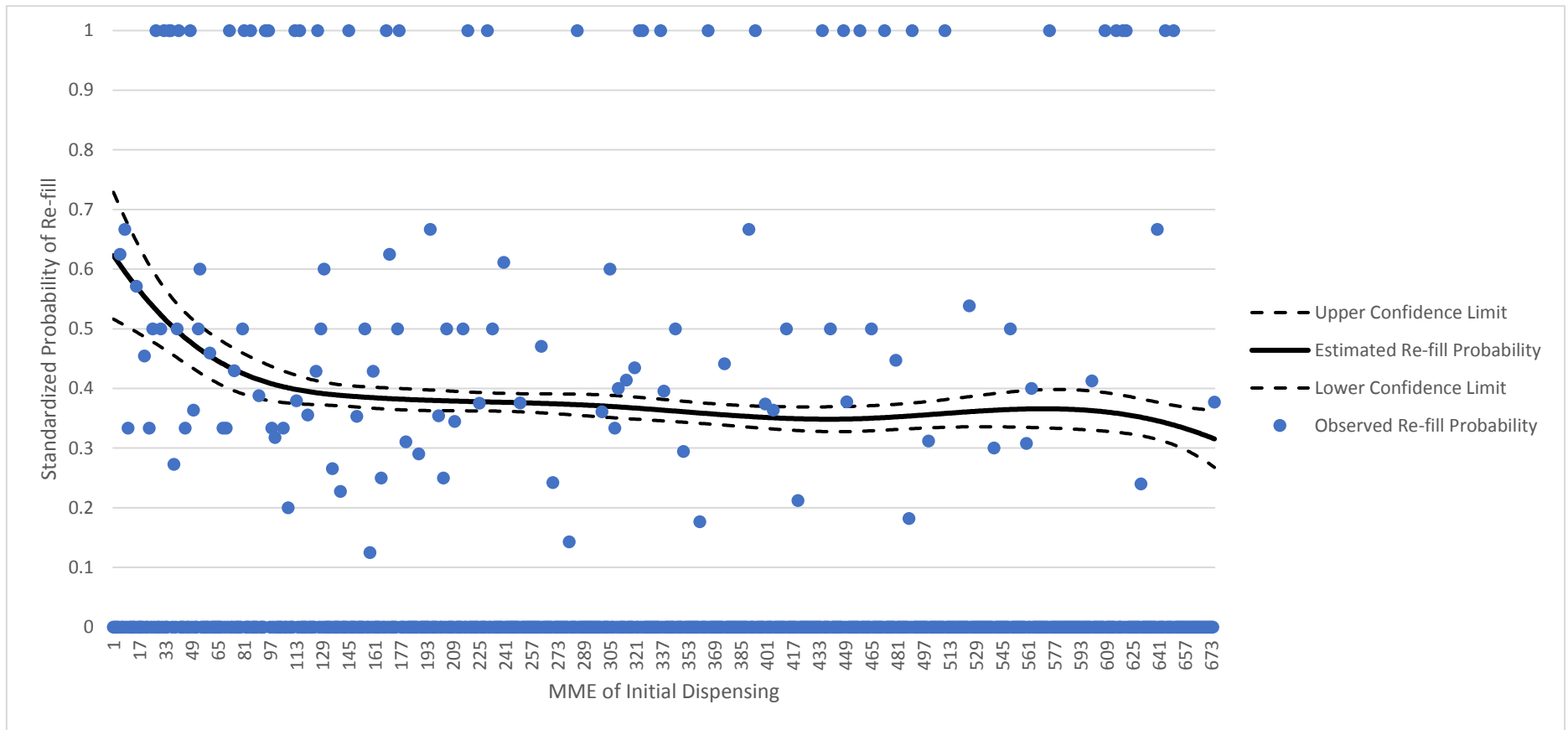


Figure 46. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hip Replacement with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

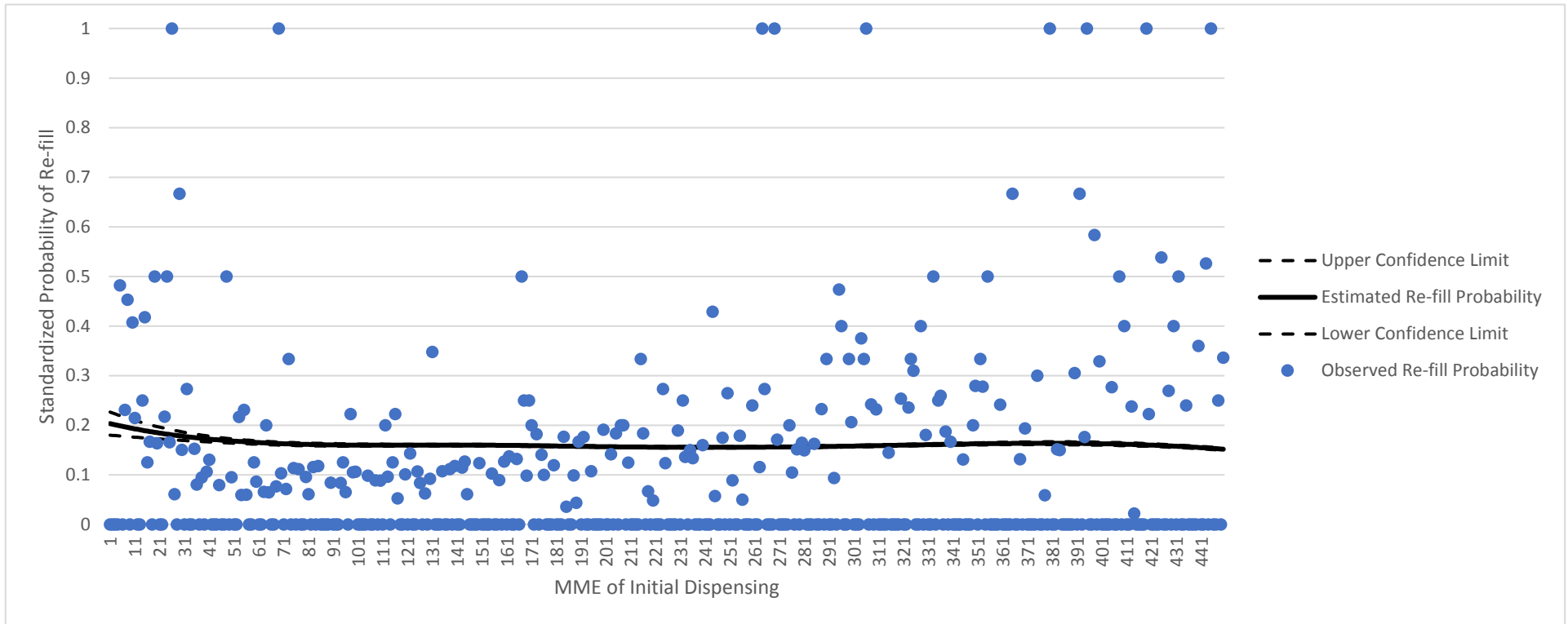


Figure 47. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hysterectomy (laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

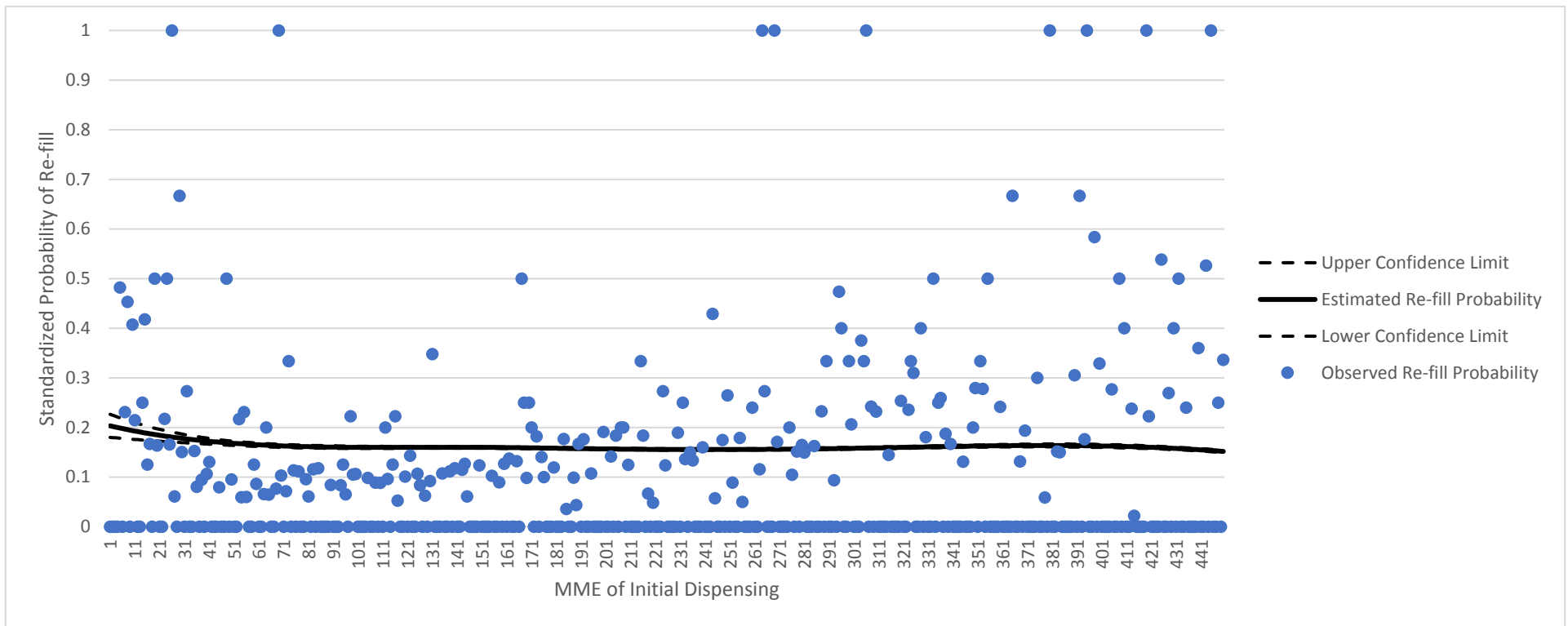


Figure 48. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Hysterectomy (non-laparoscopic) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

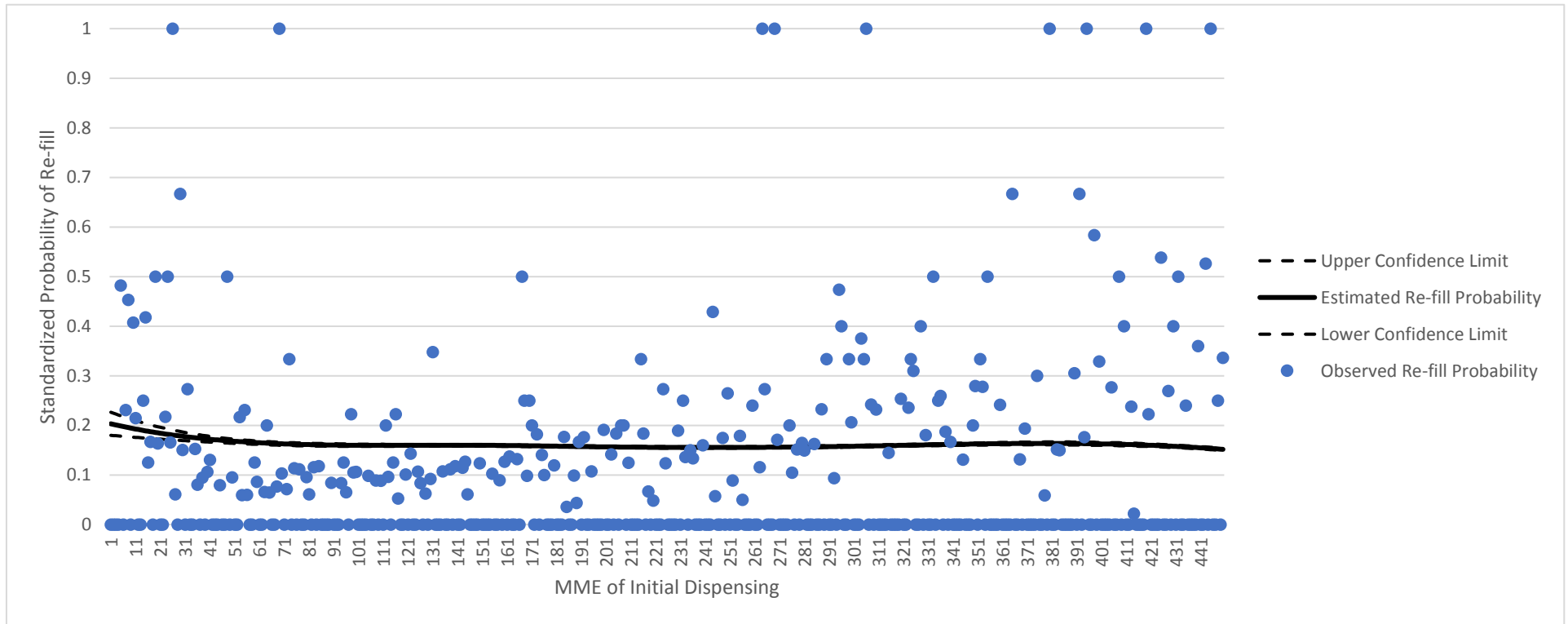


Figure 49. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Knee Arthroplasty with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

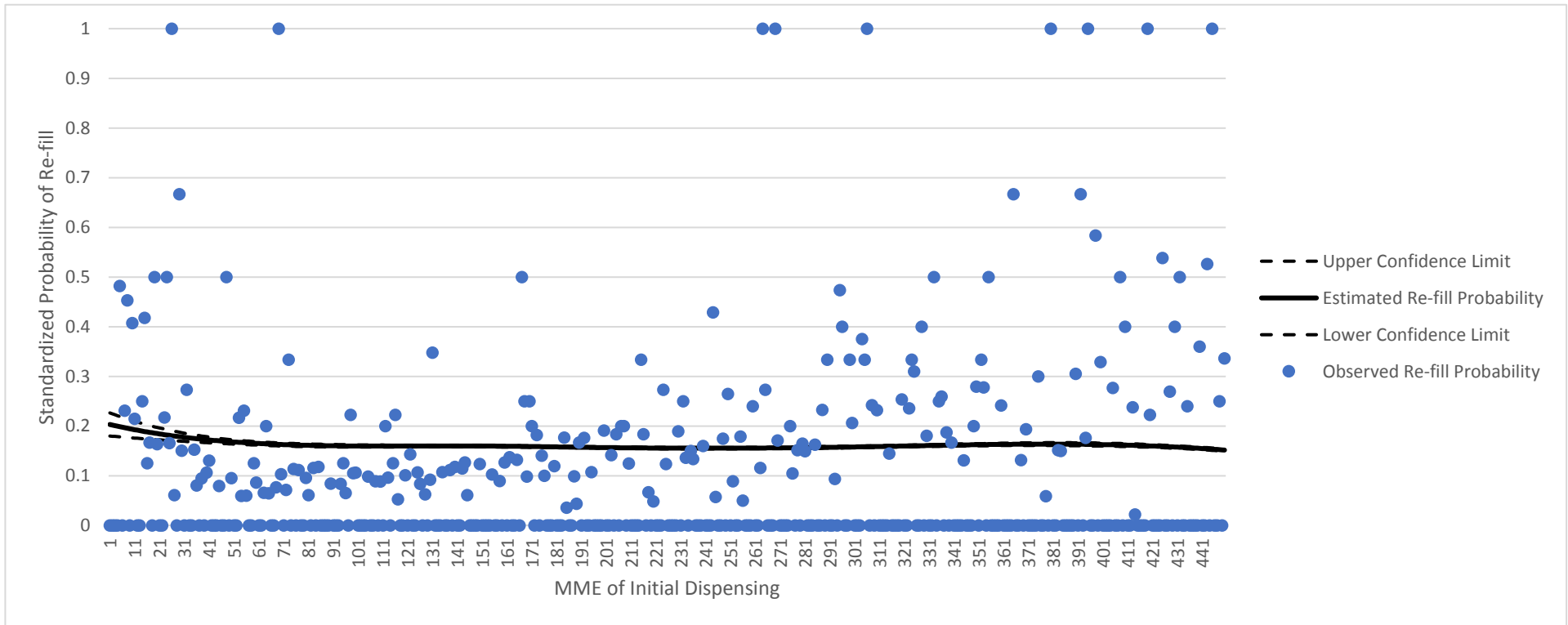


Figure 50. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Laminectomy/Discectomy with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

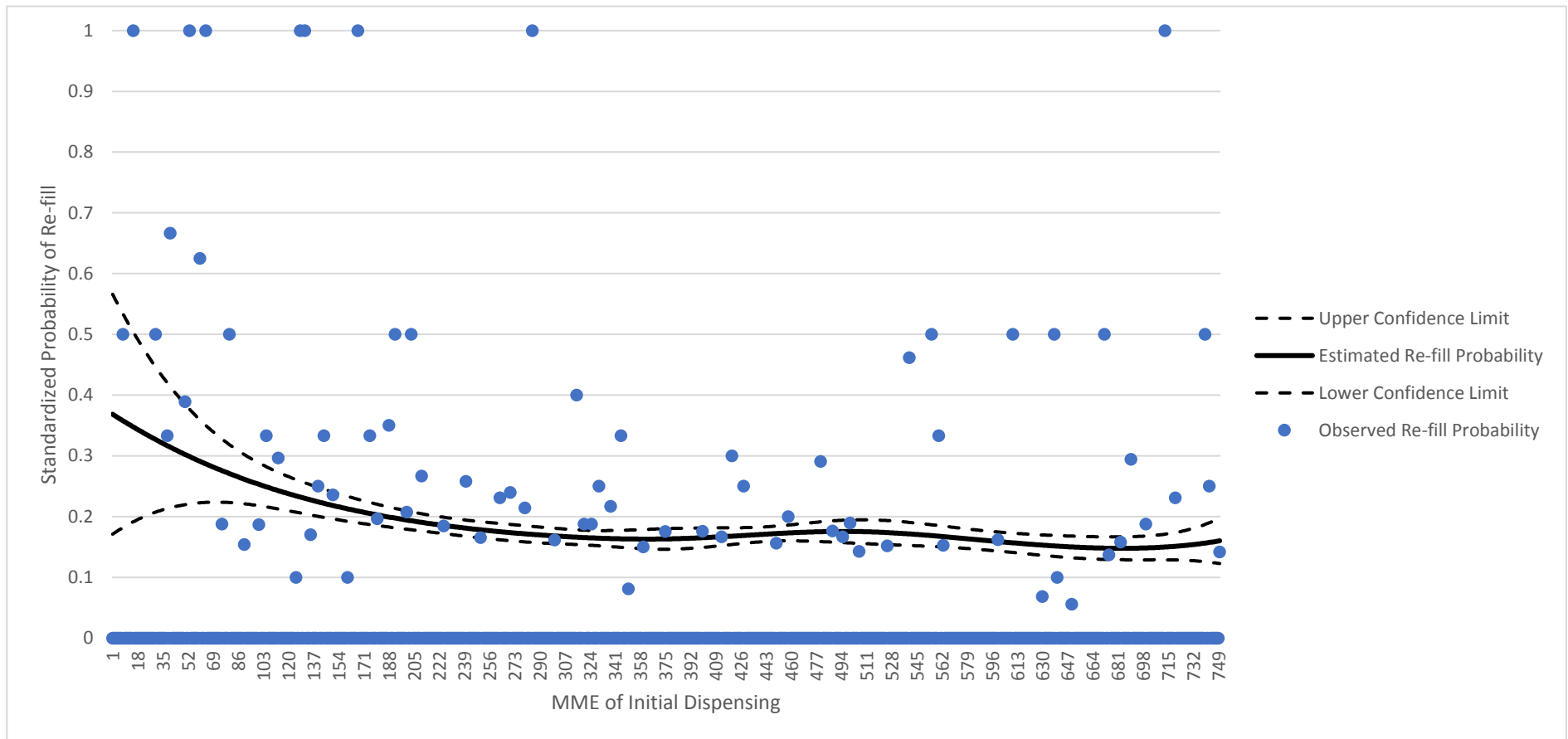


Figure 51. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (1-3 levels) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

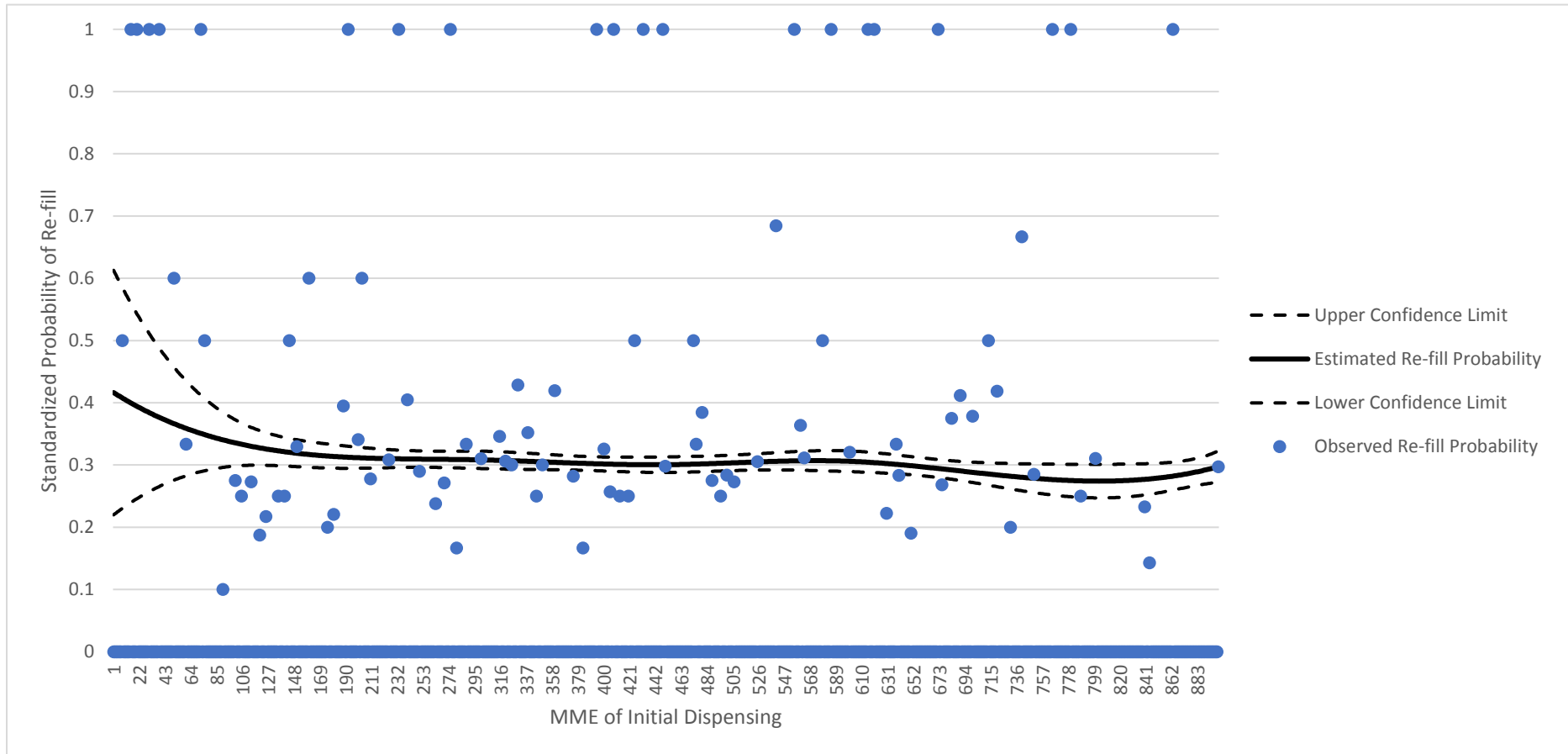


Figure 52. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (4+ levels) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

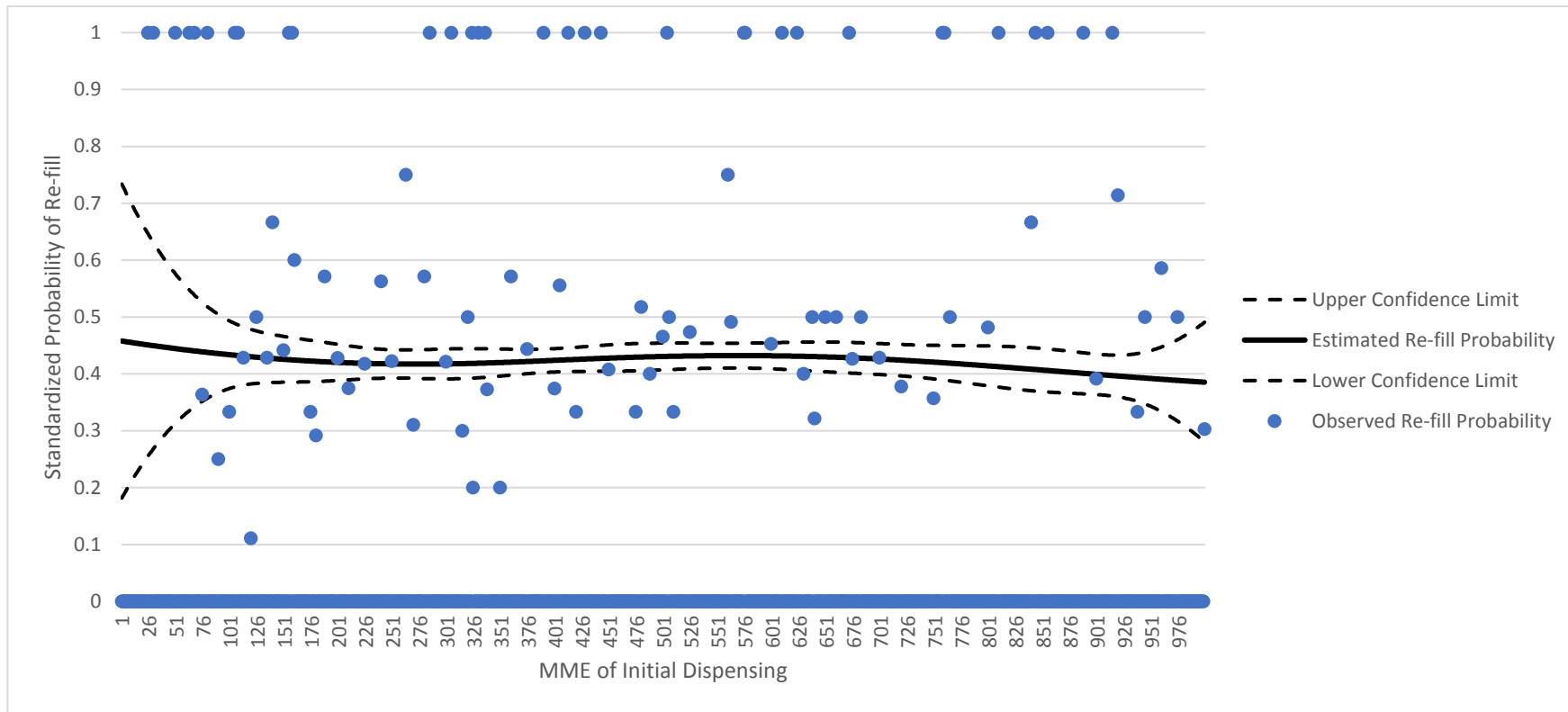


Figure 53. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Spinal Fusion (all levels) with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015

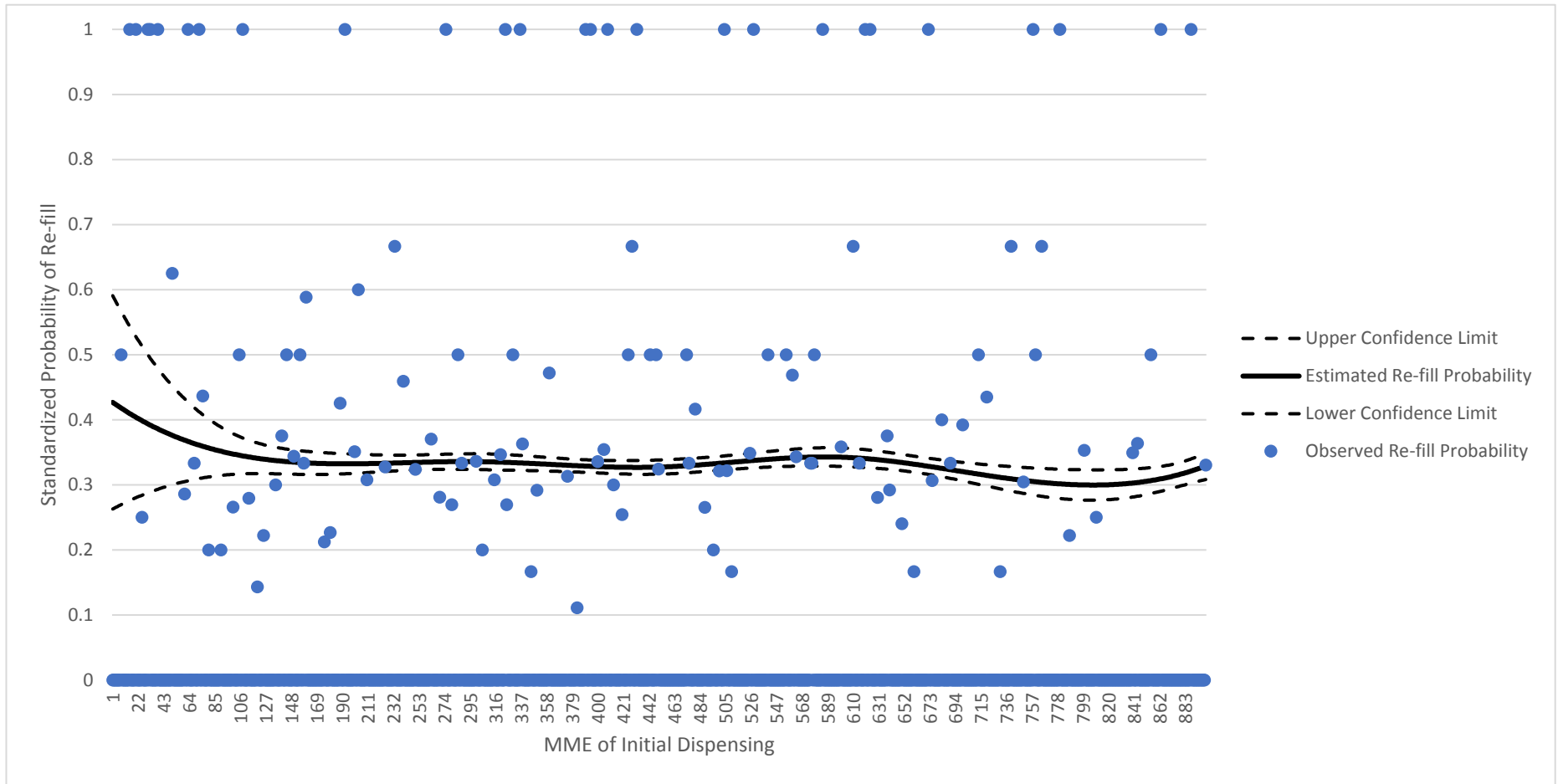
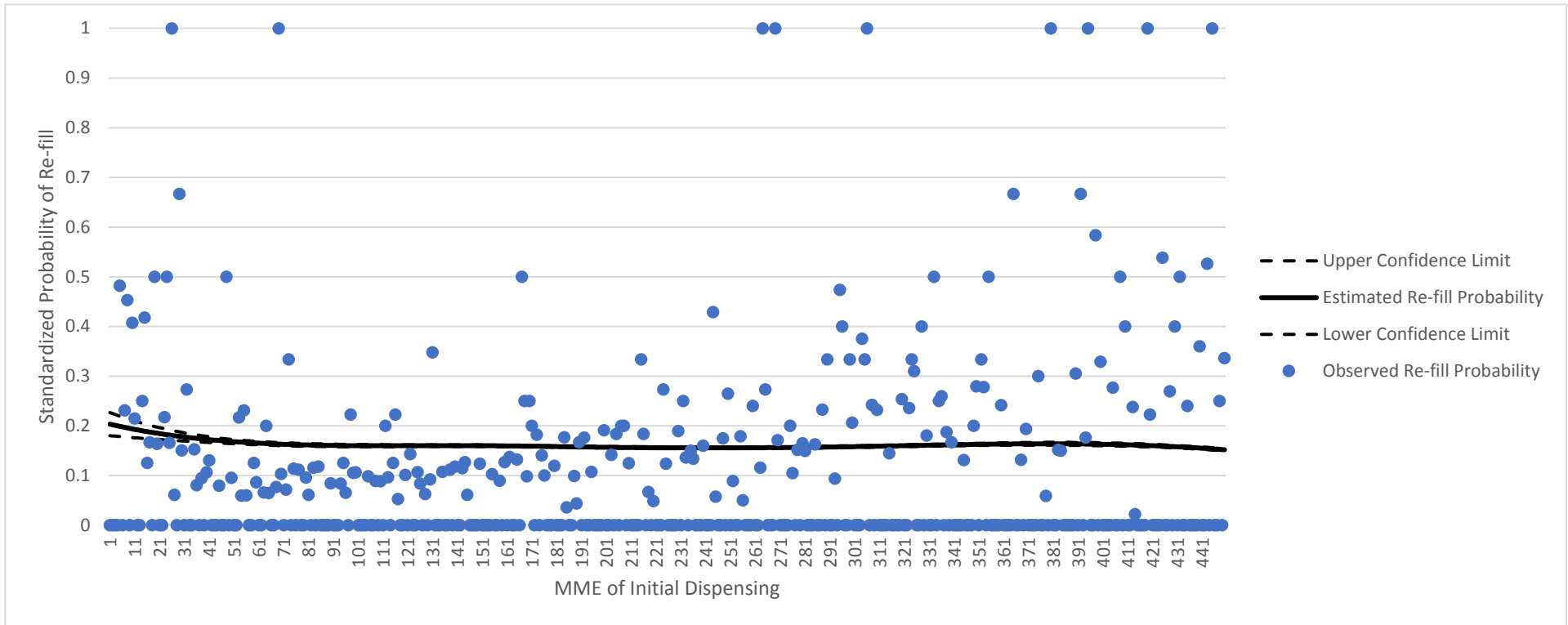


Figure 54. Estimated and Observed Re-fill Probabilities of Initial Dispensings for Patients with a Tooth Extraction with an Initial Dispensing of 90 Days or Fewer by Morphine Milligram Equivalents (MME) of Initial Dispensing in the Sentinel Distributed Database (SDD) from October 1, 2009 to September 30, 2015



**Appendix A. Dates of Available Data for Each Data Partner (DP) in the Sentinel Distributed Database (SDD)
up to Request End Date (September 30, 2015)**

Data Partner ID	Start Date	End Date
DP01	1/1/2004	09/30/2015
DP02	1/1/2000	09/30/2015
DP03	1/1/2000	09/30/2015
DP04	1/1/2008	09/30/2015
DP05	1/1/2000	09/30/2015
DP06	1/1/2000	09/30/2015
DP07	1/1/2000	09/30/2015
DP08	1/1/2008	09/30/2015
DP09	1/1/2000	09/30/2015
DP10	1/1/2000	09/30/2015
DP11	6/1/2017	09/30/2015
DP12	1/1/2010	09/30/2015
DP13	1/1/2005	09/30/2015
DP14	1/1/2016	09/30/2015
DP15	1/1/2000	09/30/2015
DP16	1/1/2000	05/31/2015
DP17	1/1/2012	09/30/2015

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
Appendectomy (nonspecific)		
47	Operations on appendix	ICD-9-CM
47.0	Appendectomy	ICD-9-CM
47.09	Other appendectomy	ICD-9-CM
47.1	Incidental appendectomy	ICD-9-CM
47.19	Other incidental appendectomy	ICD-9-CM
44900	Incision and drainage of appendiceal abscess, open	CPT-4
44950	Appendectomy;	CPT-4
44955	Appendectomy; when done for indicated purpose at time of other major procedure (not as separate procedure) (List separately in addition to code for primary procedure)	CPT-4
44960	Appendectomy; for ruptured appendix with abscess or generalized peritonitis	CPT-4
Appendectomy (laparoscopic)		
47.01	Laparoscopic appendectomy	ICD-9-CM
47.11	Laparoscopic incidental appendectomy	ICD-9-CM
44970	Laparoscopy, surgical, appendectomy	CPT-4
44979	Unlisted laparoscopy procedure, appendix	CPT-4
49315	LAPAROSCOPY SURGICAL APPENDECTOMY	CPT-4
56315	LAP SURG; APPENDECTOMY	CPT-4
Bunionectomy		
77.5	Excision and repair of bunion and other toe deformities	ICD-9-CM
77.51	Bunionectomy with soft tissue correction and osteotomy of the first metatarsal	ICD-9-CM
77.52	Bunionectomy with soft tissue correction and arthrodesis	ICD-9-CM
77.53	Other bunionectomy with soft tissue correction	ICD-9-CM
77.54	Excision or correction of bunionette	ICD-9-CM
77.56	Repair of hammer toe	ICD-9-CM
77.57	Repair of claw toe	ICD-9-CM
77.58	Other excision, fusion, and repair of toes	ICD-9-CM
77.59	Other bunionectomy	ICD-9-CM
28110	Ostectomy, partial excision, fifth metatarsal head (bunionette) (separate procedure)	CPT-4
28289	Hallux rigidus correction with cheilectomy, debridement and capsular release of the first metatarsophalangeal joint; without implant	CPT-4
28290	Correction, hallux valgus (bunion), with or without sesamoidectomy; simple exostectomy (eg, Silver type procedure)	CPT-4
28291	Hallux rigidus correction with cheilectomy, debridement and capsular release of the first metatarsophalangeal joint; with implant	CPT-4
28292	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with resection of proximal phalanx base, when performed, any method	CPT-4
28293	Correction, hallux valgus (bunion), with or without sesamoidectomy; resection of joint with implant	CPT-4
28294	Correction, hallux valgus (bunion), with or without sesamoidectomy; with tendon transplants (eg, Joplin type procedure)	CPT-4
28295	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with proximal metatarsal osteotomy, any method	CPT-4
28296	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with distal metatarsal osteotomy, any method	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
28297	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with first metatarsal and medial cuneiform joint arthrodesis, any method	CPT-4
28298	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with proximal phalanx osteotomy, any method	CPT-4
28299	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with double osteotomy, any method	CPT-4
Cesarean Section		
74.0	Classical cesarean section	ICD-9-CM
74	Cesarean section and removal of fetus	ICD-9-CM
74.1	Low cervical cesarean section	ICD-9-CM
74.2	Extraperitoneal cesarean section	ICD-9-CM
74.4	Cesarean section of other specified type	ICD-9-CM
74.9	Cesarean section of unspecified type	ICD-9-CM
74.99	Other cesarean section of unspecified type	ICD-9-CM
59500	Cesarean Section, Low Cervical, Including In-hospital	CPT-4
59501	Cesarean Section, Low Cervical, Including In-hospital	CPT-4
59510	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care	CPT-4
59514	Cesarean delivery only;	CPT-4
59515	Cesarean delivery only; including postpartum care	CPT-4
59521	Cesarean Section, Classic, Including In-hospital	CPT-4
59540	Cesarean Section, Extraperitoneal, Including In-hospital	CPT-4
59541	Cesarean Section, Extraperitoneal, Including In-hospital	CPT-4
59560	Cesarean Section With Hysterectomy, Subtotal, Including	CPT-4
59561	Cesarean Section With Hysterectomy, Subtotal, Including	CPT-4
59580	Cesarean Section With Hysterectomy, Total, Including	CPT-4
59581	Cesarean Section With Hysterectomy, Total, Including	CPT-4
59618	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care, following attempted vaginal delivery after previous cesarean delivery	CPT-4
59620	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery;	CPT-4
59622	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery; including postpartum care	CPT-4
Cholecystectomy (laparoscopic)		
51.23	Laparoscopic cholecystectomy	ICD-9-CM
51.24	Laparoscopic partial cholecystectomy	ICD-9-CM
47562	Laparoscopy, surgical; cholecystectomy	CPT-4
47563	Laparoscopy, surgical; cholecystectomy with cholangiography	CPT-4
47564	Laparoscopy, surgical; cholecystectomy with exploration of common duct	CPT-4
49310	LAPAROSCOPY, SURG.;CHOLECYSTECTOMY	CPT-4
56340	Laparoscopy, surgical; cholecystectomy (any method)	CPT-4
56341	Laparoscopy, surgical; cholecystectomy with cholangiography	CPT-4
56342	Laparoscopy, surgical; cholecystectomy with exploration of common duct	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
Cholecystectomy (nonspecific)		
51.2	Cholecystectomy	ICD-9-CM
51.21	Other partial cholecystectomy	ICD-9-CM
51.22	Cholecystectomy	ICD-9-CM
47600	Cholecystectomy;	CPT-4
47605	Cholecystectomy; with cholangiography	CPT-4
47610	Cholecystectomy with exploration of common duct;	CPT-4
47612	Cholecystectomy with exploration of common duct; with choledochenterostomy	CPT-4
47620	Cholecystectomy with exploration of common duct; with transduodenal sphincterotomy or sphincteroplasty, with or without cholangiography	CPT-4
Coronary Artery Bypass Graft		
36.1	Bypass anastomosis for heart revascularization	ICD-9-CM
36.10	Aortocoronary bypass for heart revascularization, not otherwise specified	ICD-9-CM
36.11	(Aorto)coronary bypass of one coronary artery	ICD-9-CM
36.12	(Aorto)coronary bypass of two coronary arteries	ICD-9-CM
36.13	(Aorto)coronary bypass of three coronary arteries	ICD-9-CM
36.14	(Aorto)coronary bypass of four or more coronary arteries	ICD-9-CM
36.15	Single internal mammary-coronary artery bypass	ICD-9-CM
36.16	Double internal mammary-coronary artery bypass	ICD-9-CM
36.17	Abdominal-coronary artery bypass	ICD-9-CM
36.19	Other bypass anastomosis for heart revascularization	ICD-9-CM
33510	Coronary artery bypass, vein only; single coronary venous graft	CPT-4
33511	Coronary artery bypass, vein only; 2 coronary venous grafts	CPT-4
33512	Coronary artery bypass, vein only; 3 coronary venous grafts	CPT-4
33513	Coronary artery bypass, vein only; 4 coronary venous grafts	CPT-4
33514	Coronary artery bypass, vein only; 5 coronary venous grafts	CPT-4
33516	Coronary artery bypass, vein only; 6 or more coronary venous grafts	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)	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)	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)	CPT-4
33530	Reoperation, coronary artery bypass procedure or valve procedure, more than 1 month after original operation	CPT-4
33520	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Single Graft	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)	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)	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)	CPT-4
33525	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Two Coronary Grafts	CPT-4
33528	Coronary Artery Bypass, Nonautogenous Graft (eg, Synthetic Or Cadaver); Three Or More Coronary Grafts	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
33533	Coronary artery bypass, using arterial graft(s); single arterial graft	CPT-4
33534	Coronary artery bypass, using arterial graft(s); 2 coronary arterial grafts	CPT-4
33535	Coronary artery bypass, using arterial graft(s); 3 coronary arterial grafts	CPT-4
33536	Coronary artery bypass, using arterial graft(s); 4 or more coronary arterial grafts	CPT-4
4110F	Internal mammary artery graft performed for primary, isolated coronary artery bypass graft procedure (CABG)	CPT-II
Cholecystectomy (laparoscopic)		
47562	Laparoscopy, surgical; cholecystectomy	CPT-4
47564	Laparoscopy, surgical; cholecystectomy with exploration of common duct	CPT-4
47563	Laparoscopy, surgical; cholecystectomy with cholangiography	CPT-4
51.23	Laparoscopic cholecystectomy	ICD-9-CM
51.24	Laparoscopic partial cholecystectomy	ICD-9-CM
49310	LAPAROSCOPY, SURG.;CHOLECYSTECTOMY	CPT-4
56340	Laparoscopy, surgical; cholecystectomy (any method)	CPT-4
56341	Laparoscopy, surgical; cholecystectomy with cholangiography	CPT-4
56342	Laparoscopy, surgical; cholecystectomy with exploration of common duct	CPT-4
Cholecystectomy (nonspecific)		
51.2	Cholecystectomy	ICD-9-CM
51.21	Other partial cholecystectomy	ICD-9-CM
51.22	Cholecystectomy	ICD-9-CM
47600	Cholecystectomy;	CPT-4
47605	Cholecystectomy; with cholangiography	CPT-4
47610	Cholecystectomy with exploration of common duct;	CPT-4
47612	Cholecystectomy with exploration of common duct; with choledochoenterostomy	CPT-4
47620	Cholecystectomy with exploration of common duct; with transduodenal sphincterotomy or sphincteroplasty, with or without cholangiography	CPT-4
Hip Fracture Treatment		
78.55	Internal fixation of femur without fracture reduction	ICD-9-CM
79.05	Closed reduction of fracture of femur without internal fixation	ICD-9-CM
79.15	Closed reduction of fracture of femur with internal fixation	ICD-9-CM
79.25	Open reduction of fracture of femur without internal fixation	ICD-9-CM
79.35	Open reduction of fracture of femur with internal fixation	ICD-9-CM
79.45	Closed reduction of separated epiphysis of femur	ICD-9-CM
79.55	Open reduction of separated epiphysis of femur	ICD-9-CM
27220	Closed treatment of acetabulum (hip socket) fracture(s); with manipulation, with or without skeletal traction	CPT-4
27222	Closed treatment of acetabulum (hip socket) fracture(s); without manipulation	CPT-4
27226	Open treatment of posterior or anterior acetabular wall fracture, with internal fixation	CPT-4
27227	Open treatment of acetabular fracture(s) involving anterior or posterior (one) column, or a fracture running transversely across the acetabulum, with internal fixation	CPT-4
27228	Open treatment of acetabular fracture(s) involving anterior and posterior (two) columns, includes T-fracture and both column fracture with complete articular detachment, or single column or transverse fracture with associated acetabular wall fracture, with internal fixation	CPT-4
27230	Closed treatment of femoral fracture, proximal end, neck; without manipulation	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
27232	Closed treatment of femoral fracture, proximal end, neck; with manipulation, with or without skeletal traction	CPT-4
27235	Percutaneous skeletal fixation of femoral fracture, proximal end, neck	CPT-4
27236	Open treatment of femoral fracture, proximal end, neck, internal fixation or prosthetic replacement	CPT-4
27238	Closed treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; without manipulation	CPT-4
27240	Closed treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; with manipulation, with or without skin or skeletal traction	CPT-4
27244	Treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; with plate/screw type implant, with or without cerclage	CPT-4
27245	Treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; with intramedullary implant, with or without interlocking screws and/or cerclage	CPT-4
27246	Closed treatment of greater trochanteric fracture, without manipulation	CPT-4
27248	Open treatment of greater trochanteric fracture, includes internal fixation, when performed	CPT-4
27254	Open treatment of hip dislocation, traumatic, with acetabular wall and femoral head fracture, with or without internal or external fixation	CPT-4
27267	Closed treatment of femoral fracture, proximal end, head; without manipulation	CPT-4
27268	Closed treatment of femoral fracture, proximal end, head; with manipulation	CPT-4
27269	Open treatment of femoral fracture, proximal end, head, includes internal fixation, when performed	CPT-4
Hip Replacement		
00.74	Hip bearing surface, metal-on-polyethylene	ICD-9-CM
00.75	Hip bearing surface, metal-on-metal	ICD-9-CM
00.76	Hip bearing surface, ceramic-on-ceramic	ICD-9-CM
00.77	Hip bearing surface, ceramic-on-polyethylene	ICD-9-CM
00.85	Resurfacing hip, total, acetabulum and femoral head	ICD-9-CM
00.86	Resurfacing hip, partial, femoral head	ICD-9-CM
00.87	Resurfacing hip, partial, acetabulum	ICD-9-CM
81.51	Total hip replacement	ICD-9-CM
81.52	Partial hip replacement	ICD-9-CM
27125	Hemiarthroplasty, hip, partial (eg, femoral stem prosthesis, bipolar arthroplasty)	CPT-4
27126	Partial Hip Replacement (hemiarthroplasty); Cup	CPT-4
27127	Partial Hip Replacement (hemiarthroplasty); Cup With Acetabuloplasty	CPT-4
27130	Arthroplasty, acetabular and proximal femoral prosthetic replacement (total hip arthroplasty), with or without autograft or allograft	CPT-4
27132	Conversion of previous hip surgery to total hip arthroplasty, with or without autograft or allograft	CPT-4
27134	Revision of total hip arthroplasty; both components, with or without autograft or allograft	CPT-4
27137	Revision of total hip arthroplasty; acetabular component only, with or without autograft or allograft	CPT-4
27138	Revision of total hip arthroplasty; femoral component only, with or without allograft	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
Hysterectomy (non-laparoscopic)		
68.3	Subtotal abdominal hysterectomy	ICD-9-CM
68.39	Other and unspecified subtotal abdominal hysterectomy	ICD-9-CM
68.4	Total abdominal hysterectomy	ICD-9-CM
68.49	Other and unspecified total abdominal hysterectomy	ICD-9-CM
68.5	Vaginal hysterectomy	ICD-9-CM
68.59	Other and unspecified vaginal hysterectomy	ICD-9-CM
68.6	Radical abdominal hysterectomy	ICD-9-CM
68.69	Other and unspecified radical abdominal hysterectomy	ICD-9-CM
68.7	Radical vaginal hysterectomy	ICD-9-CM
68.79	Other and unspecified radical vaginal hysterectomy	ICD-9-CM
68.9	Other and unspecified hysterectomy	ICD-9-CM
58150	Total abdominal hysterectomy (corpus and cervix), with or without removal of tube(s), with or without removal of ovary(s);	CPT-4
58152	Total abdominal hysterectomy (corpus and cervix), with or without removal of tube(s), with or without removal of ovary(s); with colpo-urethrocytopexy (eg, Marshall-Marchetti-Krantz, Burch)	CPT-4
58180	Supracervical abdominal hysterectomy (subtotal hysterectomy), with or without removal of tube(s), with or without removal of ovary(s)	CPT-4
58200	Total abdominal hysterectomy, including partial vaginectomy, with para-aortic and pelvic lymph node sampling, with or without removal of tube(s), with or without removal of ovary(s)	CPT-4
58210	Radical abdominal hysterectomy, with bilateral total pelvic lymphadenectomy and para-aortic lymph node sampling (biopsy), with or without removal of tube(s), with or without removal of ovary(s)	CPT-4
58260	Vaginal hysterectomy, for uterus 250 g or less;	CPT-4
58262	Vaginal hysterectomy, for uterus 250 g or less; with removal of tube(s), and/or ovary(s)	CPT-4
58263	Vaginal hysterectomy, for uterus 250 g or less; with removal of tube(s), and/or ovary(s), with repair of enterocele	CPT-4
58267	Vaginal hysterectomy, for uterus 250 g or less; with colpo-urethrocytopexy (Marshall-Marchetti-Krantz type, Pereyra type) with or without endoscopic control	CPT-4
58270	Vaginal hysterectomy, for uterus 250 g or less; with repair of enterocele	CPT-4
58275	Vaginal hysterectomy, with total or partial vaginectomy;	CPT-4
58280	Vaginal hysterectomy, with total or partial vaginectomy; with repair of enterocele	CPT-4
58285	Vaginal hysterectomy, radical (Schauta type operation)	CPT-4
58290	Vaginal hysterectomy, for uterus greater than 250 g;	CPT-4
58291	Vaginal hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)	CPT-4
58292	Vaginal hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s), with repair of enterocele	CPT-4
58293	Vaginal hysterectomy, for uterus greater than 250 g; with colpo-urethrocytopexy (Marshall-Marchetti-Krantz type, Pereyra type) with or without endoscopic control	CPT-4
58294	Vaginal hysterectomy, for uterus greater than 250 g; with repair of enterocele	CPT-4
Hysterectomy (laparoscopic)		
68.31	Laparoscopic supracervical hysterectomy [LSH]	ICD-9-CM
68.41	Laparoscopic total abdominal hysterectomy	ICD-9-CM
68.51	Laparoscopically assisted vaginal hysterectomy (LAVH)	ICD-9-CM
68.61	Laparoscopic radical abdominal hysterectomy	ICD-9-CM

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
68.71	Laparoscopic radical vaginal hysterectomy [LRVH]	ICD-9-CM
58541	Laparoscopy, surgical, supracervical hysterectomy, for uterus 250 g or less;	CPT-4
58542	Laparoscopy, surgical, supracervical hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)	CPT-4
58543	Laparoscopy, surgical, supracervical hysterectomy, for uterus greater than 250 g;	CPT-4
58544	Laparoscopy, surgical, supracervical hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)	CPT-4
58545	Laparoscopy, surgical, myomectomy, excision; 1 to 4 intramural myomas with total weight of 250 g or less and/or removal of surface myomas	CPT-4
58546	Laparoscopy, surgical, myomectomy, excision; 5 or more intramural myomas and/or intramural myomas with total weight greater than 250 g	CPT-4
58548	Laparoscopy, surgical, with radical hysterectomy, with bilateral total pelvic lymphadenectomy and para-aortic lymph node sampling (biopsy), with removal of tube(s) and ovary(s), if performed	CPT-4
58550	Laparoscopy, surgical, with vaginal hysterectomy, for uterus 250 g or less;	CPT-4
58552	Laparoscopy, surgical, with vaginal hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)	CPT-4
58553	Laparoscopy, surgical, with vaginal hysterectomy, for uterus greater than 250 g;	CPT-4
58554	Laparoscopy, surgical, with vaginal hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)	CPT-4
58570	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less;	CPT-4
58571	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)	CPT-4
58572	Laparoscopy, surgical, with total hysterectomy, for uterus greater than 250 g;	CPT-4
58573	Laparoscopy, surgical, with total hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)	CPT-4
S2078	Laparoscopic supracervical hysterectomy (subtotal hysterectomy), with or without removal of tube(s), with or without removal of ovary(s)	HCPCS
Knee arthroplasty		
81.54	Total knee replacement	ICD-9-CM
27437	Arthroplasty, patella; without prosthesis	CPT-4
27440	Arthroplasty, knee, tibial plateau;	CPT-4
27441	Arthroplasty, knee, tibial plateau; with debridement and partial synovectomy	CPT-4
27442	Arthroplasty, femoral condyles or tibial plateau(s), knee;	CPT-4
27443	Arthroplasty, femoral condyles or tibial plateau(s), knee; with debridement and partial synovectomy	CPT-4
27445	Arthroplasty, knee, hinge prosthesis (eg, Walldius type)	CPT-4
27446	Arthroplasty, knee, condyle and plateau; medial OR lateral compartment	CPT-4
27447	Arthroplasty, knee, condyle and plateau; medial AND lateral compartments with or without patella resurfacing (total knee arthroplasty)	CPT-4
27438	Arthroplasty, patella; with prosthesis	CPT-4
27486	Revision of total knee arthroplasty, with or without allograft; 1 component	CPT-4
27487	Revision of total knee arthroplasty; femoral and entire tibial component	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
Laminectomy/Discectomy		
80.5	Excision, destruction and other repair of intervertebral disc	ICD-9-CM
80.50	Excision or destruction of intervertebral disc, unspecified	ICD-9-CM
80.51	Excision of intervertebral disc	ICD-9-CM
63020	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, cervical	CPT-4
63030	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, lumbar	CPT-4
63035	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; each additional interspace, cervical or lumbar (List separately in addition to code for primary procedure)	CPT-4
63040	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; cervical	CPT-4
63041	Laminotomy (hemilaminectomy), For Herniated	CPT-4
63042	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; lumbar	CPT-4
63043	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; each additional cervical interspace (List separately in addition to code for primary procedure)	CPT-4
63044	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; each additional lumbar interspace (List separately in addition to code for primary procedure)	CPT-4
63055	Transpedicular approach with decompression of spinal cord, equina and/or nerve root(s) (eg, herniated intervertebral disc), single segment; thoracic	CPT-4
63056	Lumbar decompression, transpedicular or CV approach	CPT-4
63057	Transpedicular approach with decompression of spinal cord, equina and/or nerve root(s) (eg, herniated intervertebral disc), single segment; each additional segment, thoracic or lumbar (List separately in addition to code for primary procedure)	CPT-4
63060	Hemilaminectomy (laminectomy) For Herniated Intervertebral	CPT-4
63064	Costovertebral approach with decompression of spinal cord or nerve root(s) (eg, herniated intervertebral disc), thoracic; single segment	CPT-4
63066	Costovertebral approach with decompression of spinal cord or nerve root(s) (eg, herniated intervertebral disc), thoracic; each additional segment (List separately in addition to code for primary procedure)	CPT-4
63075	Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophytectomy; cervical, single interspace	CPT-4
63076	Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophytectomy; cervical, each additional interspace (List separately in addition to code for primary procedure)	CPT-4
63077	Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophytectomy; thoracic, single interspace	CPT-4
63078	Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophytectomy; thoracic, each additional interspace (List separately in addition to code for primary procedure)	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
Spinal fusion (all levels)		
81.00	Spinal fusion, not otherwise specified	ICD-9-CM
81.0	Spinal fusion	ICD-9-CM
81.01	Atlas-axis spinal fusion	ICD-9-CM
81.02	Other cervical fusion of the anterior column, anterior technique	ICD-9-CM
81.03	Other cervical fusion of the posterior column, posterior technique	ICD-9-CM
81.04	Dorsal and dorsolumbar fusion of the anterior column, anterior technique	ICD-9-CM
81.05	Dorsal and dorsolumbar fusion of the posterior column, posterior technique	ICD-9-CM
81.06	Lumbar and lumbosacral fusion of the anterior column, anterior technique	ICD-9-CM
81.07	Lumbar and lumbosacral fusion of the posterior column, posterior technique	ICD-9-CM
81.08	Lumbar and lumbosacral fusion of the anterior column, posterior technique	ICD-9-CM
81.61	360 degree spinal fusion, single incision approach	ICD-9-CM
84.51	Insertion of interbody spinal fusion device	ICD-9-CM
81.3	Refusion of spine	ICD-9-CM
81.30	Refusion of spine, not otherwise specified	ICD-9-CM
81.31	Refusion of Atlas-axis spine	ICD-9-CM
81.32	Refusion of other cervical spine, anterior column, anterior technique	ICD-9-CM
81.33	Refusion of other cervical spine, posterior column, posterior technique	ICD-9-CM
81.34	Refusion of dorsal and dorsolumbar spine, anterior column, anterior technique	ICD-9-CM
81.35	Refusion of dorsal and dorsolumbar spine, posterior column, posterior technique	ICD-9-CM
81.36	Refusion of lumbar and lumbosacral spine, anterior column, anterior technique	ICD-9-CM
81.37	Refusion of lumbar and lumbosacral spine, posterior column, posterior technique	ICD-9-CM
81.38	Refusion of lumbar and lumbosacral spine, anterior column, posterior technique	ICD-9-CM
81.39	Refusion of spine, not elsewhere classified	ICD-9-CM
22532	Arthrodesis, lateral extracavitary technique, including minimal discectomy to prepare interspace (other than for decompression); thoracic	CPT-4
22533	Arthrodesis, lateral extracavitary technique, including minimal discectomy to prepare interspace (other than for decompression); lumbar	CPT-4
22534	Arthrodesis, lateral extracavitary technique, including minimal discectomy to prepare interspace (other than for decompression); thoracic or lumbar, each additional vertebral segment (List separately in addition to code for primary procedure)	CPT-4
22548	Arthrodesis, anterior transoral or extraoral technique, clivus-C1-C2 (atlas-axis), with or without excision of odontoid process	CPT-4
22551	Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophytectomy and decompression of spinal cord and/or nerve roots; cervical below C2	CPT-4
22552	Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophytectomy and decompression of spinal cord and/or nerve roots; cervical below C2, each additional interspace (List separately in addition to code for separate procedure)	CPT-4
22554	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); cervical below C2	CPT-4
22556	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); thoracic	CPT-4
22558	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); lumbar	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
22585	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); each additional interspace (List separately in addition to code for primary procedure)	CPT-4
22586	Arthrodesis, pre-sacral interbody technique, including disc space preparation, discectomy, with posterior instrumentation, with image guidance, includes bone graft when performed, L5-S1 interspace	CPT-4
22590	Arthrodesis, posterior technique, craniocervical (occiput-C2)	CPT-4
22595	Arthrodesis, posterior technique, atlas-axis (C1-C2)	CPT-4
22600	Arthrodesis, posterior or posterolateral technique, single level; cervical below C2 segment	CPT-4
22610	Arthrodesis, posterior or posterolateral technique, single level; thoracic (with lateral transverse technique, when performed)	CPT-4
22612	Arthrodesis, posterior or posterolateral technique, single level; lumbar (with lateral transverse technique, when performed)	CPT-4
22614	Arthrodesis, posterior or posterolateral technique, single level; each additional vertebral segment (List separately in addition to code for primary procedure)	CPT-4
22630	Arthrodesis, posterior interbody technique, including laminectomy and/or discectomy to prepare interspace (other than for decompression), single interspace; lumbar	CPT-4
22632	Arthrodesis, posterior interbody technique, including laminectomy and/or discectomy to prepare interspace (other than for decompression), single interspace; each additional interspace (List separately in addition to code for primary procedure)	CPT-4
22633	Arthrodesis, combined posterior or posterolateral technique with posterior interbody technique including laminectomy and/or discectomy sufficient to prepare interspace (other than for decompression), single interspace and segment; lumbar	CPT-4
22634	Arthrodesis, combined posterior or posterolateral technique with posterior interbody technique including laminectomy and/or discectomy sufficient to prepare interspace (other than for decompression), single interspace and segment; each additional interspace and segment (List separately in addition to code for primary procedure)	CPT-4
81.63	Fusion or refusion of 4-8 vertebrae	ICD-9-CM
81.64	Fusion or refusion of 9 or more vertebrae	ICD-9-CM
22843	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 7 to 12 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22844	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 13 or more vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22847	Anterior instrumentation; 8 or more vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22842	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 3 to 6 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22846	Anterior instrumentation; 4 to 7 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
81.62	Fusion or refusion of 2-3 vertebrae	ICD-9-CM
22840	Posterior non-segmental instrumentation (eg, Harrington rod technique, pedicle fixation across 1 interspace, atlantoaxial transarticular screw fixation, sublaminar wiring at C1, facet screw fixation) (List separately in addition to code for primary procedure)	CPT-4
22845	Anterior instrumentation; 2 to 3 vertebral segments (List separately in addition to code for primary procedure)	CPT-4

Appendix B. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Surgeries in this Request

Code	Description	Code Type
Spinal fusion (1-3 levels)		
81.62	Fusion or refusion of 2-3 vertebrae	ICD-9-CM
22840	Posterior non-segmental instrumentation (eg, Harrington rod technique, pedicle fixation across 1 interspace, atlantoaxial transarticular screw fixation, sublaminar wiring at C1, facet screw fixation) (List separately in addition to code for primary procedure)	CPT-4
22845	Anterior instrumentation; 2 to 3 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
Spinal fusion (4+ levels)		
81.63	Fusion or refusion of 4-8 vertebrae	ICD-9-CM
81.64	Fusion or refusion of 9 or more vertebrae	ICD-9-CM
22843	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 7 to 12 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22844	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 13 or more vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22847	Anterior instrumentation; 8 or more vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22842	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 3 to 6 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
22846	Anterior instrumentation; 4 to 7 vertebral segments (List separately in addition to code for primary procedure)	CPT-4
Tooth Extraction		
23.0	Forceps extraction of tooth	ICD-9-CM
23.01	Extraction of deciduous tooth	ICD-9-CM
23.09	Extraction of other tooth	ICD-9-CM
23.1	Surgical removal of tooth	ICD-9-CM
23.11	Removal of residual root	ICD-9-CM
23.19	Other surgical extraction of tooth	ICD-9-CM
D7140	extraction, erupted tooth or exposed root (elevation and/or forceps removal)	HCPCS
D7210	extraction, erupted tooth requiring removal of bone and/or sectioning of tooth, and including elevation of mucoperiosteal flap if indicated	HCPCS
D7220	removal of impacted tooth - soft tissue	HCPCS
D7230	removal of impacted tooth - partially bony	HCPCS
D7240	removal of impacted tooth - completely bony	HCPCS

Appendix C. List of Generic and Brand Names of Products Used to Define Opioid Analgesics in this Request

Generic Name	Brand Name
Hydromorphone	
HYDROMORPHONE HCL	hydromorphone
HYDROMORPHONE HCL	Dilaudid
HYDROMORPHONE HCL	Exalgo ER
Meperidine	
MEPERIDINE HCL	Demerol
MEPERIDINE HCL	meperidine
MEPERIDINE HCL/PROMETHAZINE HCL	Meprozone
MEPERIDINE HCL	Meperitab
MEPERIDINE HCL/PROMETHAZINE HCL	meperidine-promethazine
Morphine	
MORPHINE SULFATE	morphine
MORPHINE SULFATE	Avinza
MORPHINE SULFATE	Kadian
MORPHINE SULFATE	MS Contin
MORPHINE SULFATE	Oramorph SR
MORPHINE SULFATE/NALTREXONE HCL	Embeda
MORPHINE SULFATE	MorphaBond ER
MORPHINE SULFATE	Arymo ER
Oxycodone	
IBUPROFEN/OXYCODONE HCL	ibuprofen-oxycodone
IBUPROFEN/OXYCODONE HCL	Combunox
OXYCODONE HCL	oxycodone
OXYCODONE HCL	OxyContin
OXYCODONE HCL	Roxicodone
OXYCODONE HCL	OxyIR
OXYCODONE HCL	Oxecta
OXYCODONE HCL	Dazidox
OXYCODONE HCL	Oxaydo
OXYCODONE HCL/ACETAMINOPHEN	Tylox
OXYCODONE HCL/ACETAMINOPHEN	oxycodone-acetaminophen
OXYCODONE HCL/ACETAMINOPHEN	Roxicet
OXYCODONE HCL/ACETAMINOPHEN	Percocet
OXYCODONE HCL/ACETAMINOPHEN	Magnacet
OXYCODONE HCL/ACETAMINOPHEN	Endocet
OXYCODONE HCL/ACETAMINOPHEN	Xolox
OXYCODONE HCL/ACETAMINOPHEN	Xartemis XR
OXYCODONE HCL/ACETAMINOPHEN	Primlev
OXYCODONE HCL/ACETAMINOPHEN	Primalev
OXYCODONE HCL/ACETAMINOPHEN	ALCET
OXYCODONE HCL/ASPIRIN	oxycodone-aspirin
OXYCODONE HCL/ASPIRIN	Endodan
OXYCODONE HCL/ASPIRIN	Percodan
OXYCODONE HCL/OXYCODONE TEREPHTHALATE/ASPIRIN	oxycodone HCl-oxycodone-ASA
OXYCODONE MYRISTATE	Xtampza ER

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Generic Name	Brand Name
Oxymorphone	
OXYMORPHONE HCL	oxymorphone
OXYMORPHONE HCL	Opana ER
OXYMORPHONE HCL	Opana
Levorphanol	
LEVORPHANOL TARTRATE	levorphanol tartrate
LEVORPHANOL TARTRATE	Levo-Dromoran
Tapentadol	
TAPENTADOL HCL	Nucynta
TAPENTADOL HCL	Nucynta ER
Codeine	
ACETAMINOPHEN WITH CODEINE PHOSPHATE	Tylenol-Codeine #3
ACETAMINOPHEN WITH CODEINE PHOSPHATE	Tylenol-Codeine #4
CODEINE SULFATE	codeine sulfate
ACETAMINOPHEN WITH CODEINE PHOSPHATE	acetaminophen-codeine
BUTALBITAL/ACETAMINOPHEN/CAFFEINE/CODEINE PHOSPHATE	butalbital-acetaminop-caf-cod
BUTALBITAL/ACETAMINOPHEN/CAFFEINE/CODEINE PHOSPHATE	Phrenilin w/Caffeine-Codeine
ASPIRIN/CODEINE PHOSPHATE	Aspirin-Codeine #3
CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE	Fiorinal-Codeine #3
BUTALBITAL/ACETAMINOPHEN/CAFFEINE/CODEINE PHOSPHATE	Fioricet with Codeine
CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE	Butalbital Compound W/Codeine
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	Panlor DC
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	Panlor SS
BUTALBITAL/ACETAMINOPHEN/CAFFEINE/CODEINE PHOSPHATE	butalbital-acetaminop-caf-cod
ASPIRIN/CODEINE PHOSPHATE	Aspirin-Codeine #4
ASPIRIN/CAFFEINE/DIHYDROCODEINE BITARTRATE	Synalgos-DC
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	Trezix
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	acetaminophen-caff-dihydrocod
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	Zerlor
CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE	Butalbital Compound-Codeine
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	acetaminophen-caff-dihydrocod
ACETAMINOPHEN WITH CODEINE PHOSPHATE	Cocet Plus
ACETAMINOPHEN WITH CODEINE PHOSPHATE	Cocet
CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE	Ascomp with Codeine
BUTALBITAL/ACETAMINOPHEN/CAFFEINE/CODEINE PHOSPHATE	Fioricet with Codeine
CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE	codeine-butalbital-ASA-caff
ASPIRIN/CAFFEINE/DIHYDROCODEINE BITARTRATE	aspirin-caffeine-dihydrocodein
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	Trezix
ACETAMINOPHEN WITH CODEINE PHOSPHATE	Vopac
ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE	acetaminophen-caff-dihydrocod
ASPIRIN/CODEINE PHOSPHATE	aspirin-codeine
Hydrocodone	
HYDROCODONE BITARTRATE	Zohydro ER
HYDROCODONE BITARTRATE	Hysingla ER
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Vicodin
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Vicodin ES

Appendix C. List of Generic and Brand Names of Products Used to Define Opioid Analgesics in this Request

Generic Name	Brand Name
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Vicodin HP
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Co-Gesic
HYDROCODONE BITARTRATE/ACETAMINOPHEN	hydrocodone-acetaminophen
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lortab
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Hydrogesic
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Margesic-H
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lorcet Plus
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lorcet 10/650
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Dolorex Forte
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Xodol 10/300
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Xodol 5/300
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Xodol 7.5/300
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Norco
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Norco
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lortab
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lortab 5-325
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lortab 7.5-325
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lortab 10-325
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Polygesic
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lorcet (hydrocodone)
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lorcet Plus
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Lorcet HD
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Norco
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Maxidone
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Zydone
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Anexsia
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Stagesic
HYDROCODONE BITARTRATE/ACETAMINOPHEN	Verdrocet
HYDROCODONE BITARTRATE/ACETAMINOPHEN/DIETARY SUPPLEMENT #11	Theracodophen-325
HYDROCODONE BITARTRATE/ACETAMINOPHEN/DIETARY SUPPLEMENT #11	Theracodophen-650
HYDROCODONE BITARTRATE/ACETAMINOPHEN/DIETARY SUPPLEMENT #11	Theracodophen-Low-90
HYDROCODONE/IBUPROFEN	Vicoprofen
HYDROCODONE/IBUPROFEN	Reprexain
HYDROCODONE/IBUPROFEN	Ibudone
HYDROCODONE/IBUPROFEN	Xylon 10
HYDROCODONE/IBUPROFEN	hydrocodone-ibuprofen
Pentazocine	
PENTAZOCINE HCL/ACETAMINOPHEN	Talacen
PENTAZOCINE HCL/NALOXONE HCL	Talwin NX
PENTAZOCINE HCL/NALOXONE HCL	pentazocine-naloxone
PENTAZOCINE HCL/ACETAMINOPHEN	pentazocine-acetaminophen
Propoxyphene	
PROPOXYPHENE HCL/ACETAMINOPHEN	propoxyphene-acetaminophen
PROPOXYPHENE NAPSYLATE	Darvon-N
PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN	Darvocet-N 100
PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN	propoxyphene N-acetaminophen

Appendix C. List of Generic and Brand Names of Products Used to Define Opioid Analgesics in this Request

Generic Name	Brand Name
PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN	Balacet 325
PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN	Darvocet A500
PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN	Propoxacet-N 100
PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN	Darvocet-N 50
Tramadol	
TRAMADOL HCL	Ultram
TRAMADOL HCL	Ultram ER
TRAMADOL HCL	tramadol
TRAMADOL HCL	Ryzolt
TRAMADOL HCL	tramadol
TRAMADOL HCL	ConZip
TRAMADOL HCL	Rybix ODT
TRAMADOL HCL/ACETAMINOPHEN	Ultracet
TRAMADOL HCL/ACETAMINOPHEN	tramadol-acetaminophen
TRAMADOL HCL/DIETARY SUPPLEMENT,MISC. CB.11	Theratramadol-60
TRAMADOL HCL/DIETARY SUPPLEMENT,MISC. CB.11	Theratramadol-90

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
Cancer		
140	MALIGNANT NEOPLASM OF LIP	ICD-9-CM Diagnosis
140.0	MAL NEOPLSM UP LIP VERMILION BORDR	ICD-9-CM Diagnosis
140.1	MAL NEOPLSM LW LIP VERMILION BORDR	ICD-9-CM Diagnosis
140.3	MALIG NEOPLSM UPPER LIP INNR ASPECT	ICD-9-CM Diagnosis
140.4	MALIG NEOPLASM LOW LIP INNR ASPECT	ICD-9-CM Diagnosis
140.5	MAL NEO LIP INNR ASPECT UNS UP/LW	ICD-9-CM Diagnosis
140.6	MALIGNANT NEOPLASM COMMISSURE LIP	ICD-9-CM Diagnosis
140.8	MALIGNANT NEOPLASM OTHER SITES LIP	ICD-9-CM Diagnosis
140.9	MAL NEOPLSM LIP VERMIL UNS UP/LW	ICD-9-CM Diagnosis
141	MALIGNANT NEOPLASM OF TONGUE	ICD-9-CM Diagnosis
141.0	MALIGNANT NEOPLASM BASE TONGUE	ICD-9-CM Diagnosis
141.1	MALIG NEOPLASM DORS SURFACE TONGUE	ICD-9-CM Diagnosis
141.2	MALIG NEOPLSM TIP&LAT BORDER TONGUE	ICD-9-CM Diagnosis
141.3	MALIG NEOPLSM VENTRAL SURFCE TONGUE	ICD-9-CM Diagnosis
141.4	MAL NEOPLSM ANT 2/3 TONGUE PART UNS	ICD-9-CM Diagnosis
141.5	MALIG NEOPLASM JUNC ZONE TONGUE	ICD-9-CM Diagnosis
141.6	MALIGNANT NEOPLASM LINGUAL TONSIL	ICD-9-CM Diagnosis
141.8	MALIG NEOPLASM OTHER SITES TONGUE	ICD-9-CM Diagnosis
141.9	MALIG NEOPLASM TONGUE UNSPEC SITE	ICD-9-CM Diagnosis
142	MALIG NEOPLASM MAJOR SALIV GLANDS	ICD-9-CM Diagnosis
142.0	MALIGNANT NEOPLASM OF PAROTID GLAND	ICD-9-CM Diagnosis
142.1	MALIG NEOPLASM SUBMANDIBULAR GLAND	ICD-9-CM Diagnosis
142.2	MALIGNANT NEOPLASM SUBLINGUAL GLAND	ICD-9-CM Diagnosis
142.8	MALIG NEOPLASM OTH MAJ SALIV GLANDS	ICD-9-CM Diagnosis
142.9	MALIG NEOPLASM SALIV GLAND UNSPEC	ICD-9-CM Diagnosis
143	MALIGNANT NEOPLASM OF GUM	ICD-9-CM Diagnosis
143.0	MALIGNANT NEOPLASM OF UPPER GUM	ICD-9-CM Diagnosis
143.1	MALIGNANT NEOPLASM OF LOWER GUM	ICD-9-CM Diagnosis
143.8	MALIGNANT NEOPLASM OTHER SITES GUM	ICD-9-CM Diagnosis
143.9	MALIGNANT NEOPLASM GUM UNSPEC SITE	ICD-9-CM Diagnosis
144	MALIGNANT NEOPLASM FLOOR MOUTH	ICD-9-CM Diagnosis
144.0	MALIG NEOPLASM ANT PRTN FLOOR MOUTH	ICD-9-CM Diagnosis
144.1	MALIG NEOPLASM LAT PRTN FLR MOUTH	ICD-9-CM Diagnosis
144.8	MALIG NEOPLASM OTH SITES FLR MOUTH	ICD-9-CM Diagnosis
144.9	MALIG NEOPLSM FLR MOUTH PART UNSPEC	ICD-9-CM Diagnosis
145	MALIG NEOPLSM OTH&UNSPEC PART MOUTH	ICD-9-CM Diagnosis
145.0	MALIGNANT NEOPLASM OF CHEEK MUCOSA	ICD-9-CM Diagnosis
145.1	MALIGNANT NEOPLASM VESTIBULE MOUTH	ICD-9-CM Diagnosis
145.2	MALIGNANT NEOPLASM OF HARD PALATE	ICD-9-CM Diagnosis
145.3	MALIGNANT NEOPLASM OF SOFT PALATE	ICD-9-CM Diagnosis
145.4	MALIGNANT NEOPLASM OF UVULA	ICD-9-CM Diagnosis
145.5	MALIGNANT NEOPLASM PALATE UNSPEC	ICD-9-CM Diagnosis
145.6	MALIGNANT NEOPLASM RETROMOLAR AREA	ICD-9-CM Diagnosis

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Code	Description	Code Type
145.8	MALIG NEOPLASM OTH SPEC PARTS MOUTH	ICD-9-CM Diagnosis
145.9	MALIG NEOPLASM MOUTH UNSPEC SITE	ICD-9-CM Diagnosis
146	MALIGNANT NEOPLASM OF OROPHARYNX	ICD-9-CM Diagnosis
146.0	MALIGNANT NEOPLASM OF TONSIL	ICD-9-CM Diagnosis
146.1	MALIGNANT NEOPLASM TONSILLAR FOSSA	ICD-9-CM Diagnosis
146.2	MALIG NEOPLASM TONSILLAR PILLARS	ICD-9-CM Diagnosis
146.3	MALIGNANT NEOPLASM OF VALLECULA	ICD-9-CM Diagnosis
146.4	MALIG NEOPLSM ANT ASPECT EPIGLOTTIS	ICD-9-CM Diagnosis
146.5	MALIG NEOPLSM JUNC RGN OROPHARYNX	ICD-9-CM Diagnosis
146.6	MALIG NEOPLASM LAT WALL OROPHARYNX	ICD-9-CM Diagnosis
146.7	MALIG NEOPLASM POST WALL OROPHARYNX	ICD-9-CM Diagnosis
146.8	MAL NEO OTH SPEC SITE OROPHARYNX	ICD-9-CM Diagnosis
146.9	MALIG NEOPLSM OROPHARYNX UNS SITE	ICD-9-CM Diagnosis
147	MALIGNANT NEOPLASM OF NASOPHARYNX	ICD-9-CM Diagnosis
147.0	MALIG NEOPLASM SUP WALL NASOPHARYNX	ICD-9-CM Diagnosis
147.1	MALIG NEOPLSM POST WALL NASOPHARYNX	ICD-9-CM Diagnosis
147.2	MALIG NEOPLASM LAT WALL NASOPHARYNX	ICD-9-CM Diagnosis
147.3	MALIG NEOPLASM ANT WALL NASOPHARYNX	ICD-9-CM Diagnosis
147.8	MAL NEO OTH SPEC SITE NASOPHARYNX	ICD-9-CM Diagnosis
147.9	MALIG NEOPLSM NASOPHARYNX UNS SITE	ICD-9-CM Diagnosis
148	MALIGNANT NEOPLASM OF HYPOPHARYNX	ICD-9-CM Diagnosis
148.0	MAL NEO POSTCRICOID RGN HYPOPHARYNX	ICD-9-CM Diagnosis
148.1	MALIGNANT NEOPLASM PYRIFORM SINUS	ICD-9-CM Diagnosis
148.2	MALIG NEOPLSM ARYEPIGLOTTIC FOLD	ICD-9-CM Diagnosis
148.3	MAL NEO POST HYPOPHARYNGEAL WALL	ICD-9-CM Diagnosis
148.8	MAL NEO OTH SPEC SITE HYPOPHARYNX	ICD-9-CM Diagnosis
148.9	MALIG NEOPLSM HYPOPHARYNX UNS SITE	ICD-9-CM Diagnosis
149	OTH MALIG NEO LIP-MOUTH-PHARYNX	ICD-9-CM Diagnosis
149.0	MALIGNANT NEOPLASM PHARYNX UNSPEC	ICD-9-CM Diagnosis
149.1	MALIGNANT NEOPLASM WALDEYERS RING	ICD-9-CM Diagnosis
149.8	MAL NEO OTH SITE WITHIN LIP&ORL CAV	ICD-9-CM Diagnosis
149.9	MAL NEO ILL-DEFIND SITE LIP&ORL CAV	ICD-9-CM Diagnosis
150	MALIGNANT NEOPLASM OF ESOPHAGUS	ICD-9-CM Diagnosis
150.0	MALIG NEOPLASM CERVICAL ESOPHAGUS	ICD-9-CM Diagnosis
150.1	MALIG NEOPLASM THORACIC ESOPHAGUS	ICD-9-CM Diagnosis
150.2	MALIG NEOPLASM ABDOMINAL ESOPHAGUS	ICD-9-CM Diagnosis
150.3	MALIG NEOPLASM UPPER1/3ESOPHAGUS	ICD-9-CM Diagnosis
150.4	MALIG NEOPLASM MIDDLE1/3ESOPHAGUS	ICD-9-CM Diagnosis
150.5	MALIG NEOPLASM LOWER1/3ESOPHAGUS	ICD-9-CM Diagnosis
150.8	MALIG NEOPLASM OTH SPEC PART ESOPH	ICD-9-CM Diagnosis
150.9	MALIG NEOPLASM ESOPH UNSPEC SITE	ICD-9-CM Diagnosis
151	MALIGNANT NEOPLASM OF STOMACH	ICD-9-CM Diagnosis
151.0	MALIGNANT NEOPLASM OF CARDIA	ICD-9-CM Diagnosis
151.1	MALIGNANT NEOPLASM OF PYLORUS	ICD-9-CM Diagnosis

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Code	Description	Code Type
151.2	MALIGNANT NEOPLASM PYLORIC ANTRUM	ICD-9-CM Diagnosis
151.3	MALIGNANT NEOPLASM FUNDUS STOMACH	ICD-9-CM Diagnosis
151.4	MALIGNANT NEOPLASM BODY STOMACH	ICD-9-CM Diagnosis
151.5	MALIG NEOPLSM LESR CURV STOMACH UNS	ICD-9-CM Diagnosis
151.6	MALIG NEOPLSM GT CURV STOMACH UNS	ICD-9-CM Diagnosis
151.8	MALIG NEOPLSM OTH SPEC SITE STOMACH	ICD-9-CM Diagnosis
151.9	MALIG NEOPLASM STOMACH UNSPEC SITE	ICD-9-CM Diagnosis
152	MALIG NEOPLSM SM INTEST INCL DUODUM	ICD-9-CM Diagnosis
152.0	MALIGNANT NEOPLASM OF DUODENUM	ICD-9-CM Diagnosis
152.1	MALIGNANT NEOPLASM OF JEJUNUM	ICD-9-CM Diagnosis
152.2	MALIGNANT NEOPLASM OF ILEUM	ICD-9-CM Diagnosis
152.3	MALIG NEOPLASM MECKELS DIVERTICULUM	ICD-9-CM Diagnosis
152.8	MAL NEOPLSM OTH SPEC SITE SM INTEST	ICD-9-CM Diagnosis
152.9	MALIG NEOPLSM SM INTEST UNSPEC SITE	ICD-9-CM Diagnosis
153	MALIGNANT NEOPLASM OF COLON	ICD-9-CM Diagnosis
153.0	MALIGNANT NEOPLASM HEPATIC FLEXURE	ICD-9-CM Diagnosis
153.1	MALIGNANT NEOPLASM TRANSVERSE COLON	ICD-9-CM Diagnosis
153.2	MALIGNANT NEOPLASM DESCENDING COLON	ICD-9-CM Diagnosis
153.3	MALIGNANT NEOPLASM OF SIGMOID COLON	ICD-9-CM Diagnosis
153.4	MALIGNANT NEOPLASM OF CECUM	ICD-9-CM Diagnosis
153.5	MALIGNANT NEOPLASM OF APPENDIX	ICD-9-CM Diagnosis
153.6	MALIGNANT NEOPLASM ASCENDING COLON	ICD-9-CM Diagnosis
153.7	MALIGNANT NEOPLASM SPLENIC FLEXURE	ICD-9-CM Diagnosis
153.8	MAL NEOPLSM OTH SPEC SITE LG INTEST	ICD-9-CM Diagnosis
153.9	MALIG NEOPLASM COLON UNSPEC SITE	ICD-9-CM Diagnosis
154	MAL NEO RECT RECTOSIGMOID JUNC&ANUS	ICD-9-CM Diagnosis
154.0	MALIG NEOPLASM RECTOSIGMOID JUNC	ICD-9-CM Diagnosis
154.1	MALIGNANT NEOPLASM OF RECTUM	ICD-9-CM Diagnosis
154.2	MALIGNANT NEOPLASM OF ANAL CANAL	ICD-9-CM Diagnosis
154.3	MALIGNANT NEOPLASM ANUS UNSPEC SITE	ICD-9-CM Diagnosis
154.8	MAL NEO OTH SITE RECTM/SIG/ANUS	ICD-9-CM Diagnosis
155	MALIG NEOPLASM LIVER&INTRAHEP BDS	ICD-9-CM Diagnosis
155.0	MALIGNANT NEOPLASM OF LIVER PRIMARY	ICD-9-CM Diagnosis
155.1	MALIGNANT NEOPLASM INTRAHEPATIC BDS	ICD-9-CM Diagnosis
155.2	MAL NEOPLSM LIVR NOT SPEC PRIM/SEC	ICD-9-CM Diagnosis
156	MALIG NEOPLSM GALLBLADD&XTRAHEP BDS	ICD-9-CM Diagnosis
156.0	MALIGNANT NEOPLASM OF GALLBLADDER	ICD-9-CM Diagnosis
156.1	MALIGNANT NEOPLASM EXTRAHEPATIC BDS	ICD-9-CM Diagnosis
156.2	MALIGNANT NEOPLASM AMPULLA VATER	ICD-9-CM Diagnosis
156.8	MAL NEO OTH SITE GB&XTRAHEP BDS	ICD-9-CM Diagnosis
156.9	MAL NEO BILI TRACT PART UNS SITE	ICD-9-CM Diagnosis
157	MALIGNANT NEOPLASM OF PANCREAS	ICD-9-CM Diagnosis
157.0	MALIGNANT NEOPLASM HEAD PANCREAS	ICD-9-CM Diagnosis
157.1	MALIGNANT NEOPLASM BODY PANCREAS	ICD-9-CM Diagnosis

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Code	Description	Code Type
157.2	MALIGNANT NEOPLASM TAIL PANCREAS	ICD-9-CM Diagnosis
157.3	MALIGNANT NEOPLASM PANCREATIC DUCT	ICD-9-CM Diagnosis
157.4	MALIG NEOPLASM ISLETS LANGERHANS	ICD-9-CM Diagnosis
157.8	MALIG NEOPLASM OTH SPEC SITES PANC	ICD-9-CM Diagnosis
157.9	MALIG NEOPLASM PANCREAS PART UNSPEC	ICD-9-CM Diagnosis
158	MALIG NEOPLASM RETROPERITON&PERITON	ICD-9-CM Diagnosis
158.0	MALIGNANT NEOPLASM RETROPERITONEUM	ICD-9-CM Diagnosis
158.8	MALIG NEOPLASM SPEC PARTS PERITON	ICD-9-CM Diagnosis
158.9	MALIG NEOPLASM PERITONEUM UNSPEC	ICD-9-CM Diagnosis
159	MAL NEO DIGES ORGANS&PANCREAS OTH	ICD-9-CM Diagnosis
159.0	MALIG NEOPLSM INTST TRACT PART UNS	ICD-9-CM Diagnosis
159.1	MALIGNANT NEOPLASM OF SPLEEN NEC	ICD-9-CM Diagnosis
159.8	MAL NEO OTH DIGESTV SYS&INTRA-ABD	ICD-9-CM Diagnosis
159.9	MAL NEO ILL-DEFIND DIGESTV&PERITON	ICD-9-CM Diagnosis
160	MAL NEO NASL CAV/MID EAR&ACSS SINUS	ICD-9-CM Diagnosis
160.0	MALIGNANT NEOPLASM NASAL CAVITIES	ICD-9-CM Diagnosis
160.1	MALIG NEO AUD TUBE-MID EAR&MASTOID	ICD-9-CM Diagnosis
160.2	MALIGNANT NEOPLASM MAXILLARY SINUS	ICD-9-CM Diagnosis
160.3	MALIGNANT NEOPLASM ETHMOIDAL SINUS	ICD-9-CM Diagnosis
160.4	MALIGNANT NEOPLASM OF FRONTAL SINUS	ICD-9-CM Diagnosis
160.5	MALIGNANT NEOPLASM SPHENOIDAL SINUS	ICD-9-CM Diagnosis
160.8	MAL NEO OTH SITE NASL-MID EAR&SINUS	ICD-9-CM Diagnosis
160.9	MAL NEO NASL CAV MID EAR SINUS UNS	ICD-9-CM Diagnosis
161	MALIGNANT NEOPLASM OF LARYNX	ICD-9-CM Diagnosis
161.0	MALIGNANT NEOPLASM OF GLOTTIS	ICD-9-CM Diagnosis
161.1	MALIGNANT NEOPLASM OF SUPRAGLOTTIS	ICD-9-CM Diagnosis
161.2	MALIGNANT NEOPLASM OF SUBGLOTTIS	ICD-9-CM Diagnosis
161.3	MALIG NEOPLASM LARYNGEAL CARTILAGES	ICD-9-CM Diagnosis
161.8	MALIG NEOPLSM OTH SPEC SITES LARYNX	ICD-9-CM Diagnosis
161.9	MALIG NEOPLASM LARYNX UNSPEC SITE	ICD-9-CM Diagnosis
162	MALIG NEOPLASM TRACH BRONCHUS&LUNG	ICD-9-CM Diagnosis
162.0	MALIGNANT NEOPLASM OF TRACHEA	ICD-9-CM Diagnosis
162.2	MALIGNANT NEOPLASM OF MAIN BRONCHUS	ICD-9-CM Diagnosis
162.3	MALIG NEOPLSM UP LOBE BRONCHUS/LUNG	ICD-9-CM Diagnosis
162.4	MAL NEOPLSM MID LOBE BRONCHUS/LUNG	ICD-9-CM Diagnosis
162.5	MALIG NEOPLSM LW LOBE BRONCHUS/LUNG	ICD-9-CM Diagnosis
162.8	MAL NEOPLSM OTH PART BRONCHUS/LUNG	ICD-9-CM Diagnosis
162.9	MAL NEOPLSM BRONCHUS&LUNG UNS SITE	ICD-9-CM Diagnosis
163	MALIGNANT NEOPLASM OF PLEURA	ICD-9-CM Diagnosis
163.0	MALIGNANT NEOPLASM PARIETAL PLEURA	ICD-9-CM Diagnosis
163.1	MALIGNANT NEOPLASM VISCERAL PLEURA	ICD-9-CM Diagnosis
163.8	MALIG NEOPLASM OTH SPEC SITES PLEU	ICD-9-CM Diagnosis
163.9	MALIG NEOPLASM PLEURA UNSPEC SITE	ICD-9-CM Diagnosis
164	MALIG NEOPLASM THYMUS HEART&MEDIAS	ICD-9-CM Diagnosis

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Code	Description	Code Type
164.0	MALIGNANT NEOPLASM OF THYMUS	ICD-9-CM Diagnosis
164.1	MALIGNANT NEOPLASM OF HEART	ICD-9-CM Diagnosis
164.2	MALIG NEOPLASM ANTERIOR MEDIASTINUM	ICD-9-CM Diagnosis
164.3	MALIG NEOPLASM POSTERIOR MEDIAST	ICD-9-CM Diagnosis
164.8	MALIG NEOPLASM OTH PARTS MEDIAST	ICD-9-CM Diagnosis
164.9	MALIG NEOPLASM MEDIAST PART UNSPEC	ICD-9-CM Diagnosis
165	MAL NEO RESP&THOR ORGANS OTH	ICD-9-CM Diagnosis
165.0	MAL NEOPLSM UP RESP TRACT PART UNS	ICD-9-CM Diagnosis
165.8	MAL NEO OTH W/IN RESP/THORAX	ICD-9-CM Diagnosis
165.9	MALIG NEO ILL-DEF W/IN RESP SYS	ICD-9-CM Diagnosis
170	MALIG NEOPLASM BONE&ARTICLR CART	ICD-9-CM Diagnosis
170.0	MALIG NEOPLSM BNS SKULL&FCE NO MAND	ICD-9-CM Diagnosis
170.1	MALIGNANT NEOPLASM OF MANDIBLE	ICD-9-CM Diagnosis
170.2	MAL NEO VERT COLMN NOT SACRM&COCCYX	ICD-9-CM Diagnosis
170.3	MALIG NEOPLASM RIBS STERNUM&CLAV	ICD-9-CM Diagnosis
170.4	MALIG NEOPLSM SCAP&LNG BNS UP LIMB	ICD-9-CM Diagnosis
170.5	MALIG NEOPLASM SHORT BNS UPPER LIMB	ICD-9-CM Diagnosis
170.6	MAL NEOPLSM PELV BNS SACRUM&COCCYX	ICD-9-CM Diagnosis
170.7	MALIG NEOPLASM LONG BNS LOWER LIMB	ICD-9-CM Diagnosis
170.8	MALIG NEOPLASM SHORT BNS LOWER LIMB	ICD-9-CM Diagnosis
170.9	MAL NEO BN&ARTICLR CART SITE UNS	ICD-9-CM Diagnosis
171	MALIG NEOPLSM CNCTV&OTH SOFT TISSUE	ICD-9-CM Diagnosis
171.0	MAL NEO CNCTV&OTH SFT TISS HEAD&NCK	ICD-9-CM Diagnosis
171.2	MAL NEO SFT TISS UP LIMB W/SHLDR	ICD-9-CM Diagnosis
171.3	MAL NEO OTH SFT TISS LW LIMB W/HIP	ICD-9-CM Diagnosis
171.4	MAL NEOPLSM CNCTV&OTH SFT TISS THOR	ICD-9-CM Diagnosis
171.5	MALIG NEOPLSM CNCTV&SFT TISS ABD	ICD-9-CM Diagnosis
171.6	MAL NEOPLSM CNCTV&OTH SFT TISS PELV	ICD-9-CM Diagnosis
171.7	MAL NEO CNCTV&OTH SFT TISS TRNK	ICD-9-CM Diagnosis
171.8	MAL NEO OTH SITE CNCTV&OTH SFT TISS	ICD-9-CM Diagnosis
171.9	MAL NEO CNCTV&OTH SFT TISS SITE UNS	ICD-9-CM Diagnosis
172	MALIGNANT MELANOMA OF SKIN	ICD-9-CM Diagnosis
172.0	MALIGNANT MELANOMA OF SKIN OF LIP	ICD-9-CM Diagnosis
172.1	MALIG MELANOMA SKN EYELD W/CANTHUS	ICD-9-CM Diagnosis
172.2	MAL MELNOMA EAR&XTRNL AUDITRY CANL	ICD-9-CM Diagnosis
172.3	MALIG MELANOMA SKN OTH&UNS PART FCE	ICD-9-CM Diagnosis
172.4	MALIGNANT MELANOMA SKIN SCALP&NECK	ICD-9-CM Diagnosis
172.5	MALIG MELANOMA SKIN TRNK NO SCROTUM	ICD-9-CM Diagnosis
172.6	MALIG MELANOMA SKN UP LIMB W/SHLDR	ICD-9-CM Diagnosis
172.7	MALIG MELANOMA SKN LOW LIMB W/HIP	ICD-9-CM Diagnosis
172.8	MALIG MELANOMA OTH SPEC SITES SKIN	ICD-9-CM Diagnosis
172.9	MELANOMA OF SKIN, SITE UNSPECIFIED	ICD-9-CM Diagnosis
173	OTHER & UNS MALIGNANT NEOPLASM SKIN	ICD-9-CM Diagnosis
173.0	OTHER UNS MALIG NEOPLASM SKIN LIP	ICD-9-CM Diagnosis

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Code	Description	Code Type
173.00	UNS MALIGNANT NEOPLASM SKIN LIP	ICD-9-CM Diagnosis
173.01	BASAL CELL CARCINOMA OF SKIN OF LIP	ICD-9-CM Diagnosis
173.02	SQUAMOUS CELL CARCINOMA SKIN OF LIP	ICD-9-CM Diagnosis
173.09	OTHER SPEC MALIG NEOPLASM SKIN LIP	ICD-9-CM Diagnosis
173.1	OTH UNS MAL NEOPLSM EYELD W/CANTHUS	ICD-9-CM Diagnosis
173.10	UNS MALIG NEOPLSM EYELID W/CANTHUS	ICD-9-CM Diagnosis
173.11	BASAL CELL CA EYELID INCL CANTHUS	ICD-9-CM Diagnosis
173.12	SQAUM CELL CA EYELID INCL CANTHUS	ICD-9-CM Diagnosis
173.19	OTH SPEC MAL NEO EYELD W/CANTHUS	ICD-9-CM Diagnosis
173.2	OTH UNS MAL NEO EAR EXT AUD CANAL	ICD-9-CM Diagnosis
173.20	UNS MAL NEO SKN EAR EXT AUD CANAL	ICD-9-CM Diagnosis
173.21	BASAL CELL CA SKN EAR EXT AUD CANAL	ICD-9-CM Diagnosis
173.22	SQ CELL CA SKIN EAR EXT AUD CANAL	ICD-9-CM Diagnosis
173.29	OTH MAL NEO SKIN EAR EXT AUD CANAL	ICD-9-CM Diagnosis
173.3	OTH MAL NEO SKIN OTH&UNS PART FACE	ICD-9-CM Diagnosis
173.30	UNS MAL NEO SKIN OTH UNS PART FACE	ICD-9-CM Diagnosis
173.31	BASAL CELL CA SKN OTH UNS PART FACE	ICD-9-CM Diagnosis
173.32	SQ CELL CA SKIN OTH UNS PARTS FACE	ICD-9-CM Diagnosis
173.39	OTH MAL NEO SKIN OTH UNS PART FACE	ICD-9-CM Diagnosis
173.4	OTH MALIG NEOPLASM SCALP SKIN NECK	ICD-9-CM Diagnosis
173.40	UNS MALIG NEOPLASM SCALP SKIN NECK	ICD-9-CM Diagnosis
173.41	BASAL CELL CA SCALP SKIN NECK	ICD-9-CM Diagnosis
173.42	SQUAMOUS CELL CA SCALP SKIN NECK	ICD-9-CM Diagnosis
173.49	OTH SPEC MALIG NEO SCALP SKIN NECK	ICD-9-CM Diagnosis
173.5	OTH MAL NEO SKIN TRUNK NO SCROTUM	ICD-9-CM Diagnosis
173.50	UNS MAL NEO SKIN TRUNK NO SCROTUM	ICD-9-CM Diagnosis
173.51	BASAL CELL CA SKIN TRUNK NO SCROTUM	ICD-9-CM Diagnosis
173.52	SQ CELL CA SKIN TRUNK NO SCROTUM	ICD-9-CM Diagnosis
173.59	OTH MAL NEO SKIN TRUNK NO SCROTUM	ICD-9-CM Diagnosis
173.6	OTH MAL NEO SKIN UP LIMB W/SHOULDER	ICD-9-CM Diagnosis
173.60	UNS MAL NEO SKIN UP LIMB W/SHOULDER	ICD-9-CM Diagnosis
173.61	BASL CELL CA SKN UP LIMB INCL SHLDR	ICD-9-CM Diagnosis
173.62	SQ CELL CA SKIN UP LIMB INCL SHLDR	ICD-9-CM Diagnosis
173.69	OTH MAL NEO SKIN UP LIMB W/SHLOUNDER	ICD-9-CM Diagnosis
173.7	OTH MALIG NEO SKIN LW LIMB W/HIP	ICD-9-CM Diagnosis
173.70	UNS MALIG NEO SKIN LW LIMB W/HIP	ICD-9-CM Diagnosis
173.71	BASAL CELL CA SKIN LW LIMB INCL HIP	ICD-9-CM Diagnosis
173.72	SQ CELL CA SKIN LOW LIMB INCL HIP	ICD-9-CM Diagnosis
173.79	OTH SPEC MAL NEO SKN LW LIMB W/HIP	ICD-9-CM Diagnosis
173.8	OTH MALIG NEO OTH SPEC SITE SKIN	ICD-9-CM Diagnosis
173.80	UNS MALIG NEO OTH SPEC SITE SKIN	ICD-9-CM Diagnosis
173.81	BASAL CELL CA OTH SPEC SITES SKIN	ICD-9-CM Diagnosis
173.82	SQ CELL CA OTH SPEC SITES SKIN	ICD-9-CM Diagnosis
173.89	OTH SPEC MAL NEO OTH SPEC SITE SKN	ICD-9-CM Diagnosis

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
173.9	OTH UNS MALIG NEOPLSM SKIN SITE UNS	ICD-9-CM Diagnosis
173.90	UNS MALIG NEOPLASM SKIN SITE UNS	ICD-9-CM Diagnosis
173.91	BASAL CELL CARCINOMA SKIN SITE UNS	ICD-9-CM Diagnosis
173.92	SQUAMOUS CELL CA SKIN SITE UNS	ICD-9-CM Diagnosis
173.99	OTH SPEC MALIG NEOPLSM SKN SITE UNS	ICD-9-CM Diagnosis
174	MALIGNANT NEOPLASM OF FEMALE BREAST	ICD-9-CM Diagnosis
174.0	MALIG NEOPLSM NIPPLE&AREOLA FE BRST	ICD-9-CM Diagnosis
174.1	MALIG NEOPLASM CNTRL PRN FE BREAST	ICD-9-CM Diagnosis
174.2	MALIG NEOPLSM UP-INNR QUAD FE BRST	ICD-9-CM Diagnosis
174.3	MALIG NEOPLSM LOW-INNR QUAD FE BRST	ICD-9-CM Diagnosis
174.4	MALIG NEOPLSM UP-OUTER QUAD FE BRST	ICD-9-CM Diagnosis
174.5	MALIG NEOPLSM LW-OUTER QUAD FE BRST	ICD-9-CM Diagnosis
174.6	MALIG NEOPLASM AX TAIL FE BREAST	ICD-9-CM Diagnosis
174.8	MALIG NEOPLSM OTH SPEC SITE FE BRST	ICD-9-CM Diagnosis
174.9	MALIG NEOPLASM BREAST UNSPEC SITE	ICD-9-CM Diagnosis
175	MALIGNANT NEOPLASM OF MALE BREAST	ICD-9-CM Diagnosis
175.0	MAL NEOPLSM NIPPLE&AREOLA MALE BRST	ICD-9-CM Diagnosis
175.9	MAL NEOPLSM OTH&UNS SITE MALE BRST	ICD-9-CM Diagnosis
176	KAPOSIS SARCOMA	ICD-9-CM Diagnosis
176.0	KAPOSIS SARCOMA OF SKIN	ICD-9-CM Diagnosis
176.1	KAPOSIS SARCOMA OF SOFT TISSUE	ICD-9-CM Diagnosis
176.2	KAPOSIS SARCOMA OF PALATE	ICD-9-CM Diagnosis
176.3	KAPOSIS SARCOMA GI SITES	ICD-9-CM Diagnosis
176.4	KAPOSIS SARCOMA OF LUNG	ICD-9-CM Diagnosis
176.5	KAPOSIS SARCOMA OF LYMPH NODES	ICD-9-CM Diagnosis
176.8	KAPOSIS SARCOMA OTHER SPEC SITES	ICD-9-CM Diagnosis
176.9	KAPOSIS SARCOMA OF UNSPECIFIED SITE	ICD-9-CM Diagnosis
179	MALIG NEOPLASM UTERUS PART UNSPEC	ICD-9-CM Diagnosis
180	MALIGNANT NEOPLASM OF CERVIX UTERI	ICD-9-CM Diagnosis
180.0	MALIGNANT NEOPLASM OF ENDOCERVIX	ICD-9-CM Diagnosis
180.1	MALIGNANT NEOPLASM OF EXOCERVIX	ICD-9-CM Diagnosis
180.8	MALIG NEOPLASM OTH SPEC SITES CERV	ICD-9-CM Diagnosis
180.9	MALIG NEOPLSM CERV UTERI UNS SITE	ICD-9-CM Diagnosis
181	MALIGNANT NEOPLASM OF PLACENTA	ICD-9-CM Diagnosis
182	MALIGNANT NEOPLASM BODY UTERUS	ICD-9-CM Diagnosis
182.0	MAL NEOPLSM CORPUS UTERI NO ISTHMUS	ICD-9-CM Diagnosis
182.1	MALIGNANT NEOPLASM OF ISTHMUS	ICD-9-CM Diagnosis
182.8	MAL NEOPLSM OTH SPEC SITE BDY UTRUS	ICD-9-CM Diagnosis
183	MALIG NEOPLSM OVRY&OTH UTERN ADNEXA	ICD-9-CM Diagnosis
183.0	MALIGNANT NEOPLASM OF OVARY	ICD-9-CM Diagnosis
183.2	MALIGNANT NEOPLASM FALLOPIAN TUBE	ICD-9-CM Diagnosis
183.3	MALIG NEOPLASM BROAD LIG UTERUS	ICD-9-CM Diagnosis
183.4	MALIG NEOPLASM PARAMETRIUM UTERUS	ICD-9-CM Diagnosis
183.5	MALIG NEOPLASM ROUND LIG UTERUS	ICD-9-CM Diagnosis

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Code	Description	Code Type
183.8	MAL NEO OTH SPEC SITE UTERN ADNEXA	ICD-9-CM Diagnosis
183.9	MALIG NEOPLSM UTERN ADNEXA UNS SITE	ICD-9-CM Diagnosis
184	MALIG NEOPLSM OTH&UNS FE GENIT ORGN	ICD-9-CM Diagnosis
184.0	MALIGNANT NEOPLASM OF VAGINA	ICD-9-CM Diagnosis
184.1	MALIGNANT NEOPLASM OF LABIA MAJORA	ICD-9-CM Diagnosis
184.2	MALIGNANT NEOPLASM OF LABIA MINORA	ICD-9-CM Diagnosis
184.3	MALIGNANT NEOPLASM OF CLITORIS	ICD-9-CM Diagnosis
184.4	MALIG NEOPLASM VULVA UNSPEC SITE	ICD-9-CM Diagnosis
184.8	MAL NEO OTH SPEC SITE FE GNT ORGN	ICD-9-CM Diagnosis
184.9	MALIG NEOPLSM FE GNT ORGN SITE UNS	ICD-9-CM Diagnosis
185	MALIGNANT NEOPLASM OF PROSTATE	ICD-9-CM Diagnosis
186	MALIGNANT NEOPLASM OF TESTIS	ICD-9-CM Diagnosis
186.0	MALIG NEOPLASM UNDESCENDED TESTIS	ICD-9-CM Diagnosis
186.9	MALIG NEOPLASM OTHER&UNSPEC TESTIS	ICD-9-CM Diagnosis
187	MAL NEOPLSM PENIS&OTH MALE GNT ORGN	ICD-9-CM Diagnosis
187.1	MALIGNANT NEOPLASM OF PREPUCE	ICD-9-CM Diagnosis
187.2	MALIGNANT NEOPLASM OF GLANS PENIS	ICD-9-CM Diagnosis
187.3	MALIGNANT NEOPLASM OF BODY OF PENIS	ICD-9-CM Diagnosis
187.4	MALIG NEOPLASM PENIS PART UNSPEC	ICD-9-CM Diagnosis
187.5	MALIGNANT NEOPLASM OF EPIDIDYMIS	ICD-9-CM Diagnosis
187.6	MALIGNANT NEOPLASM SPERMATIC CORD	ICD-9-CM Diagnosis
187.7	MALIGNANT NEOPLASM OF SCROTUM	ICD-9-CM Diagnosis
187.8	MAL NEO OTH SPEC SITE MALE GNT ORGN	ICD-9-CM Diagnosis
187.9	MAL NEOPLSM MALE GNT ORGN SITE UNS	ICD-9-CM Diagnosis
188	MALIGNANT NEOPLASM OF BLADDER	ICD-9-CM Diagnosis
188.0	MALIG NEOPLASM TRIGONE URIN BLADD	ICD-9-CM Diagnosis
188.1	MALIG NEOPLASM DOME URINARY BLADDER	ICD-9-CM Diagnosis
188.2	MALIG NEOPLASM LAT WALL URIN BLADD	ICD-9-CM Diagnosis
188.3	MALIG NEOPLASM ANT WALL URIN BLADD	ICD-9-CM Diagnosis
188.4	MALIG NEOPLASM POST WALL URIN BLADD	ICD-9-CM Diagnosis
188.5	MALIGNANT NEOPLASM OF BLADDER NECK	ICD-9-CM Diagnosis
188.6	MALIGNANT NEOPLASM URETERIC ORIFICE	ICD-9-CM Diagnosis
188.7	MALIGNANT NEOPLASM OF URACHUS	ICD-9-CM Diagnosis
188.8	MALIG NEOPLASM OTH SPEC SITES BLADD	ICD-9-CM Diagnosis
188.9	MALIG NEOPLASM BLADDER PART UNSPEC	ICD-9-CM Diagnosis
189	MAL NEO KIDNEY&OTH&UNS URIN ORGN	ICD-9-CM Diagnosis
189.0	MALIG NEOPLASM KIDNEY EXCEPT PELVIS	ICD-9-CM Diagnosis
189.1	MALIGNANT NEOPLASM OF RENAL PELVIS	ICD-9-CM Diagnosis
189.2	MALIGNANT NEOPLASM OF URETER	ICD-9-CM Diagnosis
189.3	MALIGNANT NEOPLASM OF URETHRA	ICD-9-CM Diagnosis
189.4	MALIG NEOPLASM PARAURETHRAL GLANDS	ICD-9-CM Diagnosis
189.8	MAL NEOPLSM OTH SPEC SITE URIN ORGN	ICD-9-CM Diagnosis
189.9	MALIG NEOPLSM URIN ORGN SITE UNSPEC	ICD-9-CM Diagnosis
190	MALIGNANT NEOPLASM OF EYE	ICD-9-CM Diagnosis

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Code	Description	Code Type
190.0	MALIGNANT NEO EYEBALL	ICD-9-CM Diagnosis
190.1	MALIGNANT NEOPLASM OF ORBIT	ICD-9-CM Diagnosis
190.2	MALIGNANT NEOPLASM LACRIMAL GLAND	ICD-9-CM Diagnosis
190.3	MALIGNANT NEOPLASM OF CONJUNCTIVA	ICD-9-CM Diagnosis
190.4	MALIGNANT NEOPLASM OF CORNEA	ICD-9-CM Diagnosis
190.5	MALIGNANT NEOPLASM OF RETINA	ICD-9-CM Diagnosis
190.6	MALIGNANT NEOPLASM OF CHOROID	ICD-9-CM Diagnosis
190.7	MALIGNANT NEOPLASM OF LACRIMAL DUCT	ICD-9-CM Diagnosis
190.8	MALIG NEOPLASM OTHER SPEC SITES EYE	ICD-9-CM Diagnosis
190.9	MALIGNANT NEOPLASM EYE PART UNSPEC	ICD-9-CM Diagnosis
191	MALIGNANT NEOPLASM OF BRAIN	ICD-9-CM Diagnosis
191.0	MAL NEOPLSM CEREBRUM NO LOBES&VENTS	ICD-9-CM Diagnosis
191.1	MALIG NEOPLASM FRONTAL LOBE BRAIN	ICD-9-CM Diagnosis
191.2	MALIG NEOPLASM TEMPORAL LOBE BRAIN	ICD-9-CM Diagnosis
191.3	MALIG NEOPLASM PARIETAL LOBE BRAIN	ICD-9-CM Diagnosis
191.4	MALIG NEOPLASM OCCIPITAL LOBE BRAIN	ICD-9-CM Diagnosis
191.5	MALIGNANT NEOPLASM VENTRICLES BRAIN	ICD-9-CM Diagnosis
191.6	MALIGNANT NEOPLASM CEREBELLUM NOS	ICD-9-CM Diagnosis
191.7	MALIGNANT NEOPLASM OF BRAIN STEM	ICD-9-CM Diagnosis
191.8	MALIG NEOPLASM OTHER PARTS BRAIN	ICD-9-CM Diagnosis
191.9	MALIG NEOPLASM BRAIN UNSPEC SITE	ICD-9-CM Diagnosis
192	MALIG NEOPLSM OTH&UNS PART NERV SYS	ICD-9-CM Diagnosis
192.0	MALIGNANT NEOPLASM CRANIAL NERVES	ICD-9-CM Diagnosis
192.1	MALIG NEOPLASM CEREBRAL MENINGES	ICD-9-CM Diagnosis
192.2	MALIGNANT NEOPLASM OF SPINAL CORD	ICD-9-CM Diagnosis
192.3	MALIGNANT NEOPLASM SPINAL MENINGES	ICD-9-CM Diagnosis
192.8	MAL NEOPLSM OTH SPEC SITE NERV SYS	ICD-9-CM Diagnosis
192.9	MALIG NEOPLSM NERV SYS PART UNSPEC	ICD-9-CM Diagnosis
193	MALIGNANT NEOPLASM OF THYROID GLAND	ICD-9-CM Diagnosis
194	MAL NEO OTH ENDOCRN GLND&REL STRCT	ICD-9-CM Diagnosis
194.0	MALIGNANT NEOPLASM OF ADRENAL GLAND	ICD-9-CM Diagnosis
194.1	MALIG NEOPLASM PARATHYROID GLAND	ICD-9-CM Diagnosis
194.3	MALIG NEOPLASM PITUITARY	ICD-9-CM Diagnosis
194.4	MALIGNANT NEOPLASM OF PINEAL GLAND	ICD-9-CM Diagnosis
194.5	MALIGNANT NEOPLASM OF CAROTID BODY	ICD-9-CM Diagnosis
194.6	MAL NEO AORTC BDY&OTH PARAGANGLIA	ICD-9-CM Diagnosis
194.8	MAL NEO OTH ENDOCRN GLND&REL STRCT	ICD-9-CM Diagnosis
194.9	MAL NEOPLSM ENDOCRN GLAND SITE UNS	ICD-9-CM Diagnosis
195	MALIG NEOPLASM OTH&ILL-DEFIND SITES	ICD-9-CM Diagnosis
195.0	MALIGNANT NEOPLASM HEAD FACE&NECK	ICD-9-CM Diagnosis
195.1	MALIGNANT NEOPLASM OF THORAX	ICD-9-CM Diagnosis
195.2	MALIGNANT NEOPLASM OF ABDOMEN	ICD-9-CM Diagnosis
195.3	MALIGNANT NEOPLASM OF PELVIS	ICD-9-CM Diagnosis
195.4	MALIGNANT NEOPLASM OF UPPER LIMB	ICD-9-CM Diagnosis

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Code	Description	Code Type
195.5	MALIGNANT NEOPLASM OF LOWER LIMB	ICD-9-CM Diagnosis
195.8	MALIGNANT NEOPLASM OTHER SPEC SITES	ICD-9-CM Diagnosis
196	SEC&UNSPEC MALIG NEOPLASM NODES	ICD-9-CM Diagnosis
196.0	SEC&UNS MAL NEO NODES HEAD FCE&NCK	ICD-9-CM Diagnosis
196.1	SEC&UNS MAL NEOPLSM INTRATHR NODES	ICD-9-CM Diagnosis
196.2	SEC&UNS MAL NEOPLSM INTRA-ABD NODES	ICD-9-CM Diagnosis
196.3	SEC&UNS MAL NEO NODES AX&UP LIMB	ICD-9-CM Diagnosis
196.5	SEC&UNS MAL NEO NODES ING/LEG	ICD-9-CM Diagnosis
196.6	SEC&UNS MAL NEOPLSM INTRAPELV NODES	ICD-9-CM Diagnosis
196.8	SEC&UNS MALIG NEOPLSM NODES MX SITE	ICD-9-CM Diagnosis
196.9	SEC&UNS MAL NEOPLSM NODES SITE UNS	ICD-9-CM Diagnosis
197	SEC MALIG NEOPLASM RESP&DIGESTV SYS	ICD-9-CM Diagnosis
197.0	SEC MALIGNANT NEOPLASM OF LUNG	ICD-9-CM Diagnosis
197.1	SEC MALIGNANT NEOPLASM MEDIASTINUM	ICD-9-CM Diagnosis
197.2	SEC MALIGNANT NEOPLASM OF PLEURA	ICD-9-CM Diagnosis
197.3	SEC MALIG NEOPLASM OTH RESP ORGN	ICD-9-CM Diagnosis
197.4	SEC MALIG NEOPLSM SM INTST W/DUODUM	ICD-9-CM Diagnosis
197.5	SEC MALIG NEOPLASM LG INTEST&RECT	ICD-9-CM Diagnosis
197.6	SEC MAL NEO RETROPERITON&PERITON	ICD-9-CM Diagnosis
197.7	SEC MALIGNANT NEOPLASM OF LIVER	ICD-9-CM Diagnosis
197.8	SEC MAL NEO OTH DIGESTV ORGN&SPLEEN	ICD-9-CM Diagnosis
198	SEC MALIG NEOPLASM OTHER SPEC SITES	ICD-9-CM Diagnosis
198.0	SEC MALIGNANT NEOPLASM OF KIDNEY	ICD-9-CM Diagnosis
198.1	SEC MALIG NEOPLASM OTH URINARY ORGN	ICD-9-CM Diagnosis
198.2	SEC MALIGNANT NEOPLASM OF SKIN	ICD-9-CM Diagnosis
198.3	SEC MALIG NEOPLSM BRAIN&SPINAL CORD	ICD-9-CM Diagnosis
198.4	SEC MALIG NEOPLSM OTH PART NERV SYS	ICD-9-CM Diagnosis
198.5	SEC MALIG NEOPLASM BONE&BONE MARROW	ICD-9-CM Diagnosis
198.6	SEC MALIGNANT NEOPLASM OF OVARY	ICD-9-CM Diagnosis
198.7	SEC MALIG NEOPLASM ADRENAL GLAND	ICD-9-CM Diagnosis
198.8	SEC MALIG NEOPLASM OTHER SPEC SITES	ICD-9-CM Diagnosis
198.81	SEC MALIGNANT NEOPLASM OF BREAST	ICD-9-CM Diagnosis
198.82	SEC MALIG NEOPLASM GENITAL ORGANS	ICD-9-CM Diagnosis
198.89	SEC MALIG NEOPLASM OTHER SPEC SITES	ICD-9-CM Diagnosis
199	MALIG NEOPLASM WITHOUT SPEC SITE	ICD-9-CM Diagnosis
199.0	DISSEMINATED MALIGNANT NEOPLASM	ICD-9-CM Diagnosis
199.1	OTHER MALIG NEOPLASM UNSPEC SITE	ICD-9-CM Diagnosis
199.2	MALIG NEOPLSM ASSOC TRANSPLNT ORGAN	ICD-9-CM Diagnosis
200	LYMPH&RETIC&OTH LYMPH MALIG TUMOR	ICD-9-CM Diagnosis
200.0	RETICULOSARCOMA	ICD-9-CM Diagnosis
200.00	RETICULOSRCOM XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
200.01	RETICULOSRCOM NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
200.02	RETICULOSARCOMA INTRATHORACIC NODES	ICD-9-CM Diagnosis
200.03	RETICULOSARCOMA INTRA-ABD NODES	ICD-9-CM Diagnosis

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Code	Description	Code Type
200.04	RETICULOSRCOM NODES AX&UPPER LIMB	ICD-9-CM Diagnosis
200.05	RETICULOSRCOM NODES ING RGN&LW LIMB	ICD-9-CM Diagnosis
200.06	RETICULOSARCOMA INTRAPELVIC NODES	ICD-9-CM Diagnosis
200.07	RETICULOSARCOMA OF SPLEEN	ICD-9-CM Diagnosis
200.08	RETICULOSARCOMA NODES MX SITES	ICD-9-CM Diagnosis
200.1	LYMPHOSARCOMA	ICD-9-CM Diagnosis
200.10	LYMPHOSRCOM XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
200.11	LYMPHOSARCOMA NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
200.12	LYMPHOSARCOMA INTRATHORACIC NODES	ICD-9-CM Diagnosis
200.13	LYMPHOSARCOMA INTRA-ABD LYMPH NODES	ICD-9-CM Diagnosis
200.14	LYMPHOSRCOM NODES AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
200.15	LYMPHOSRCOM NODES ING RGN&LOW LIMB	ICD-9-CM Diagnosis
200.16	LYMPHOSARCOMA INTRAPELVIC NODES	ICD-9-CM Diagnosis
200.17	LYMPHOSARCOMA OF SPLEEN	ICD-9-CM Diagnosis
200.18	LYMPHOSARCOMA NODES MULTIPLE SITES	ICD-9-CM Diagnosis
200.2	BURKITT'S TUMOR OR LYMPHOMA	ICD-9-CM Diagnosis
200.20	BURKITT'S TUMOR/LYMPHOMA UNS	ICD-9-CM Diagnosis
200.21	BRKITS TUMR/LYMPHOMA NODES HEAD&NCK	ICD-9-CM Diagnosis
200.22	BRKITS TUMR/LYMPHOMA INTRATHR NODES	ICD-9-CM Diagnosis
200.23	BURKITT'S TUMR/LYMPHMA ABD LYMPH	ICD-9-CM Diagnosis
200.24	BURKITT'S TUMOR AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
200.25	BURKITT'S TUMR/LYMPHOMA ING/LW LIMB	ICD-9-CM Diagnosis
200.26	BURKITT'S TUMOR INTRAPELVIC	ICD-9-CM Diagnosis
200.27	BURKITT'S TUMOR OR LYMPHOMA SPLEEN	ICD-9-CM Diagnosis
200.28	BRKITS TUMR/LYMPHOMA NODES MX SITE	ICD-9-CM Diagnosis
200.3	MARGINAL ZONE LYMPHOMA	ICD-9-CM Diagnosis
200.30	MZ LYMPHOMA UNS SITE EXTRANOD&ORGAN	ICD-9-CM Diagnosis
200.31	MZ LYMPHOMA NODES HEAD FACE & NECK	ICD-9-CM Diagnosis
200.32	MZ LYMPHOMA INTRATHORACIC NODES	ICD-9-CM Diagnosis
200.33	MZ LYMPHOMA INTRA-ABDOMINAL NODES	ICD-9-CM Diagnosis
200.34	MZ LYMPHOMA NODES AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
200.35	MZ LYMPHOMA NODES ING REG&LOW LIMB	ICD-9-CM Diagnosis
200.36	MZ LYMPHOMA INTRAPELVIC LYMPH NODES	ICD-9-CM Diagnosis
200.37	MARGINAL ZONE LYMPHOMA SPLEEN	ICD-9-CM Diagnosis
200.38	MZ LYMPHOMA LYMPH NODES MULTI SITES	ICD-9-CM Diagnosis
200.4	MANTLE CELL LYMPHOMA	ICD-9-CM Diagnosis
200.40	MCL UNS SITE EXTRANODAL&SOLID ORGAN	ICD-9-CM Diagnosis
200.41	MCL LYMPH NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
200.42	MCL INTRATHORACIC LYMPH NODES	ICD-9-CM Diagnosis
200.43	MCL INTRA-ABDOMINAL LYMPH NODES	ICD-9-CM Diagnosis
200.44	MCL LYMPH NODES AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
200.45	MCL NODES ING REGION&LOWER LIMB	ICD-9-CM Diagnosis
200.46	MCL INTRAPELVIC LYMPH NODES	ICD-9-CM Diagnosis
200.47	MANTLE CELL LYMPHOMA SPLEEN	ICD-9-CM Diagnosis

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Code	Description	Code Type
200.48	MCL LYMPH NODES MULTIPLE SITES	ICD-9-CM Diagnosis
200.5	PRIMARY CNTRL NERV SYS LYMPHOMA	ICD-9-CM Diagnosis
200.50	PRIM CNS LYMPHOMA UNS EXTRANOD&ORGN	ICD-9-CM Diagnosis
200.51	PRIM CNS LYMPHOMA HEAD FACE&NECK	ICD-9-CM Diagnosis
200.52	PRIM CNS LYMPHOMA INTRATHOR NODES	ICD-9-CM Diagnosis
200.53	PRIM CNS LYMPHOMA INTRA-ABD NODES	ICD-9-CM Diagnosis
200.54	PRIM CNS LYMPHOMA AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
200.55	PRIM CNS LYMPHOMA INGUINAL&LOW LIMB	ICD-9-CM Diagnosis
200.56	PRIM CNS LYMPHOMA INTRAPELVIC NODES	ICD-9-CM Diagnosis
200.57	PRIMARY CNS LYMPHOMA SPLEEN	ICD-9-CM Diagnosis
200.58	PRIM CNS LYMPHOMA MULTIPLE SITES	ICD-9-CM Diagnosis
200.6	ANAPLASTIC LARGE CELL LYMPHOMA	ICD-9-CM Diagnosis
200.60	ALCL UNS SITE EXTRANODAL&SOLID ORG	ICD-9-CM Diagnosis
200.61	ALC LYMPHOMA NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
200.62	ALC LYMPHOMA INTRATHORACIC NODES	ICD-9-CM Diagnosis
200.63	ALC LYMPHOMA INTRA-ABDOMINAL NODES	ICD-9-CM Diagnosis
200.64	ALC LYMPHOMA NODES AXILLA&UP LIMB	ICD-9-CM Diagnosis
200.65	ALC LYMPHOMA NODES ING&LOW LIMB	ICD-9-CM Diagnosis
200.66	ALC LYMPHOMA INTRAPELVIC NODES	ICD-9-CM Diagnosis
200.67	ANAPLASTIC LRG CELL LYMPHOMA SPLEEN	ICD-9-CM Diagnosis
200.68	ALC LYMPHOMA NODES MULTIPLE SITES	ICD-9-CM Diagnosis
200.7	LARGE CELL LYMPHOMA	ICD-9-CM Diagnosis
200.70	LCL UNS SITE EXTRANODAL&SOLID ORGAN	ICD-9-CM Diagnosis
200.71	LCL LYMPH NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
200.72	LCL INTRATHORACIC LYMPH NODES	ICD-9-CM Diagnosis
200.73	LCL INTRA-ABDOMINAL LYMPH NODES	ICD-9-CM Diagnosis
200.74	LCL LYMPH NODES AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
200.75	LCL LYMPH NODES INGUINAL&LOWER LIMB	ICD-9-CM Diagnosis
200.76	LCL INTRAPELVIC LYMPH NODES	ICD-9-CM Diagnosis
200.77	LARGE CELL LYMPHOMA SPLEEN	ICD-9-CM Diagnosis
200.78	LARGE CELL LYMPHOMA NODES MX SITES	ICD-9-CM Diagnosis
200.8	VARIANTS LYMPHOSRCOM&RETICULOSRCOM	ICD-9-CM Diagnosis
200.80	VARIANTS XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
200.81	OTH VARNTS LYMPHOSARCOMA NODES HEAD	ICD-9-CM Diagnosis
200.82	OTH VARNTS LYMPHOSARCOMA THORAX	ICD-9-CM Diagnosis
200.83	OTH VARNTS LYMPHOSARCOMA INTRA-ABD	ICD-9-CM Diagnosis
200.84	OTH VARNTS LYMPHOSARCOMA AX&UP LIMB	ICD-9-CM Diagnosis
200.85	OTH VARNT LYMPHOSRCM ING REG&LW LIM	ICD-9-CM Diagnosis
200.86	OTH VARNTS LYMPHOSARCOMA INTRAPELV	ICD-9-CM Diagnosis
200.87	OTH VARIANTS LYMPHOSARCOMA SPLEEN	ICD-9-CM Diagnosis
200.88	OTH VARIANT LYMPHOSRCM NODE MX SITE	ICD-9-CM Diagnosis
201	HODGKINS DISEASE	ICD-9-CM Diagnosis
201.0	HODGKINS PARAGRANULOMA	ICD-9-CM Diagnosis
201.00	HODGKINS PARAGRAN EXTRND UNS SITE	ICD-9-CM Diagnosis

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Code	Description	Code Type
201.01	HODGKIN PARAGRNULOM NODES HEAD&NCK	ICD-9-CM Diagnosis
201.02	HODGKIN PARAGRNULOM INTRATHOR NODES	ICD-9-CM Diagnosis
201.03	HODGKIN PARAGRNULOM INTRA-ABD NODES	ICD-9-CM Diagnosis
201.04	HODGKINS PARAGRAN AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
201.05	HODGKINS PARAGRNULOM ING &LW LIMB	ICD-9-CM Diagnosis
201.06	HODGKIN PARAGRNULOM INTRAPELV NODES	ICD-9-CM Diagnosis
201.07	HODGKINS PARAGRANULOMA OF SPLEEN	ICD-9-CM Diagnosis
201.08	HODGKINS PARAGRNULOM NODES MX SITES	ICD-9-CM Diagnosis
201.1	HODGKINS GRANULOMA	ICD-9-CM Diagnosis
201.10	HODGK GRANUL-EXTRNOD UNS SITE	ICD-9-CM Diagnosis
201.11	HODGKIN GRANULOMA NODES HEAD&NCK	ICD-9-CM Diagnosis
201.12	HODGKINS GRANULOMA INTRATHOR NODES	ICD-9-CM Diagnosis
201.13	HODGKINS GRANULOMA INTRA-ABD NODES	ICD-9-CM Diagnosis
201.14	HODGKINS GRANULOMA NODES AX&UP LIMB	ICD-9-CM Diagnosis
201.15	HODGKINS GRANULOMA ING&LOWR LIMB	ICD-9-CM Diagnosis
201.16	HODGKINS GRANULOMA INTRAPELV NODES	ICD-9-CM Diagnosis
201.17	HODGKINS GRANULOMA OF SPLEEN	ICD-9-CM Diagnosis
201.18	HODGKINS GRANULOMA NODES MX SITES	ICD-9-CM Diagnosis
201.2	HODGKINS SARCOMA	ICD-9-CM Diagnosis
201.20	HODGKIN SRCOM XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
201.21	HODGKINS SRCOM NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
201.22	HODGKINS SRCOM INTRATHORACIC NODES	ICD-9-CM Diagnosis
201.23	HODGKINS SARCOMA INTRA-ABD NODES	ICD-9-CM Diagnosis
201.24	HODGKINS SRCOM NODES AX&UPPER LIMB	ICD-9-CM Diagnosis
201.25	HODGKIN SRCOM NODES ING RGN&LW LIMB	ICD-9-CM Diagnosis
201.26	HODGKINS SARCOMA INTRAPELVIC NODES	ICD-9-CM Diagnosis
201.27	HODGKINS SARCOMA OF SPLEEN	ICD-9-CM Diagnosis
201.28	HODGKINS SARCOMA NODES MX SITES	ICD-9-CM Diagnosis
201.4	HODGKIN LYMPHCYT-HISTCYT	ICD-9-CM Diagnosis
201.40	HODG LYMPHOCYT-HISTIO UNS EXTRNOD	ICD-9-CM Diagnosis
201.41	HODG LYMPH-HISTIO HEAD FACE & NECK	ICD-9-CM Diagnosis
201.42	HODG LYMPH-HISTIO THORAX	ICD-9-CM Diagnosis
201.43	HODG LYMPH-HISTIO ABDOM	ICD-9-CM Diagnosis
201.44	HODG LYMPH-HISTIO AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
201.45	HODG LYMPHO-HISTIO ING REG&LWR LIMB	ICD-9-CM Diagnosis
201.46	HODG LYMPH-HISTIO INTRAPELVIC NODES	ICD-9-CM Diagnosis
201.47	HODGKIN LYMPHCYT-HISTCYT SPLEEN	ICD-9-CM Diagnosis
201.48	HODG LYMPHOCYT-HISTIOCYT MX SITE	ICD-9-CM Diagnosis
201.5	HODGKINS DISEASE NODULAR SCLEROSIS	ICD-9-CM Diagnosis
201.50	HODG NODUL SCLEROS UNS SITE EXTRND	ICD-9-CM Diagnosis
201.51	HODG NODUL SCLERO HEAD FACE & NECK	ICD-9-CM Diagnosis
201.52	HODG NODUL SCLERO THORAX	ICD-9-CM Diagnosis
201.53	HODG NODUL SCLERO ABDOM	ICD-9-CM Diagnosis
201.54	HODG NODUL SCLERO AXILLA&UPPER LIMB	ICD-9-CM Diagnosis

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Code	Description	Code Type
201.55	HODG NODULR SCLROS ING REG&LW LIMB	ICD-9-CM Diagnosis
201.56	HODG NODUL SCLERO INTRAPELVIC	ICD-9-CM Diagnosis
201.57	HODGKINS NODULAR SCLEROSIS SPLEEN	ICD-9-CM Diagnosis
201.58	HODGKIN NODULR SCLER NODES MX SITE	ICD-9-CM Diagnosis
201.6	HODGKINS DISEASE MIXED CELLULARITY	ICD-9-CM Diagnosis
201.60	HODG NODL MIXD CELLR UNS SITE XTRND	ICD-9-CM Diagnosis
201.61	HODG MIX CELLR W/NODES HEAD&NECK	ICD-9-CM Diagnosis
201.62	HODGKINS MIX CELLR INTRATHOR NODES	ICD-9-CM Diagnosis
201.63	HODGKINS MIX CELLR INTRA-ABD NODES	ICD-9-CM Diagnosis
201.64	HODGKINS MIX CELLR NODES AX&UP LIMB	ICD-9-CM Diagnosis
201.65	HODG MIX CELLR NOD ING REG&LW LMB	ICD-9-CM Diagnosis
201.66	HODGKINS MIX CELLR INTRAPELV NODES	ICD-9-CM Diagnosis
201.67	HODGKINS MIXED CELLULARITY SPLEEN	ICD-9-CM Diagnosis
201.68	HODGKINS MIX CELLR NODES MX SITES	ICD-9-CM Diagnosis
201.7	HODGKINS LYMPHOCYTIC DEPLETION	ICD-9-CM Diagnosis
201.70	HODG LYMPHOCYT DEPLET EXTRANOD	ICD-9-CM Diagnosis
201.71	HODG LYMPH DEPLET HEAD FACE & NECK	ICD-9-CM Diagnosis
201.72	HODG LYMPH DEPLET THORAX	ICD-9-CM Diagnosis
201.73	HODG LYMPH DEPLET ABDOM	ICD-9-CM Diagnosis
201.74	HODG LYMPH DEPLET AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
201.75	HODG LYMPHO DPLT NOD ING REG&LW LMB	ICD-9-CM Diagnosis
201.76	HODG LYMPH DEPLET INTRAPELVIC	ICD-9-CM Diagnosis
201.77	HODGKINS LYMPHOCYTIC DEPLET SPLEEN	ICD-9-CM Diagnosis
201.78	HODG LYMPHOCYTIC DEPLET NOD MX SITE	ICD-9-CM Diagnosis
201.9	HODGKINS DISEASE, UNSPECIFIED TYPE	ICD-9-CM Diagnosis
201.90	HODG UNS TYPE/SITE EXTRND&SLID ORGN	ICD-9-CM Diagnosis
201.91	HODGKIN UNS TYPE NODES HEAD FCE&NCK	ICD-9-CM Diagnosis
201.92	HODGKINS UNS TYPE INTRATHOR NODES	ICD-9-CM Diagnosis
201.93	HODGKINS UNS TYPE INTRA-ABD NODES	ICD-9-CM Diagnosis
201.94	HODGKINS UNS TYPE NODES AX&UP LIMB	ICD-9-CM Diagnosis
201.95	HODG UNS TYPE NODE ING REG&LWR LIMB	ICD-9-CM Diagnosis
201.96	HODGKINS UNS TYPE INTRAPELV NODES	ICD-9-CM Diagnosis
201.97	HODGKINS UNSPECIFIED TYPE OF SPLEEN	ICD-9-CM Diagnosis
201.98	HODGKINS UNSPEC TYPE NODES MX SITES	ICD-9-CM Diagnosis
202	OTH MAL NEO LYMPHOID&HISTCYT TISS	ICD-9-CM Diagnosis
202.0	NODULAR LYMPHOMA	ICD-9-CM Diagnosis
202.00	NODULR LYMPHOMA XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
202.01	NODULAR LYMPHOMA NODES HEAD FCE&NCK	ICD-9-CM Diagnosis
202.02	NODULAR LYMPHOMA INTRATHOR NODES	ICD-9-CM Diagnosis
202.03	NODULAR LYMPHOMA INTRA-ABD NODES	ICD-9-CM Diagnosis
202.04	NODULR LYMPHOMA NODES AX&UPPER LIMB	ICD-9-CM Diagnosis
202.05	NODULAR LYMPHOMA INGUIN&LOWER LIMB	ICD-9-CM Diagnosis
202.06	NODULAR LYMPHOMA INTRAPELVIC NODES	ICD-9-CM Diagnosis
202.07	NODULAR LYMPHOMA OF SPLEEN	ICD-9-CM Diagnosis

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Code	Description	Code Type
202.08	NODULAR LYMPHOMA NODES MX SITES	ICD-9-CM Diagnosis
202.1	MYCOSIS FUNGOIDES	ICD-9-CM Diagnosis
202.10	MYCOF FUNGOIDES XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
202.11	MYCOF FUNGOIDES NODES HEAD FCE&NCK	ICD-9-CM Diagnosis
202.12	MYCOSIS FUNGOIDES INTRATHOR NODES	ICD-9-CM Diagnosis
202.13	MYCOSIS FUNGOIDES INTRA-ABD NODES	ICD-9-CM Diagnosis
202.14	MYCOSIS FUNGOIDES NODES AX&UP LIMB	ICD-9-CM Diagnosis
202.15	MYCOSIS FUNGOIDES ING REG&LWR LIMB	ICD-9-CM Diagnosis
202.16	MYCOSIS FUNGOIDES INTRAPELVIC NODES	ICD-9-CM Diagnosis
202.17	MYCOSIS FUNGOIDES OF SPLEEN	ICD-9-CM Diagnosis
202.18	MYCOSIS FUNGOIDES NODES MX SITES	ICD-9-CM Diagnosis
202.2	SEZARYS DISEASE	ICD-9-CM Diagnosis
202.20	SEZARYS DZ UNS SITE EXTRANOD	ICD-9-CM Diagnosis
202.21	SEZARYS DZ LYMPH NODES HEAD&NECK	ICD-9-CM Diagnosis
202.22	SEZARYS DZ INTRATHORACIC LYMPH NODE	ICD-9-CM Diagnosis
202.23	SEZARYS DZ INTRA-ABD LYMPH NODES	ICD-9-CM Diagnosis
202.24	SEZARYS DZ LYMPH NOD AXLLA&UPPR LMB	ICD-9-CM Diagnosis
202.25	SEZARY DZ LYMPH NOD ING REG&LWR LMB	ICD-9-CM Diagnosis
202.26	SEZARYS DZ INTRAPELVIC LYMPH NODES	ICD-9-CM Diagnosis
202.27	SEZARYS DZ OF SPLEEN	ICD-9-CM Diagnosis
202.28	SEZARYS DZ LYMPH NODES MULT SITES	ICD-9-CM Diagnosis
202.3	MALIGNANT HISTIOCYTOSIS	ICD-9-CM Diagnosis
202.30	MAL HISTIOCYTOF XTRANOD&SOLID ORGN	ICD-9-CM Diagnosis
202.31	MAL HISTIOCYTOF NODES HEAD FCE&NCK	ICD-9-CM Diagnosis
202.32	MALIG HISTIOCYTOSIS INTRATHOR NODES	ICD-9-CM Diagnosis
202.33	MALIG HISTIOCYTOSIS INTRA-ABD NODES	ICD-9-CM Diagnosis
202.34	MALIG HISTIOCYTOF NODES AX&UP LIMB	ICD-9-CM Diagnosis
202.35	MAL HISTIO NODES ING REG&LWR LMB	ICD-9-CM Diagnosis
202.36	MALIG HISTIOCYTOSIS INTRAPELV NODES	ICD-9-CM Diagnosis
202.37	MALIGNANT HISTIOCYTOSIS OF SPLEEN	ICD-9-CM Diagnosis
202.38	MALIG HISTIOCYTOSIS NODES MX SITES	ICD-9-CM Diagnosis
202.4	LEUKEMIC RETICULOENDOTHELIOSIS	ICD-9-CM Diagnosis
202.40	LEUKEMIC RETICULOENDOTHLIO UNS SITE	ICD-9-CM Diagnosis
202.41	LEUKMIC RETICULONDOETHLOS HEAD&NCK	ICD-9-CM Diagnosis
202.42	LEUKMC RETCULONDOETHLIOS THORAX NODE	ICD-9-CM Diagnosis
202.43	LEUKMC RTCULONDOETHLIOS INTRA-ABD	ICD-9-CM Diagnosis
202.44	LEUKMIC RETCULONDOETHLIOS AX&UP LMB	ICD-9-CM Diagnosis
202.45	LEUKM RTCULONDOETHLIO ING REG&LW LMB	ICD-9-CM Diagnosis
202.46	LEUKEMIC RETCULONDOETHLIOS INTRAPLVC	ICD-9-CM Diagnosis
202.47	LEUKEMIC RETICULOENDOTHELIOS SPLEEN	ICD-9-CM Diagnosis
202.48	LEUKEMIC RETICULOENDOTHLIO MX SITES	ICD-9-CM Diagnosis
202.5	LETTERER-SIWE DISEASE	ICD-9-CM Diagnosis
202.50	LETTERER-SIWE DZ UNS XTRANOD	ICD-9-CM Diagnosis
202.51	LETTERER-SIWE DZ NODES HEAD&NECK	ICD-9-CM Diagnosis

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Code	Description	Code Type
202.52	LETTERER-SIWE DZ INTRATHORACIC NODE	ICD-9-CM Diagnosis
202.53	LETTERER-SIWE DZ INTRA-ABD NODES	ICD-9-CM Diagnosis
202.54	LETTERER-SIWE DZ NODE AXILLA&UP LMB	ICD-9-CM Diagnosis
202.55	LETTERER-SIWE DZ NOD ING REG&LW LMB	ICD-9-CM Diagnosis
202.56	LETTERER-SIWE DZ INTRAPELVIC NODES	ICD-9-CM Diagnosis
202.57	LETTERER-SIWE DISEASE OF SPLEEN	ICD-9-CM Diagnosis
202.58	LETTERER-SIWE DZ NODE MULT SITES	ICD-9-CM Diagnosis
202.6	MALIGNANT MAST CELL TUMORS	ICD-9-CM Diagnosis
202.60	MAL MAST CELL TUMR UNS SITE XTRANOD	ICD-9-CM Diagnosis
202.61	MAL MAST CELL TUMRS NODES HEAD&NCK	ICD-9-CM Diagnosis
202.62	MAL MAST CELL TUMRS INTRATHR NODES	ICD-9-CM Diagnosis
202.63	MAL MAST CELL TUMRS INTRA-ABD NODES	ICD-9-CM Diagnosis
202.64	MAL MASTOCYTOSIS AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
202.65	MALIG MAST CELL TUMR ING REG&LW LMB	ICD-9-CM Diagnosis
202.66	MAL MAST CELL TUMRS INTRAPELV NODES	ICD-9-CM Diagnosis
202.67	MALIGNANT MAST CELL TUMORS SPLEEN	ICD-9-CM Diagnosis
202.68	MALIG MAST CELL TUMRS NODES MX SITE	ICD-9-CM Diagnosis
202.7	PERIPHERAL T-CELL LYMPHOMA	ICD-9-CM Diagnosis
202.70	PTL UNS SITE EXTRANODAL&SOLID ORGAN	ICD-9-CM Diagnosis
202.71	PTL LYMPH NODES HEAD FACE&NECK	ICD-9-CM Diagnosis
202.72	PTL INTRATHORICIC LYMPH NODES	ICD-9-CM Diagnosis
202.73	PTL INTRA-ABDOMINAL LYMPH NODES	ICD-9-CM Diagnosis
202.74	PTL LYMPH NODES AXILLA&UPPER LIMB	ICD-9-CM Diagnosis
202.75	PTL LYMPH NODES INGUINAL&LOW LIMB	ICD-9-CM Diagnosis
202.76	PTL INTRAPELVIC LYMPH NODES	ICD-9-CM Diagnosis
202.77	PERIPHERAL T-CELL LYMPHOMA SPLEEN	ICD-9-CM Diagnosis
202.78	PTL LYMPH NODES MULTIPLE SITES	ICD-9-CM Diagnosis
202.8	OTHER MALIGNANT LYMPHOMAS	ICD-9-CM Diagnosis
202.80	OTH MAL LYMPHOMA UNS SITE-EXTRNOD	ICD-9-CM Diagnosis
202.81	OTH MAL LYMPHOMAS NODES HEAD&NCK	ICD-9-CM Diagnosis
202.82	OTH MALIG LYMPHOMAS INTRATHOR NODES	ICD-9-CM Diagnosis
202.83	OTH MALIG LYMPHOMAS INTRA-ABD NODES	ICD-9-CM Diagnosis
202.84	OTH MAL LYMPHOMAS NODES AX&UP LIMB	ICD-9-CM Diagnosis
202.85	OTH MAL LYMPHOMAS ING REG&LOWR LIMB	ICD-9-CM Diagnosis
202.86	OTH MALIG LYMPHOMAS INTRAPELV NODES	ICD-9-CM Diagnosis
202.87	OTHER MALIGNANT LYMPHOMAS OF SPLEEN	ICD-9-CM Diagnosis
202.88	OTH MALIG LYMPHOMAS NODES MX SITES	ICD-9-CM Diagnosis
202.9	UNS MAL NEO LYMPHOID&HISTCYT TISS	ICD-9-CM Diagnosis
202.90	OTH&UNS MAL LYMPHOD-HSTIO XTRND UNS	ICD-9-CM Diagnosis
202.91	OTH&UNS MAL LYMPHOD-HISTIO HEAD	ICD-9-CM Diagnosis
202.92	OTH & UNS MAL LYMPHOID THORAX	ICD-9-CM Diagnosis
202.93	OTH & UNS MAL LYMPHOID ABDOM	ICD-9-CM Diagnosis
202.94	OTH & UNS MAL LYMPHOID AXILLA	ICD-9-CM Diagnosis
202.95	OTH & UNS MAL LYMPHOID INGUIN	ICD-9-CM Diagnosis

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Code	Description	Code Type
202.96	OTH & UNS MAL LYMPHOID PELVIC	ICD-9-CM Diagnosis
202.97	OTH&UNS MAL NEO LYMPHOD&HISTO SPLEN	ICD-9-CM Diagnosis
202.98	OTH & UNS MAL LYMPHOID MULT SITES	ICD-9-CM Diagnosis
203	MX MYELOMA&IMMUNOPROLIFERAT NEOPLSM	ICD-9-CM Diagnosis
203.0	MULTIPLE MYELOMA	ICD-9-CM Diagnosis
203.00	MM W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
203.01	MULTIPLE MYELOMA IN REMISSION	ICD-9-CM Diagnosis
203.02	MULTIPLE MYELOMA IN RELAPSE	ICD-9-CM Diagnosis
203.1	PLASMA CELL LEUKEMIA	ICD-9-CM Diagnosis
203.10	PCL W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
203.11	PLASMA CELL LEUKEMIA IN REMISSION	ICD-9-CM Diagnosis
203.12	PLASMA CELL LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
203.8	OTHER IMMUNOPROLIFERATIVE NEOPLASMS	ICD-9-CM Diagnosis
203.80	OTH IMMUNOPROLIF NEOPLASM W/O REM	ICD-9-CM Diagnosis
203.81	OTH IMMUNOPROLIF NEOPLSM REMISSION	ICD-9-CM Diagnosis
203.82	OTH IMMUNOPROLIF NEOPLSM IN RELAPSE	ICD-9-CM Diagnosis
204	LYMPHOID LEUKEMIA	ICD-9-CM Diagnosis
204.0	ACUTE LYMPHOID LEUKEMIA	ICD-9-CM Diagnosis
204.00	ALL W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
204.01	ACUTE LYMPHOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
204.02	ACUTE LYMPHOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
204.1	CHRONIC LYMPHOID LEUKEMIA	ICD-9-CM Diagnosis
204.10	CLL W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
204.11	CHRONIC LYMPHOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
204.12	CHRON LYMPHOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
204.2	SUBACUTE LYMPHOID LEUKEMIA	ICD-9-CM Diagnosis
204.20	SUBACUTE LL W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
204.21	SUBACUT LYMPHOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
204.22	SUBACUTE LYMPHOID LEUKEMIA RELAPSE	ICD-9-CM Diagnosis
204.8	OTHER LYMPHOID LEUKEMIA	ICD-9-CM Diagnosis
204.80	OTH LL W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
204.81	OTHER LYMPHOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
204.82	OTHER LYMPHOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
204.9	UNSPECIFIED LYMPHOID LEUKEMIA	ICD-9-CM Diagnosis
204.90	UNS LL W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
204.91	UNSPEC LYMPHOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
204.92	UNS LYMPHOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
205	MYELOID LEUKEMIA	ICD-9-CM Diagnosis
205.0	ACUTE MYELOID LEUKEMIA	ICD-9-CM Diagnosis
205.00	AML W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
205.01	ACUTE MYELOID LEUKEMIA IN REMISSION	ICD-9-CM Diagnosis
205.02	ACUTE MYELOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
205.1	CHRONIC MYELOID LEUKEMIA	ICD-9-CM Diagnosis
205.10	CML W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis

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Code	Description	Code Type
205.11	CHRONIC MYELOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
205.12	CHRONIC MYELOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
205.2	SUBACUTE MYELOID LEUKEMIA	ICD-9-CM Diagnosis
205.20	SUBACUTE ML W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
205.21	SUBACUTE MYELOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
205.22	SUBACUT MYELOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
205.3	MYELOID SARCOMA	ICD-9-CM Diagnosis
205.30	MYELOID SARCOMA W/O ACHIEVED REM	ICD-9-CM Diagnosis
205.31	MYELOID SARCOMA IN REMISSION	ICD-9-CM Diagnosis
205.32	MYELOID SARCOMA IN RELAPSE	ICD-9-CM Diagnosis
205.8	OTHER MYELOID LEUKEMIA	ICD-9-CM Diagnosis
205.80	OTH ML W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
205.81	OTHER MYELOID LEUKEMIA IN REMISSION	ICD-9-CM Diagnosis
205.82	OTHER MYELOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
205.9	UNSPECIFIED MYELOID LEUKEMIA	ICD-9-CM Diagnosis
205.90	UNS ML W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
205.91	UNSPEC MYELOID LEUKEMIA REMISSION	ICD-9-CM Diagnosis
205.92	UNS MYELOID LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
206	MONOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
206.0	ACUTE MONOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
206.00	AML W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
206.01	ACUTE MONOCYTIC LEUKEMIA REMISSION	ICD-9-CM Diagnosis
206.02	ACUTE MONOCYTIC LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
206.1	CHRONIC MONOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
206.10	CML W/O MENTION ACHIEVED REMISSION	ICD-9-CM Diagnosis
206.11	CHRON MONOCYTIC LEUKEMIA REMISSION	ICD-9-CM Diagnosis
206.12	CHRON MONOCYTIC LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
206.2	SUBACUTE MONOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
206.20	SUBACUTE ML W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
206.21	SUBACUT MONOCYTIC LEUKEM REMISSION	ICD-9-CM Diagnosis
206.22	SUBACUTE MONOCYTIC LEUKEMIA RELAPSE	ICD-9-CM Diagnosis
206.8	OTHER MONOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
206.80	OTH ML W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
206.81	OTHER MONOCYTIC LEUKEMIA REMISSION	ICD-9-CM Diagnosis
206.82	OTHER MONOCYTIC LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
206.9	UNSPECIFIED MONOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
206.90	UNS ML W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
206.91	UNSPEC MONOCYTIC LEUKEMIA REMISSION	ICD-9-CM Diagnosis
206.92	UNS MONOCYTIC LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
207	OTHER SPECIFIED LEUKEMIA	ICD-9-CM Diagnosis
207.0	ACUTE ERYTHREMIA&ERYTHROLEUKEMIA	ICD-9-CM Diagnosis
207.00	ACUTE ERYTHREMIA & EL W/O REMISSION	ICD-9-CM Diagnosis
207.01	AC ERYTHREMIA&ERYTHROLEUKEM REMISS	ICD-9-CM Diagnosis
207.02	ACUTE ERYTHREMIA AND EL IN RELAPSE	ICD-9-CM Diagnosis

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
207.1	CHRONIC ERYTHREMIA	ICD-9-CM Diagnosis
207.10	CHRON ERYTHREMIA W/O REMISSION	ICD-9-CM Diagnosis
207.11	CHRONIC ERYTHREMIA IN REMISSION	ICD-9-CM Diagnosis
207.12	CHRONIC ERYTHREMIA IN RELAPSE	ICD-9-CM Diagnosis
207.2	MEGAKARYOCYTIC LEUKEMIA	ICD-9-CM Diagnosis
207.20	MEGAKARYOCTC LEUKEMIA W/O REMISSION	ICD-9-CM Diagnosis
207.21	MEGAKARYOCYTIC LEUKEMIA REMISSION	ICD-9-CM Diagnosis
207.22	MEGAKARYOCYTIC LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
207.8	OTHER SPECIFIED LEUKEMIA	ICD-9-CM Diagnosis
207.80	OTH SPEC LEUKEMIA W/O REMISSION	ICD-9-CM Diagnosis
207.81	OTHER SPECIFIED LEUKEMIA REMISSION	ICD-9-CM Diagnosis
207.82	OTHER SPECIFIED LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
208	LEUKEMIA OF UNSPECIFIED CELL TYPE	ICD-9-CM Diagnosis
208.0	ACUTE LEUKEMIA UNSPEC CELL TYPE	ICD-9-CM Diagnosis
208.00	AC LEUKEMIA UNS CELL W/O REMISSION	ICD-9-CM Diagnosis
208.01	ACUT LEUKEM UNS CELL TYPE REMISSION	ICD-9-CM Diagnosis
208.02	ACUTE LEUKEMIA UNS CELL IN RELAPSE	ICD-9-CM Diagnosis
208.1	CHRONIC LEUKEMIA UNSPEC CELL TYPE	ICD-9-CM Diagnosis
208.10	CHRON LEUKEMIA UNS CELL W/O REMISSN	ICD-9-CM Diagnosis
208.11	CHRN LEUKEM UNS CELL TYPE REMISSION	ICD-9-CM Diagnosis
208.12	CHRON LEUKEMIA UNS CELL IN RELAPSE	ICD-9-CM Diagnosis
208.2	SUBACUTE LEUKEMIA UNSPEC CELL TYPE	ICD-9-CM Diagnosis
208.20	SUBACUTE LEUKEMIA UNS CELL W/O REM	ICD-9-CM Diagnosis
208.21	SUBAC LEUKEMIA UNS CELL TYPE REMIS	ICD-9-CM Diagnosis
208.22	SUBACUTE LEUKEMIA UNS CELL RELAPSE	ICD-9-CM Diagnosis
208.8	OTHER LEUKEMIA UNSPEC CELL TYPE	ICD-9-CM Diagnosis
208.80	OTH LEUKEMIA UNS CELL W/O REMISSION	ICD-9-CM Diagnosis
208.81	OTH LEUKEM UNS CELL TYPE REMISSION	ICD-9-CM Diagnosis
208.82	OTH LEUKEMIA UNS CELL IN RELAPSE	ICD-9-CM Diagnosis
208.9	UNSPECIFIED LEUKEMIA	ICD-9-CM Diagnosis
208.90	UNS LEUKEMAI W/O ACHIEVED REMISSION	ICD-9-CM Diagnosis
208.91	UNSPECIFIED LEUKEMIA IN REMISSION	ICD-9-CM Diagnosis
208.92	UNSPECIFIED LEUKEMIA IN RELAPSE	ICD-9-CM Diagnosis
209	NEUROENDOCRINE TUMORS	ICD-9-CM Diagnosis
209.0	MALIG CARCINOID TUMORS SMALL INTEST	ICD-9-CM Diagnosis
209.00	MAL CARCINOID TUMOR SM INTEST UNS	ICD-9-CM Diagnosis
209.01	MALIGNANT CARCINOID TUMOR DUODENUM	ICD-9-CM Diagnosis
209.02	MALIGNANT CARCINOID TUMOR JEJUNUM	ICD-9-CM Diagnosis
209.03	MALIGNANT CARCINOID TUMOR THE ILEUM	ICD-9-CM Diagnosis
209.1	MAL CARCINOID APPX LG INTEST RECTUM	ICD-9-CM Diagnosis
209.10	MAL CARCINOID TUMOR LG INTEST UNS	ICD-9-CM Diagnosis
209.11	MALIGNANT CARCINOID TUMOR APPENDIX	ICD-9-CM Diagnosis
209.12	MALIGNANT CARCINOID TUMOR CECUM	ICD-9-CM Diagnosis
209.13	MAL CARCINOID TUMOR ASCENDING COLON	ICD-9-CM Diagnosis

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
209.14	MAL CARCINOID TUMOR TRANSVRS COLON	ICD-9-CM Diagnosis
209.15	MALIG CARCINOID TUMOR DESCEND COLON	ICD-9-CM Diagnosis
209.16	MALIG CARCINOID TUMOR SIGMOID COLON	ICD-9-CM Diagnosis
209.17	MALIGNANT CARCINOID TUMOR OF RECTUM	ICD-9-CM Diagnosis
209.2	MAL CARCINOID TUMORS OTH & UNS SITE	ICD-9-CM Diagnosis
209.20	MAL CARCINOID TUMOR UNKN PRIM SITE	ICD-9-CM Diagnosis
209.21	MAL CARCINOID TUMOR BRONCHUS & LUNG	ICD-9-CM Diagnosis
209.22	MALIGNANT CARCINOID TUMOR THYMUS	ICD-9-CM Diagnosis
209.23	MALIGNANT CARCINOID TUMOR STOMACH	ICD-9-CM Diagnosis
209.24	MALIGNANT CARCINOID TUMOR OF KIDNEY	ICD-9-CM Diagnosis
209.25	MALIG CARCINOID TUMOR FOREGUT NOS	ICD-9-CM Diagnosis
209.26	MALIG CARCINOID TUMOR MIDGUT NOS	ICD-9-CM Diagnosis
209.27	MALIG CARCINOID TUMOR HINDGUT NOS	ICD-9-CM Diagnosis
209.29	MALIG CARCINOID TUMOR OTHER SITES	ICD-9-CM Diagnosis
209.3	MALIG PD NEUROENDOCRINE TUMORS	ICD-9-CM Diagnosis
209.30	MALIG PD NEUROENDOCRINE CA ANY SITE	ICD-9-CM Diagnosis
209.31	MERKEL CELL CARCINOMA OF THE FACE	ICD-9-CM Diagnosis
209.32	MERKEL CELL CARCINOMA SCALP & NECK	ICD-9-CM Diagnosis
209.33	MERKEL CELL CARCINOMA OF UPPER LIMB	ICD-9-CM Diagnosis
209.34	MERKEL CELL CARCINOMA OF LOWER LIMB	ICD-9-CM Diagnosis
209.35	MERKEL CELL CARCINOMA OF THE TRUNK	ICD-9-CM Diagnosis
209.36	MERKEL CELL CARCINOMA OF OTH SITES	ICD-9-CM Diagnosis
209.4	BENIGN CARCINOID TUMRS SMALL INTEST	ICD-9-CM Diagnosis
209.40	BENIGN CARCINOID TUMR SM INTEST UNS	ICD-9-CM Diagnosis
209.41	BENIGN CARCINOID TUMOR OF DUODENUM	ICD-9-CM Diagnosis
209.42	BENIGN CARCINOID TUMOR OF JEJUNUM	ICD-9-CM Diagnosis
209.43	BENIGN CARCINOID TUMOR OF THE ILEUM	ICD-9-CM Diagnosis
209.5	BENIGN CARCINOID APP LG INTEST RECT	ICD-9-CM Diagnosis
209.50	BENIGN CARCINOID TUMR LG INTEST UNS	ICD-9-CM Diagnosis
209.51	BENIGN CARCINOID TUMOR OF APPENDIX	ICD-9-CM Diagnosis
209.52	BENIGN CARCINOID TUMOR OF THE CECUM	ICD-9-CM Diagnosis
209.53	BENIGN CARCINOID TUMOR ASCEND COLON	ICD-9-CM Diagnosis
209.54	BENIGN CARCINOID TUMOR TRANS COLON	ICD-9-CM Diagnosis
209.55	BENIGN CARCINOID TUMR DESCEND COLON	ICD-9-CM Diagnosis
209.56	BENIGN CARCINOID TUMR SIGMOID COLON	ICD-9-CM Diagnosis
209.57	BENIGN CARCINOID TUMOR OF RECTUM	ICD-9-CM Diagnosis
209.6	BENIGN CARCINOID TUMR OTH&UNS SITE	ICD-9-CM Diagnosis
209.60	BENIGN CARCINOID TUMR UNK PRIM SITE	ICD-9-CM Diagnosis
209.61	BENIGN CARCINOID TUMR BRONCHUS LUNG	ICD-9-CM Diagnosis
209.62	BENIGN CARCINOID TUMOR OF THYMUS	ICD-9-CM Diagnosis
209.63	BENIGN CARCINOID TUMOR OF STOMACH	ICD-9-CM Diagnosis
209.64	BENIGN CARCINOID TUMOR OF KIDNEY	ICD-9-CM Diagnosis
209.65	BENIGN CARCINOID TUMOR FOREGUT NOS	ICD-9-CM Diagnosis
209.66	BENIGN CARCINOID TUMOR MIDGUT NOS	ICD-9-CM Diagnosis

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
209.67	BENIGN CARCINOID TUMOR HINDGUT NOS	ICD-9-CM Diagnosis
209.69	BENIGN CARCINOID TUMOR OTHER SITES	ICD-9-CM Diagnosis
209.7	SECONDARY NEUROENDOCRINE TUMORS	ICD-9-CM Diagnosis
209.70	SEC NEUROENDOCRIN TUMOR UNSPEC SITE	ICD-9-CM Diagnosis
209.71	SEC NEUROENDOCRIN TUMR DISTANT NODES	ICD-9-CM Diagnosis
209.72	SECONDRY NEUROENDOCRINE TUMOR LIVER	ICD-9-CM Diagnosis
209.73	SECONDARY NEUROENDOCRINE TUMOR BONE	ICD-9-CM Diagnosis
209.74	SEC NEUROENDOCRINE TUMOR PERITONEUM	ICD-9-CM Diagnosis
209.75	SECONDARY MERKEL CELL CARCINOMA	ICD-9-CM Diagnosis
209.79	SEC NEUROENDOCRINE TUMOR OTH SITES	ICD-9-CM Diagnosis
210	BEN NEOPLASM LIP ORAL CAV&PHARYNX	ICD-9-CM Diagnosis
210.0	BENIGN NEOPLASM OF LIP	ICD-9-CM Diagnosis
210.1	BENIGN NEOPLASM OF TONGUE	ICD-9-CM Diagnosis
210.2	BEN NEOPLASM MAJOR SALIVARY GLANDS	ICD-9-CM Diagnosis
210.3	BENIGN NEOPLASM OF FLOOR OF MOUTH	ICD-9-CM Diagnosis
210.4	BEN NEOPLASM OTH&UNSPEC PARTS MOUTH	ICD-9-CM Diagnosis
210.5	BENIGN NEOPLASM OF TONSIL	ICD-9-CM Diagnosis
210.6	BEN NEOPLASM OTH PARTS OROPHARYNX	ICD-9-CM Diagnosis
210.7	BENIGN NEOPLASM OF NASOPHARYNX	ICD-9-CM Diagnosis
210.8	BENIGN NEOPLASM OF HYPOPHARYNX	ICD-9-CM Diagnosis
210.9	BENIGN NEOPLASM PHARYNX UNSPECIFIED	ICD-9-CM Diagnosis
211	BEN NEOPLSM OTH PART DIGESTV SYSTEM	ICD-9-CM Diagnosis
211.0	BENIGN NEOPLASM OF ESOPHAGUS	ICD-9-CM Diagnosis
211.1	BENIGN NEOPLASM OF STOMACH	ICD-9-CM Diagnosis
211.2	BEN NEOPLASM DUODENUM JEJUNUM&ILEUM	ICD-9-CM Diagnosis
211.3	BENIGN NEOPLASM OF COLON	ICD-9-CM Diagnosis
211.4	BENIGN NEOPLASM RECTUM&ANAL CANAL	ICD-9-CM Diagnosis
211.5	BEN NEOPLASM LIVER&BILIARY PASSAGES	ICD-9-CM Diagnosis
211.6	BEN NEO PANC NO ISLETS LANGERHANS	ICD-9-CM Diagnosis
211.7	BENIGN NEOPLASM ISLETS LANGERHANS	ICD-9-CM Diagnosis
211.8	BEN NEOPLASM RETROPERITON&PERITON	ICD-9-CM Diagnosis
211.9	BEN NEO OTH&UNS SITE DIGESTV SYS	ICD-9-CM Diagnosis
212	BEN NEOPLASM RESP&INTRATHOR ORGN	ICD-9-CM Diagnosis
212.0	BEN NEO NASAL CAV MID EAR & SINUS	ICD-9-CM Diagnosis
212.1	BENIGN NEOPLASM OF LARYNX	ICD-9-CM Diagnosis
212.2	BENIGN NEOPLASM OF TRACHEA	ICD-9-CM Diagnosis
212.3	BENIGN NEOPLASM OF BRONCHUS&LUNG	ICD-9-CM Diagnosis
212.4	BENIGN NEOPLASM OF PLEURA	ICD-9-CM Diagnosis
212.5	BENIGN NEOPLASM OF MEDIASTINUM	ICD-9-CM Diagnosis
212.6	BENIGN NEOPLASM OF THYMUS	ICD-9-CM Diagnosis
212.7	BENIGN NEOPLASM OF HEART	ICD-9-CM Diagnosis
212.8	BEN NEO OTH SITE RESP&INTRATHR ORGN	ICD-9-CM Diagnosis
212.9	BEN NEO RESP&INTRATHR ORGN SITE UNS	ICD-9-CM Diagnosis
213	BEN NEOPLASM BONE&ARTICLR CARTILAGE	ICD-9-CM Diagnosis

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
213.0	BENIGN NEOPLASM BONES SKULL&FACE	ICD-9-CM Diagnosis
213.1	BENIGN NEOPLASM OF LOWER JAW BONE	ICD-9-CM Diagnosis
213.2	BEN NEO VERT COLMN NOT SACRM&COCCYX	ICD-9-CM Diagnosis
213.3	BEN NEOPLASM RIBS STERNUM&CLAVICLE	ICD-9-CM Diagnosis
213.4	BEN NEOPLSM SCAP&LNG BNS UPPER LIMB	ICD-9-CM Diagnosis
213.5	BEN NEOPLASM SHORT BONES UPPER LIMB	ICD-9-CM Diagnosis
213.6	BEN NEOPLASM PELV BNS SACRUM&COCCYX	ICD-9-CM Diagnosis
213.7	BEN NEOPLASM LONG BONES LOWER LIMB	ICD-9-CM Diagnosis
213.8	BEN NEOPLASM SHORT BONES LOWER LIMB	ICD-9-CM Diagnosis
213.9	BEN NEO BN&ARTICLR CART SITE UNS	ICD-9-CM Diagnosis
214	LIPOMA	ICD-9-CM Diagnosis
214.0	LIPOMA SKIN&SUBCUT TISSUE FACE	ICD-9-CM Diagnosis
214.1	LIPOMA OTH SKIN&SUBCUTANEOUS TISSUE	ICD-9-CM Diagnosis
214.2	LIPOMA OF INTRATHORACIC ORGANS	ICD-9-CM Diagnosis
214.3	LIPOMA OF INTRA-ABDOMINAL ORGANS	ICD-9-CM Diagnosis
214.4	LIPOMA OF SPERMATIC CORD	ICD-9-CM Diagnosis
214.8	LIPOMA OF OTHER SPECIFIED SITES	ICD-9-CM Diagnosis
214.9	LIPOMA OF UNSPECIFIED SITE	ICD-9-CM Diagnosis
215	OTH BEN NEOPLSM CNCTV&OTH SFT TISS	ICD-9-CM Diagnosis
215.0	OTH BEN NEO CNCTV&OTH TISS HEAD&NCK	ICD-9-CM Diagnosis
215.2	OTH BEN NEO OTH SFT TIS ARM W/SHLDR	ICD-9-CM Diagnosis
215.3	OTH BEN NEO OTH SFT TISS LEG W/ HIP	ICD-9-CM Diagnosis
215.4	OTH BEN NEO CNCTV&OTH SFT TISS THOR	ICD-9-CM Diagnosis
215.5	OTH BEN NEOPLSM CNCTV&SFT TISS ABD	ICD-9-CM Diagnosis
215.6	OTH BEN NEO CNCTV&OTH SFT TISS PELV	ICD-9-CM Diagnosis
215.7	OTH BEN NEO CNCTV&OTH TISS TRNK UNS	ICD-9-CM Diagnosis
215.8	OTH BEN NEO CNCTV&OTH TISS OTH SITE	ICD-9-CM Diagnosis
215.9	OTH BEN NEO CNCTV&OTH SFT TISS	ICD-9-CM Diagnosis
216	BENIGN NEOPLASM OF SKIN	ICD-9-CM Diagnosis
216.0	BENIGN NEOPLASM OF SKIN OF LIP	ICD-9-CM Diagnosis
216.1	BEN NEOPLASM EYELID INCL CANTHUS	ICD-9-CM Diagnosis
216.2	BEN NEOPLASM EAR&EXT AUDITRY CANAL	ICD-9-CM Diagnosis
216.3	BEN NEOPLSM SKN OTH&UNSPEC PART FCE	ICD-9-CM Diagnosis
216.4	BENIGN NEOPLASM SCALP&SKIN NECK	ICD-9-CM Diagnosis
216.5	BEN NEOPLASM SKIN TRUNK NO SCROTUM	ICD-9-CM Diagnosis
216.6	BEN NEOPLSM SKN UP LIMB INCL SHLDR	ICD-9-CM Diagnosis
216.7	BEN NEOPLASM SKIN LOW LIMB INCL HIP	ICD-9-CM Diagnosis
216.8	BENIGN NEOPLASM OTH SPEC SITES SKIN	ICD-9-CM Diagnosis
216.9	BENIGN NEOPLASM SKIN SITE UNSPEC	ICD-9-CM Diagnosis
217	BENIGN NEOPLASM OF BREAST	ICD-9-CM Diagnosis
218	UTERINE LEIOMYOMA	ICD-9-CM Diagnosis
218.0	SUBMUCOUS LEIOMYOMA OF UTERUS	ICD-9-CM Diagnosis
218.1	INTRAMURAL LEIOMYOMA OF UTERUS	ICD-9-CM Diagnosis
218.2	SUBSEROUS LEIOMYOMA OF UTERUS	ICD-9-CM Diagnosis

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Code	Description	Code Type
218.9	LEIOMYOMA OF UTERUS, UNSPECIFIED	ICD-9-CM Diagnosis
219	OTHER BENIGN NEOPLASM OF UTERUS	ICD-9-CM Diagnosis
219.0	BENIGN NEOPLASM OF CERVIX UTERI	ICD-9-CM Diagnosis
219.1	BENIGN NEOPLASM OF CORPUS UTERI	ICD-9-CM Diagnosis
219.8	BEN NEOPLASM OTH SPEC PARTS UTERUS	ICD-9-CM Diagnosis
219.9	BENIGN NEOPLASM UTERUS PART UNSPEC	ICD-9-CM Diagnosis
220	BENIGN NEOPLASM OF OVARY	ICD-9-CM Diagnosis
221	BEN NEOPLASM OTH FE GENITAL ORGANS	ICD-9-CM Diagnosis
221.0	BEN NEOPLSM FALLOP TUBE&UTERINE LIG	ICD-9-CM Diagnosis
221.1	BENIGN NEOPLASM OF VAGINA	ICD-9-CM Diagnosis
221.2	BENIGN NEOPLASM OF VULVA	ICD-9-CM Diagnosis
221.8	BEN NEO OTH SPEC SITE FE GNT ORGN	ICD-9-CM Diagnosis
221.9	BEN NEOPLSM FE GENIT ORGN SITE UNS	ICD-9-CM Diagnosis
222	BENIGN NEOPLASM MALE GENITAL ORGANS	ICD-9-CM Diagnosis
222.0	BENIGN NEOPLASM OF TESTIS	ICD-9-CM Diagnosis
222.1	BENIGN NEOPLASM OF PENIS	ICD-9-CM Diagnosis
222.2	BENIGN NEOPLASM OF PROSTATE	ICD-9-CM Diagnosis
222.3	BENIGN NEOPLASM OF EPIDIDYMIS	ICD-9-CM Diagnosis
222.4	BENIGN NEOPLASM OF SCROTUM	ICD-9-CM Diagnosis
222.8	BEN NEO OTH SPEC SITE MALE GNT ORGN	ICD-9-CM Diagnosis
222.9	BEN NEOPLSM MALE GNT ORGN SITE UNS	ICD-9-CM Diagnosis
223	BEN NEOPLASM KIDNEY&OTH URIN ORGN	ICD-9-CM Diagnosis
223.0	BEN NEOPLASM KIDNEY EXCEPT PELVIS	ICD-9-CM Diagnosis
223.1	BENIGN NEOPLASM OF RENAL PELVIS	ICD-9-CM Diagnosis
223.2	BENIGN NEOPLASM OF URETER	ICD-9-CM Diagnosis
223.3	BENIGN NEOPLASM OF BLADDER	ICD-9-CM Diagnosis
223.8	BEN NEOPLSM OTH SPEC SITE URIN ORGN	ICD-9-CM Diagnosis
223.81	BENIGN NEOPLASM OF URETHRA	ICD-9-CM Diagnosis
223.89	BEN NEOPLSM OTH SPEC SITE URIN ORGN	ICD-9-CM Diagnosis
223.9	BEN NEOPLASM URIN ORGAN SITE UNSPEC	ICD-9-CM Diagnosis
224	BENIGN NEOPLASM OF EYE	ICD-9-CM Diagnosis
224.0	BENIGN NEOPLASM EYEBALL	ICD-9-CM Diagnosis
224.1	BENIGN NEOPLASM OF ORBIT	ICD-9-CM Diagnosis
224.2	BENIGN NEOPLASM OF LACRIMAL GLAND	ICD-9-CM Diagnosis
224.3	BENIGN NEOPLASM OF CONJUNCTIVA	ICD-9-CM Diagnosis
224.4	BENIGN NEOPLASM OF CORNEA	ICD-9-CM Diagnosis
224.5	BENIGN NEOPLASM OF RETINA	ICD-9-CM Diagnosis
224.6	BENIGN NEOPLASM OF CHOROID	ICD-9-CM Diagnosis
224.7	BENIGN NEOPLASM OF LACRIMAL DUCT	ICD-9-CM Diagnosis
224.8	BENIGN NEOPLASM OTH SPEC PARTS EYE	ICD-9-CM Diagnosis
224.9	BENIGN NEOPLASM EYE PART UNSPEC	ICD-9-CM Diagnosis
225	BEN NEOPLSM BRAIN&OTH PART NERV SYS	ICD-9-CM Diagnosis
225.0	BENIGN NEOPLASM OF BRAIN	ICD-9-CM Diagnosis
225.1	BENIGN NEOPLASM OF CRANIAL NERVES	ICD-9-CM Diagnosis

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Code	Description	Code Type
225.2	BENIGN NEOPLASM CEREBRAL MENINGES	ICD-9-CM Diagnosis
225.3	BENIGN NEOPLASM OF SPINAL CORD	ICD-9-CM Diagnosis
225.4	BENIGN NEOPLASM OF SPINAL MENINGES	ICD-9-CM Diagnosis
225.8	BEN NEOPLSM OTH SPEC SITE NERV SYS	ICD-9-CM Diagnosis
225.9	BEN NEOPLSM NERV SYSTEM PART UNSPEC	ICD-9-CM Diagnosis
226	BENIGN NEOPLASM OF THYROID GLANDS	ICD-9-CM Diagnosis
227	BEN NEO OTH ENDOCRN GLND&REL STRCT	ICD-9-CM Diagnosis
227.0	BENIGN NEOPLASM OF ADRENAL GLAND	ICD-9-CM Diagnosis
227.1	BENIGN NEOPLASM PARATHYROID GLAND	ICD-9-CM Diagnosis
227.3	BEN NEO PITUITRY&CRANIOPHRYNGL DUCT	ICD-9-CM Diagnosis
227.4	BENIGN NEOPLASM OF PINEAL GLAND	ICD-9-CM Diagnosis
227.5	BENIGN NEOPLASM OF CAROTID BODY	ICD-9-CM Diagnosis
227.6	BEN NEO AORTC BDY&OTH PARAGANGLIA	ICD-9-CM Diagnosis
227.8	BEN NEO OTH ENDOCRN GLND&REL STRCT	ICD-9-CM Diagnosis
227.9	BEN NEOPLSM ENDOCRN GLAND SITE UNS	ICD-9-CM Diagnosis
228	HEMANGIOMA&LYMPHANGIOMA ANY SITE	ICD-9-CM Diagnosis
228.0	HEMANGIOMA, ANY SITE	ICD-9-CM Diagnosis
228.00	HEMANGIOMA OF UNSPECIFIED SITE	ICD-9-CM Diagnosis
228.01	HEMANGIOMA SKIN&SUBCUTANEOUS TISSUE	ICD-9-CM Diagnosis
228.02	HEMANGIOMA INTRACRANIAL STRUCTURES	ICD-9-CM Diagnosis
228.03	HEMANGIOMA OF RETINA	ICD-9-CM Diagnosis
228.04	HEMANGIOMA INTRA-ABD STRUCTURES	ICD-9-CM Diagnosis
228.09	HEMANGIOMA OF OTHER SITES	ICD-9-CM Diagnosis
228.1	LYMPHANGIOMA, ANY SITE	ICD-9-CM Diagnosis
229	BENIGN NEOPLASM OTHER&UNSPEC SITES	ICD-9-CM Diagnosis
229.0	BENIGN NEOPLASM OF LYMPH NODES	ICD-9-CM Diagnosis
229.8	BENIGN NEOPLASM OTHER SPEC SITES	ICD-9-CM Diagnosis
229.9	BENIGN NEOPLASM OF UNSPECIFIED SITE	ICD-9-CM Diagnosis
230	CARCINOMA SITU OF DIGESTIVE ORGANS	ICD-9-CM Diagnosis
230.0	CA SITU LIP ORAL CAVITY&PHARYNX	ICD-9-CM Diagnosis
230.1	CARCINOMA IN SITU OF ESOPHAGUS	ICD-9-CM Diagnosis
230.2	CARCINOMA IN SITU OF STOMACH	ICD-9-CM Diagnosis
230.3	CARCINOMA IN SITU OF COLON	ICD-9-CM Diagnosis
230.4	CARCINOMA IN SITU OF RECTUM	ICD-9-CM Diagnosis
230.5	CARCINOMA IN SITU OF ANAL CANAL	ICD-9-CM Diagnosis
230.6	CARCINOMA SITU OF ANUS UNSPECIFIED	ICD-9-CM Diagnosis
230.7	CA SITU OTH&UNSPEC PARTS INTESTINE	ICD-9-CM Diagnosis
230.8	CARCINOMA SITU LIVER&BILIARY SYSTEM	ICD-9-CM Diagnosis
230.9	CA SITU OTH&UNSPEC DIGESTIVE ORGANS	ICD-9-CM Diagnosis
231	CARCINOMA SITU RESPIRATORY SYSTEM	ICD-9-CM Diagnosis
231.0	CARCINOMA IN SITU OF LARYNX	ICD-9-CM Diagnosis
231.1	CARCINOMA IN SITU OF TRACHEA	ICD-9-CM Diagnosis
231.2	CARCINOMA IN SITU OF BRONCHUS&LUNG	ICD-9-CM Diagnosis
231.8	CA SITU OTH SPEC PARTS RESP SYSTEM	ICD-9-CM Diagnosis

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Code	Description	Code Type
231.9	CA SITU RESP SYSTEM PART UNSPEC	ICD-9-CM Diagnosis
232	CARCINOMA IN SITU OF SKIN	ICD-9-CM Diagnosis
232.0	CARCINOMA IN SITU OF SKIN OF LIP	ICD-9-CM Diagnosis
232.1	CA SITU EYELID INCLUDING CANTHUS	ICD-9-CM Diagnosis
232.2	CA SITU SKIN EAR&EXT AUDITRY CANAL	ICD-9-CM Diagnosis
232.3	CA SITU SKIN OTH&UNSPEC PARTS FACE	ICD-9-CM Diagnosis
232.4	CARCINOMA SITU SCALP&SKIN NECK	ICD-9-CM Diagnosis
232.5	CA SITU SKIN TRUNK EXCEPT SCROTUM	ICD-9-CM Diagnosis
232.6	CA SITU SKIN UPPER LIMB INCL SHLDR	ICD-9-CM Diagnosis
232.7	CA SITU SKIN LOWER LIMB INCL HIP	ICD-9-CM Diagnosis
232.8	CARCINOMA SITU OTH SPEC SITES SKIN	ICD-9-CM Diagnosis
232.9	CARCINOMA SITU SKIN SITE UNSPEC	ICD-9-CM Diagnosis
233	CA SITU BREAST&GENITOURINARY SYSTEM	ICD-9-CM Diagnosis
233.0	CARCINOMA IN SITU OF BREAST	ICD-9-CM Diagnosis
233.1	CARCINOMA IN SITU OF CERVIX UTERI	ICD-9-CM Diagnosis
233.2	CA SITU OTH&UNSPEC PARTS UTERUS	ICD-9-CM Diagnosis
233.3	CA SITU OTH&UNSPEC FE GENITAL ORGN	ICD-9-CM Diagnosis
233.30	CA IN SITU UNS FEMALE GENITAL ORGAN	ICD-9-CM Diagnosis
233.31	CARCINOMA IN SITU VAGINA	ICD-9-CM Diagnosis
233.32	CARCINOMA IN SITU VULVA	ICD-9-CM Diagnosis
233.39	CA IN SITU OTH FEMALE GENITAL ORGAN	ICD-9-CM Diagnosis
233.4	CARCINOMA IN SITU OF PROSTATE	ICD-9-CM Diagnosis
233.5	CARCINOMA IN SITU OF PENIS	ICD-9-CM Diagnosis
233.6	CA SITU OTH&UNSPEC MALE GENIT ORGN	ICD-9-CM Diagnosis
233.7	CARCINOMA IN SITU OF BLADDER	ICD-9-CM Diagnosis
233.9	CA SITU OTH&UNSPEC URINARY ORGANS	ICD-9-CM Diagnosis
234	CARCINOMA SITU OTHER&UNSPEC SITES	ICD-9-CM Diagnosis
234.0	CARCINOMA IN SITU OF EYE	ICD-9-CM Diagnosis
234.8	CARCINOMA SITU OTHER SPEC SITES	ICD-9-CM Diagnosis
234.9	CARCINOMA IN SITU, SITE UNSPECIFIED	ICD-9-CM Diagnosis
235	NEOPLSM UNCERT BHV DIGESTV&RESP SYS	ICD-9-CM Diagnosis
235.0	NEOPLSM UNCERT BHV MAJ SALIV GLND	ICD-9-CM Diagnosis
235.1	NEO UNCERT BHV LIP ORL CAV&PHARYNX	ICD-9-CM Diagnosis
235.2	NEO UNCERT BHV STOMACH INTEST&RECT	ICD-9-CM Diagnosis
235.3	NEO UNCERT BHV LIVER&BILI PASSAGES	ICD-9-CM Diagnosis
235.4	NEO UNCERT BHV RETROPERITON&PERITON	ICD-9-CM Diagnosis
235.5	NEO UNCERT BHV OTH&UNS DIGESTV ORGN	ICD-9-CM Diagnosis
235.6	NEOPLASM UNCERTAIN BEHAVIOR LARYNX	ICD-9-CM Diagnosis
235.7	NEO UNCERT BHV TRACH BRONCHUS&LUNG	ICD-9-CM Diagnosis
235.8	NEO UNCERT BHV PLEU THYMUS&MEDIAS	ICD-9-CM Diagnosis
235.9	NEO UNCERT BHV OTH&UNS RESP ORGN	ICD-9-CM Diagnosis
236	NEOPLASM UNCERTAIN BEHAVIOR GU ORGN	ICD-9-CM Diagnosis
236.0	NEOPLASM UNCERTAIN BEHAVIOR UTERUS	ICD-9-CM Diagnosis
236.1	NEOPLASM UNCERTAIN BHV PLACENTA	ICD-9-CM Diagnosis

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Code	Description	Code Type
236.2	NEOPLASM UNCERTAIN BEHAVIOR OVARY	ICD-9-CM Diagnosis
236.3	NEO UNCERT BHV OTH&UNS FE GNT ORGN	ICD-9-CM Diagnosis
236.4	NEOPLASM UNCERTAIN BEHAVIOR TESTIS	ICD-9-CM Diagnosis
236.5	NEOPLASM UNCERTAIN BEHAVIOR PROS	ICD-9-CM Diagnosis
236.6	NEO UNCERT BHV UNS MALE GNT ORGN	ICD-9-CM Diagnosis
236.7	NEOPLASM UNCERTAIN BEHAVIOR BLADDER	ICD-9-CM Diagnosis
236.9	NEO UNCERT BHV OTH&UNS URIN ORGN	ICD-9-CM Diagnosis
236.90	NEOPLSM UNCERT BHV URIN ORGN UNSPEC	ICD-9-CM Diagnosis
236.91	NEOPLSM UNCERTAIN BHV KIDNEY&URETER	ICD-9-CM Diagnosis
236.99	NEO UNCERT BHV OTH&UNS URIN ORGN	ICD-9-CM Diagnosis
237	NEO UNCERT BHV ENDOCRN GLND&NRV SYS	ICD-9-CM Diagnosis
237.0	NEO UNCERT BHV PITUITARY GLAND	ICD-9-CM Diagnosis
237.1	NEOPLASM UNCERTAIN BHV PINEAL GLAND	ICD-9-CM Diagnosis
237.2	NEOPLSM UNCERTAIN BHV ADRENAL GLAND	ICD-9-CM Diagnosis
237.3	NEOPLASM UNCERTAIN BHV PARAGANGLIA	ICD-9-CM Diagnosis
237.4	NEO UNCERT BHV OTH&UNS ENDOCRN GLND	ICD-9-CM Diagnosis
237.5	NEOPLSM UNCERTAIN BHV BRAIN&SP CORD	ICD-9-CM Diagnosis
237.6	NEOPLASM UNCERTAIN BHV MENINGES	ICD-9-CM Diagnosis
237.7	NEUROFIBROMATOSIS	ICD-9-CM Diagnosis
237.70	NEUROFIBROMATOSIS, UNSPECIFIED	ICD-9-CM Diagnosis
237.71	NEUROFIBROMATOSIS, TYPE 1	ICD-9-CM Diagnosis
237.72	NEUROFIBROMATOSIS, TYPE 2	ICD-9-CM Diagnosis
237.73	SCHWANNOMATOSIS	ICD-9-CM Diagnosis
237.79	OTHER NEUROFIBROMATOSIS	ICD-9-CM Diagnosis
237.9	NEO UNCERT BHV OTH&UNS PART NRV SYS	ICD-9-CM Diagnosis
238	NEO UNCERT BHV OTH&UNS SITE&TISS	ICD-9-CM Diagnosis
238.0	NEOPLSM UNCERT BHV BN&ARTICLR CART	ICD-9-CM Diagnosis
238.1	NEO UNCERT BHV CNCTV&OTH SFT TISS	ICD-9-CM Diagnosis
238.2	NEOPLASM UNCERTAIN BEHAVIOR SKIN	ICD-9-CM Diagnosis
238.3	NEOPLASM UNCERTAIN BEHAVIOR BREAST	ICD-9-CM Diagnosis
238.4	NEO UNCERT BHV POLYCYTHEMIA VERA	ICD-9-CM Diagnosis
238.5	NEO UNCERT BHV HISTCYT&MAST CELLS	ICD-9-CM Diagnosis
238.6	NEOPLASM UNCERTAIN BHV PLASMA CELLS	ICD-9-CM Diagnosis
238.7	NEO UNCERT BHV OTH LYMPH&HEMATOPOT	ICD-9-CM Diagnosis
238.71	ESSENTIAL THROMBOCYTHEMIA	ICD-9-CM Diagnosis
238.72	LW GRADE MYELOYDYSPLSTC SYNDROME LES	ICD-9-CM Diagnosis
238.73	HIGH GRADE MYELOYDYSPLSTC SYND LES	ICD-9-CM Diagnosis
238.74	MYELOYDYSPLASTIC SYNDROME W/5Q DEL	ICD-9-CM Diagnosis
238.75	MYELOYDYSPLASTIC SYNDROME UNSPEC	ICD-9-CM Diagnosis
238.76	MYELOFIBROSIS W/MYELOID METAPLASIA	ICD-9-CM Diagnosis
238.77	POST-TRANSPLANT LYMPHOPROLIF D/O	ICD-9-CM Diagnosis
238.79	OTH LYMPHATIC&HEMATOPOIETIC TISSUES	ICD-9-CM Diagnosis
238.8	NEOPLSM UNCERTAIN BHV OTH SPEC SITE	ICD-9-CM Diagnosis
238.9	NEOPLASM UNCERTAIN BHV SITE UNSPEC	ICD-9-CM Diagnosis

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Code	Description	Code Type
239	NEOPLASMS OF UNSPECIFIED NATURE	ICD-9-CM Diagnosis
239.0	NEOPLASM UNSPEC NATR DIGESTV SYSTEM	ICD-9-CM Diagnosis
239.1	NEOPLASM UNSPEC NATURE RESP SYSTEM	ICD-9-CM Diagnosis
239.2	NEOPLSM UNSPEC NATR BN SFT TISS&SKN	ICD-9-CM Diagnosis
239.3	NEOPLASM UNSPECIFIED NATURE BREAST	ICD-9-CM Diagnosis
239.4	NEOPLASM UNSPECIFIED NATURE BLADDER	ICD-9-CM Diagnosis
239.5	NEOPLASM UNSPEC NATURE OTH GU ORGN	ICD-9-CM Diagnosis
239.6	NEOPLASM UNSPECIFIED NATURE BRAIN	ICD-9-CM Diagnosis
239.7	NEO UNS NATUR ENDOCRNE&OTH NERV SYS	ICD-9-CM Diagnosis
239.8	NEOPLASM UNSPEC NATR OTH SPEC SITES	ICD-9-CM Diagnosis
239.81	NEOPLSMS UNS NATR RETINA & CHOROID	ICD-9-CM Diagnosis
239.89	NEOPLSM UNSPEC NATR OTH SPEC SITES	ICD-9-CM Diagnosis
239.9	NEOPLASM UNSPEC NATURE SITE UNSPEC	ICD-9-CM Diagnosis
V66.2	Convalescence and palliative care following chemotherapy	ICD-9-CM Diagnosis
V67.2	Follow Up Examination Following Chemotherapy	ICD-9-CM Diagnosis
V58.1	Cancer chemotherapy treatment	ICD-9-CM Diagnosis
V58.0	Radiation therapy	ICD-9-CM Diagnosis
V66.1	Radiation therapy	ICD-9-CM Diagnosis
77401	Radiation therapy	CPT-4
77402	Radiation therapy	CPT-4
77403	Radiation therapy	CPT-4
77404	Radiation therapy	CPT-4
77405	Radiation therapy	CPT-4
77406	Radiation therapy	CPT-4
77407	Radiation therapy	CPT-4
77408	Radiation therapy	CPT-4
77409	Radiation therapy	CPT-4
77410	Radiation therapy	CPT-4
77411	Radiation therapy	CPT-4
77412	Radiation therapy	CPT-4
77413	Radiation therapy	CPT-4
77414	Radiation therapy	CPT-4
77415	Radiation therapy	CPT-4
77416	Radiation therapy	CPT-4
77417	Radiation therapy	CPT-4
77418	Radiation therapy	CPT-4
77419	Radiation therapy	CPT-4
77420	Radiation therapy	CPT-4
77421	Radiation therapy	CPT-4
77422	Radiation therapy	CPT-4
77423	Radiation therapy	CPT-4
77424	Radiation therapy	CPT-4
77425	Radiation therapy	CPT-4
77426	Radiation therapy	CPT-4

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Code	Description	Code Type
77427	Radiation therapy	CPT-4
77428	Radiation therapy	CPT-4
77429	Radiation therapy	CPT-4
77430	Radiation therapy	CPT-4
77431	Radiation therapy	CPT-4
77432	Radiation therapy	CPT-4
77433	Radiation therapy	CPT-4
77434	Radiation therapy	CPT-4
77435	Radiation therapy	CPT-4
77436	Radiation therapy	CPT-4
77437	Radiation therapy	CPT-4
77438	Radiation therapy	CPT-4
77439	Radiation therapy	CPT-4
77440	Radiation therapy	CPT-4
77441	Radiation therapy	CPT-4
77442	Radiation therapy	CPT-4
77443	Radiation therapy	CPT-4
77444	Radiation therapy	CPT-4
77445	Radiation therapy	CPT-4
77446	Radiation therapy	CPT-4
77447	Radiation therapy	CPT-4
77448	Radiation therapy	CPT-4
77449	Radiation therapy	CPT-4
77450	Radiation therapy	CPT-4
77451	Radiation therapy	CPT-4
77452	Radiation therapy	CPT-4
77453	Radiation therapy	CPT-4
77454	Radiation therapy	CPT-4
77455	Radiation therapy	CPT-4
77456	Radiation therapy	CPT-4
77457	Radiation therapy	CPT-4
77458	Radiation therapy	CPT-4
77459	Radiation therapy	CPT-4
77460	Radiation therapy	CPT-4
77461	Radiation therapy	CPT-4
77462	Radiation therapy	CPT-4
77463	Radiation therapy	CPT-4
77464	Radiation therapy	CPT-4
77465	Radiation therapy	CPT-4
77466	Radiation therapy	CPT-4
77467	Radiation therapy	CPT-4
77468	Radiation therapy	CPT-4
77469	Radiation therapy	CPT-4
77470	Radiation therapy	CPT-4

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Code	Description	Code Type
77471	Radiation therapy	CPT-4
77472	Radiation therapy	CPT-4
77473	Radiation therapy	CPT-4
77474	Radiation therapy	CPT-4
77475	Radiation therapy	CPT-4
77476	Radiation therapy	CPT-4
77477	Radiation therapy	CPT-4
77478	Radiation therapy	CPT-4
77479	Radiation therapy	CPT-4
77480	Radiation therapy	CPT-4
77481	Radiation therapy	CPT-4
77482	Radiation therapy	CPT-4
77483	Radiation therapy	CPT-4
77484	Radiation therapy	CPT-4
77485	Radiation therapy	CPT-4
77486	Radiation therapy	CPT-4
77487	Radiation therapy	CPT-4
77488	Radiation therapy	CPT-4
77489	Radiation therapy	CPT-4
77490	Radiation therapy	CPT-4
77491	Radiation therapy	CPT-4
77492	Radiation therapy	CPT-4
77493	Radiation therapy	CPT-4
77494	Radiation therapy	CPT-4
77495	Radiation therapy	CPT-4
77496	Radiation therapy	CPT-4
77497	Radiation therapy	CPT-4
77498	Radiation therapy	CPT-4
77499	Radiation therapy	CPT-4
77520	Radiation therapy	CPT-4
77523	Radiation therapy	CPT-4
77750	Radiation therapy	CPT-4
77751	Radiation therapy	CPT-4
77752	Radiation therapy	CPT-4
77753	Radiation therapy	CPT-4
77754	Radiation therapy	CPT-4
77755	Radiation therapy	CPT-4
77756	Radiation therapy	CPT-4
77757	Radiation therapy	CPT-4
77758	Radiation therapy	CPT-4
77759	Radiation therapy	CPT-4
77760	Radiation therapy	CPT-4
77761	Radiation therapy	CPT-4
77762	Radiation therapy	CPT-4

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Code	Description	Code Type
77763	Radiation therapy	CPT-4
77764	Radiation therapy	CPT-4
77765	Radiation therapy	CPT-4
77766	Radiation therapy	CPT-4
77767	Radiation therapy	CPT-4
77768	Radiation therapy	CPT-4
77769	Radiation therapy	CPT-4
77770	Radiation therapy	CPT-4
77771	Radiation therapy	CPT-4
77772	Radiation therapy	CPT-4
77773	Radiation therapy	CPT-4
77774	Radiation therapy	CPT-4
77775	Radiation therapy	CPT-4
77776	Radiation therapy	CPT-4
77777	Radiation therapy	CPT-4
77778	Radiation therapy	CPT-4
77779	Radiation therapy	CPT-4
77780	Radiation therapy	CPT-4
77781	Radiation therapy	CPT-4
77782	Radiation therapy	CPT-4
77783	Radiation therapy	CPT-4
77784	Radiation therapy	CPT-4
77785	Radiation therapy	CPT-4
77786	Radiation therapy	CPT-4
77787	Radiation therapy	CPT-4
77788	Radiation therapy	CPT-4
77789	Radiation therapy	CPT-4
77790	Radiation therapy	CPT-4
77791	Radiation therapy	CPT-4
77792	Radiation therapy	CPT-4
77793	Radiation therapy	CPT-4
77794	Radiation therapy	CPT-4
77795	Radiation therapy	CPT-4
77796	Radiation therapy	CPT-4
77797	Radiation therapy	CPT-4
77798	Radiation therapy	CPT-4
77799	Radiation therapy	CPT-4
J9000	Cancer chemotherapy treatment	HCPCS
J9001	Cancer chemotherapy treatment	HCPCS
J9002	Cancer chemotherapy treatment	HCPCS
J9003	Cancer chemotherapy treatment	HCPCS
J9004	Cancer chemotherapy treatment	HCPCS
J9005	Cancer chemotherapy treatment	HCPCS
J9006	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9007	Cancer chemotherapy treatment	HCPCS
J9008	Cancer chemotherapy treatment	HCPCS
J9009	Cancer chemotherapy treatment	HCPCS
J9010	Cancer chemotherapy treatment	HCPCS
J9011	Cancer chemotherapy treatment	HCPCS
J9012	Cancer chemotherapy treatment	HCPCS
J9013	Cancer chemotherapy treatment	HCPCS
J9014	Cancer chemotherapy treatment	HCPCS
J9015	Cancer chemotherapy treatment	HCPCS
J9016	Cancer chemotherapy treatment	HCPCS
J9017	Cancer chemotherapy treatment	HCPCS
J9018	Cancer chemotherapy treatment	HCPCS
J9019	Cancer chemotherapy treatment	HCPCS
J9020	Cancer chemotherapy treatment	HCPCS
J9021	Cancer chemotherapy treatment	HCPCS
J9022	Cancer chemotherapy treatment	HCPCS
J9023	Cancer chemotherapy treatment	HCPCS
J9024	Cancer chemotherapy treatment	HCPCS
J9025	Cancer chemotherapy treatment	HCPCS
J9026	Cancer chemotherapy treatment	HCPCS
J9027	Cancer chemotherapy treatment	HCPCS
J9028	Cancer chemotherapy treatment	HCPCS
J9029	Cancer chemotherapy treatment	HCPCS
J9030	Cancer chemotherapy treatment	HCPCS
J9031	Cancer chemotherapy treatment	HCPCS
J9032	Cancer chemotherapy treatment	HCPCS
J9033	Cancer chemotherapy treatment	HCPCS
J9034	Cancer chemotherapy treatment	HCPCS
J9035	Cancer chemotherapy treatment	HCPCS
J9036	Cancer chemotherapy treatment	HCPCS
J9037	Cancer chemotherapy treatment	HCPCS
J9038	Cancer chemotherapy treatment	HCPCS
J9039	Cancer chemotherapy treatment	HCPCS
J9040	Cancer chemotherapy treatment	HCPCS
J9041	Cancer chemotherapy treatment	HCPCS
J9042	Cancer chemotherapy treatment	HCPCS
J9043	Cancer chemotherapy treatment	HCPCS
J9044	Cancer chemotherapy treatment	HCPCS
J9045	Cancer chemotherapy treatment	HCPCS
J9046	Cancer chemotherapy treatment	HCPCS
J9047	Cancer chemotherapy treatment	HCPCS
J9048	Cancer chemotherapy treatment	HCPCS
J9049	Cancer chemotherapy treatment	HCPCS
J9050	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9051	Cancer chemotherapy treatment	HCPCS
J9052	Cancer chemotherapy treatment	HCPCS
J9053	Cancer chemotherapy treatment	HCPCS
J9054	Cancer chemotherapy treatment	HCPCS
J9055	Cancer chemotherapy treatment	HCPCS
J9056	Cancer chemotherapy treatment	HCPCS
J9057	Cancer chemotherapy treatment	HCPCS
J9058	Cancer chemotherapy treatment	HCPCS
J9059	Cancer chemotherapy treatment	HCPCS
J9060	Cancer chemotherapy treatment	HCPCS
J9061	Cancer chemotherapy treatment	HCPCS
J9062	Cancer chemotherapy treatment	HCPCS
J9063	Cancer chemotherapy treatment	HCPCS
J9064	Cancer chemotherapy treatment	HCPCS
J9065	Cancer chemotherapy treatment	HCPCS
J9066	Cancer chemotherapy treatment	HCPCS
J9067	Cancer chemotherapy treatment	HCPCS
J9068	Cancer chemotherapy treatment	HCPCS
J9069	Cancer chemotherapy treatment	HCPCS
J9070	Cancer chemotherapy treatment	HCPCS
J9071	Cancer chemotherapy treatment	HCPCS
J9072	Cancer chemotherapy treatment	HCPCS
J9073	Cancer chemotherapy treatment	HCPCS
J9074	Cancer chemotherapy treatment	HCPCS
J9075	Cancer chemotherapy treatment	HCPCS
J9076	Cancer chemotherapy treatment	HCPCS
J9077	Cancer chemotherapy treatment	HCPCS
J9078	Cancer chemotherapy treatment	HCPCS
J9079	Cancer chemotherapy treatment	HCPCS
J9080	Cancer chemotherapy treatment	HCPCS
J9081	Cancer chemotherapy treatment	HCPCS
J9082	Cancer chemotherapy treatment	HCPCS
J9083	Cancer chemotherapy treatment	HCPCS
J9084	Cancer chemotherapy treatment	HCPCS
J9085	Cancer chemotherapy treatment	HCPCS
J9086	Cancer chemotherapy treatment	HCPCS
J9087	Cancer chemotherapy treatment	HCPCS
J9088	Cancer chemotherapy treatment	HCPCS
J9089	Cancer chemotherapy treatment	HCPCS
J9090	Cancer chemotherapy treatment	HCPCS
J9091	Cancer chemotherapy treatment	HCPCS
J9092	Cancer chemotherapy treatment	HCPCS
J9093	Cancer chemotherapy treatment	HCPCS
J9094	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9095	Cancer chemotherapy treatment	HCPCS
J9096	Cancer chemotherapy treatment	HCPCS
J9097	Cancer chemotherapy treatment	HCPCS
J9098	Cancer chemotherapy treatment	HCPCS
J9099	Cancer chemotherapy treatment	HCPCS
J9100	Cancer chemotherapy treatment	HCPCS
J9101	Cancer chemotherapy treatment	HCPCS
J9102	Cancer chemotherapy treatment	HCPCS
J9103	Cancer chemotherapy treatment	HCPCS
J9104	Cancer chemotherapy treatment	HCPCS
J9105	Cancer chemotherapy treatment	HCPCS
J9106	Cancer chemotherapy treatment	HCPCS
J9107	Cancer chemotherapy treatment	HCPCS
J9108	Cancer chemotherapy treatment	HCPCS
J9109	Cancer chemotherapy treatment	HCPCS
J9110	Cancer chemotherapy treatment	HCPCS
J9111	Cancer chemotherapy treatment	HCPCS
J9112	Cancer chemotherapy treatment	HCPCS
J9113	Cancer chemotherapy treatment	HCPCS
J9114	Cancer chemotherapy treatment	HCPCS
J9115	Cancer chemotherapy treatment	HCPCS
J9116	Cancer chemotherapy treatment	HCPCS
J9117	Cancer chemotherapy treatment	HCPCS
J9118	Cancer chemotherapy treatment	HCPCS
J9119	Cancer chemotherapy treatment	HCPCS
J9120	Cancer chemotherapy treatment	HCPCS
J9121	Cancer chemotherapy treatment	HCPCS
J9122	Cancer chemotherapy treatment	HCPCS
J9123	Cancer chemotherapy treatment	HCPCS
J9124	Cancer chemotherapy treatment	HCPCS
J9125	Cancer chemotherapy treatment	HCPCS
J9126	Cancer chemotherapy treatment	HCPCS
J9127	Cancer chemotherapy treatment	HCPCS
J9128	Cancer chemotherapy treatment	HCPCS
J9129	Cancer chemotherapy treatment	HCPCS
J9130	Cancer chemotherapy treatment	HCPCS
J9131	Cancer chemotherapy treatment	HCPCS
J9132	Cancer chemotherapy treatment	HCPCS
J9133	Cancer chemotherapy treatment	HCPCS
J9134	Cancer chemotherapy treatment	HCPCS
J9135	Cancer chemotherapy treatment	HCPCS
J9136	Cancer chemotherapy treatment	HCPCS
J9137	Cancer chemotherapy treatment	HCPCS
J9138	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9139	Cancer chemotherapy treatment	HCPCS
J9140	Cancer chemotherapy treatment	HCPCS
J9141	Cancer chemotherapy treatment	HCPCS
J9142	Cancer chemotherapy treatment	HCPCS
J9143	Cancer chemotherapy treatment	HCPCS
J9144	Cancer chemotherapy treatment	HCPCS
J9145	Cancer chemotherapy treatment	HCPCS
J9146	Cancer chemotherapy treatment	HCPCS
J9147	Cancer chemotherapy treatment	HCPCS
J9148	Cancer chemotherapy treatment	HCPCS
J9149	Cancer chemotherapy treatment	HCPCS
J9150	Cancer chemotherapy treatment	HCPCS
J9151	Cancer chemotherapy treatment	HCPCS
J9152	Cancer chemotherapy treatment	HCPCS
J9153	Cancer chemotherapy treatment	HCPCS
J9154	Cancer chemotherapy treatment	HCPCS
J9155	Cancer chemotherapy treatment	HCPCS
J9156	Cancer chemotherapy treatment	HCPCS
J9157	Cancer chemotherapy treatment	HCPCS
J9158	Cancer chemotherapy treatment	HCPCS
J9159	Cancer chemotherapy treatment	HCPCS
J9160	Cancer chemotherapy treatment	HCPCS
J9161	Cancer chemotherapy treatment	HCPCS
J9162	Cancer chemotherapy treatment	HCPCS
J9163	Cancer chemotherapy treatment	HCPCS
J9164	Cancer chemotherapy treatment	HCPCS
J9165	Cancer chemotherapy treatment	HCPCS
J9166	Cancer chemotherapy treatment	HCPCS
J9167	Cancer chemotherapy treatment	HCPCS
J9168	Cancer chemotherapy treatment	HCPCS
J9169	Cancer chemotherapy treatment	HCPCS
J9170	Cancer chemotherapy treatment	HCPCS
J9171	Cancer chemotherapy treatment	HCPCS
J9172	Cancer chemotherapy treatment	HCPCS
J9173	Cancer chemotherapy treatment	HCPCS
J9174	Cancer chemotherapy treatment	HCPCS
J9175	Cancer chemotherapy treatment	HCPCS
J9176	Cancer chemotherapy treatment	HCPCS
J9177	Cancer chemotherapy treatment	HCPCS
J9178	Cancer chemotherapy treatment	HCPCS
J9179	Cancer chemotherapy treatment	HCPCS
J9180	Cancer chemotherapy treatment	HCPCS
J9181	Cancer chemotherapy treatment	HCPCS
J9182	Cancer chemotherapy treatment	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
J9183	Cancer chemotherapy treatment	HCPCS
J9184	Cancer chemotherapy treatment	HCPCS
J9185	Cancer chemotherapy treatment	HCPCS
J9186	Cancer chemotherapy treatment	HCPCS
J9187	Cancer chemotherapy treatment	HCPCS
J9188	Cancer chemotherapy treatment	HCPCS
J9189	Cancer chemotherapy treatment	HCPCS
J9190	Cancer chemotherapy treatment	HCPCS
J9191	Cancer chemotherapy treatment	HCPCS
J9192	Cancer chemotherapy treatment	HCPCS
J9193	Cancer chemotherapy treatment	HCPCS
J9194	Cancer chemotherapy treatment	HCPCS
J9195	Cancer chemotherapy treatment	HCPCS
J9196	Cancer chemotherapy treatment	HCPCS
J9197	Cancer chemotherapy treatment	HCPCS
J9198	Cancer chemotherapy treatment	HCPCS
J9199	Cancer chemotherapy treatment	HCPCS
J9200	Cancer chemotherapy treatment	HCPCS
J9201	Cancer chemotherapy treatment	HCPCS
J9202	Cancer chemotherapy treatment	HCPCS
J9203	Cancer chemotherapy treatment	HCPCS
J9204	Cancer chemotherapy treatment	HCPCS
J9205	Cancer chemotherapy treatment	HCPCS
J9206	Cancer chemotherapy treatment	HCPCS
J9207	Cancer chemotherapy treatment	HCPCS
J9208	Cancer chemotherapy treatment	HCPCS
J9209	Cancer chemotherapy treatment	HCPCS
J9210	Cancer chemotherapy treatment	HCPCS
J9211	Cancer chemotherapy treatment	HCPCS
J9212	Cancer chemotherapy treatment	HCPCS
J9213	Cancer chemotherapy treatment	HCPCS
J9214	Cancer chemotherapy treatment	HCPCS
J9215	Cancer chemotherapy treatment	HCPCS
J9216	Cancer chemotherapy treatment	HCPCS
J9217	Cancer chemotherapy treatment	HCPCS
J9218	Cancer chemotherapy treatment	HCPCS
J9219	Cancer chemotherapy treatment	HCPCS
J9220	Cancer chemotherapy treatment	HCPCS
J9221	Cancer chemotherapy treatment	HCPCS
J9222	Cancer chemotherapy treatment	HCPCS
J9223	Cancer chemotherapy treatment	HCPCS
J9224	Cancer chemotherapy treatment	HCPCS
J9225	Cancer chemotherapy treatment	HCPCS
J9226	Cancer chemotherapy treatment	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
J9227	Cancer chemotherapy treatment	HCPCS
J9228	Cancer chemotherapy treatment	HCPCS
J9229	Cancer chemotherapy treatment	HCPCS
J9230	Cancer chemotherapy treatment	HCPCS
J9231	Cancer chemotherapy treatment	HCPCS
J9232	Cancer chemotherapy treatment	HCPCS
J9233	Cancer chemotherapy treatment	HCPCS
J9234	Cancer chemotherapy treatment	HCPCS
J9235	Cancer chemotherapy treatment	HCPCS
J9236	Cancer chemotherapy treatment	HCPCS
J9237	Cancer chemotherapy treatment	HCPCS
J9238	Cancer chemotherapy treatment	HCPCS
J9239	Cancer chemotherapy treatment	HCPCS
J9240	Cancer chemotherapy treatment	HCPCS
J9241	Cancer chemotherapy treatment	HCPCS
J9242	Cancer chemotherapy treatment	HCPCS
J9243	Cancer chemotherapy treatment	HCPCS
J9244	Cancer chemotherapy treatment	HCPCS
J9245	Cancer chemotherapy treatment	HCPCS
J9246	Cancer chemotherapy treatment	HCPCS
J9247	Cancer chemotherapy treatment	HCPCS
J9248	Cancer chemotherapy treatment	HCPCS
J9249	Cancer chemotherapy treatment	HCPCS
J9250	Cancer chemotherapy treatment	HCPCS
J9251	Cancer chemotherapy treatment	HCPCS
J9252	Cancer chemotherapy treatment	HCPCS
J9253	Cancer chemotherapy treatment	HCPCS
J9254	Cancer chemotherapy treatment	HCPCS
J9255	Cancer chemotherapy treatment	HCPCS
J9256	Cancer chemotherapy treatment	HCPCS
J9257	Cancer chemotherapy treatment	HCPCS
J9258	Cancer chemotherapy treatment	HCPCS
J9259	Cancer chemotherapy treatment	HCPCS
J9260	Cancer chemotherapy treatment	HCPCS
J9261	Cancer chemotherapy treatment	HCPCS
J9262	Cancer chemotherapy treatment	HCPCS
J9263	Cancer chemotherapy treatment	HCPCS
J9264	Cancer chemotherapy treatment	HCPCS
J9265	Cancer chemotherapy treatment	HCPCS
J9266	Cancer chemotherapy treatment	HCPCS
J9267	Cancer chemotherapy treatment	HCPCS
J9268	Cancer chemotherapy treatment	HCPCS
J9269	Cancer chemotherapy treatment	HCPCS
J9270	Cancer chemotherapy treatment	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
J9271	Cancer chemotherapy treatment	HCPCS
J9272	Cancer chemotherapy treatment	HCPCS
J9273	Cancer chemotherapy treatment	HCPCS
J9274	Cancer chemotherapy treatment	HCPCS
J9275	Cancer chemotherapy treatment	HCPCS
J9276	Cancer chemotherapy treatment	HCPCS
J9277	Cancer chemotherapy treatment	HCPCS
J9278	Cancer chemotherapy treatment	HCPCS
J9279	Cancer chemotherapy treatment	HCPCS
J9280	Cancer chemotherapy treatment	HCPCS
J9281	Cancer chemotherapy treatment	HCPCS
J9282	Cancer chemotherapy treatment	HCPCS
J9283	Cancer chemotherapy treatment	HCPCS
J9284	Cancer chemotherapy treatment	HCPCS
J9285	Cancer chemotherapy treatment	HCPCS
J9286	Cancer chemotherapy treatment	HCPCS
J9287	Cancer chemotherapy treatment	HCPCS
J9288	Cancer chemotherapy treatment	HCPCS
J9289	Cancer chemotherapy treatment	HCPCS
J9290	Cancer chemotherapy treatment	HCPCS
J9291	Cancer chemotherapy treatment	HCPCS
J9292	Cancer chemotherapy treatment	HCPCS
J9293	Cancer chemotherapy treatment	HCPCS
J9294	Cancer chemotherapy treatment	HCPCS
J9295	Cancer chemotherapy treatment	HCPCS
J9296	Cancer chemotherapy treatment	HCPCS
J9297	Cancer chemotherapy treatment	HCPCS
J9298	Cancer chemotherapy treatment	HCPCS
J9299	Cancer chemotherapy treatment	HCPCS
J9300	Cancer chemotherapy treatment	HCPCS
J9301	Cancer chemotherapy treatment	HCPCS
J9302	Cancer chemotherapy treatment	HCPCS
J9303	Cancer chemotherapy treatment	HCPCS
J9304	Cancer chemotherapy treatment	HCPCS
J9305	Cancer chemotherapy treatment	HCPCS
J9306	Cancer chemotherapy treatment	HCPCS
J9307	Cancer chemotherapy treatment	HCPCS
J9308	Cancer chemotherapy treatment	HCPCS
J9309	Cancer chemotherapy treatment	HCPCS
J9310	Cancer chemotherapy treatment	HCPCS
J9311	Cancer chemotherapy treatment	HCPCS
J9312	Cancer chemotherapy treatment	HCPCS
J9313	Cancer chemotherapy treatment	HCPCS
J9314	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9315	Cancer chemotherapy treatment	HCPCS
J9316	Cancer chemotherapy treatment	HCPCS
J9317	Cancer chemotherapy treatment	HCPCS
J9318	Cancer chemotherapy treatment	HCPCS
J9319	Cancer chemotherapy treatment	HCPCS
J9320	Cancer chemotherapy treatment	HCPCS
J9321	Cancer chemotherapy treatment	HCPCS
J9322	Cancer chemotherapy treatment	HCPCS
J9323	Cancer chemotherapy treatment	HCPCS
J9324	Cancer chemotherapy treatment	HCPCS
J9325	Cancer chemotherapy treatment	HCPCS
J9326	Cancer chemotherapy treatment	HCPCS
J9327	Cancer chemotherapy treatment	HCPCS
J9328	Cancer chemotherapy treatment	HCPCS
J9329	Cancer chemotherapy treatment	HCPCS
J9330	Cancer chemotherapy treatment	HCPCS
J9331	Cancer chemotherapy treatment	HCPCS
J9332	Cancer chemotherapy treatment	HCPCS
J9333	Cancer chemotherapy treatment	HCPCS
J9334	Cancer chemotherapy treatment	HCPCS
J9335	Cancer chemotherapy treatment	HCPCS
J9336	Cancer chemotherapy treatment	HCPCS
J9337	Cancer chemotherapy treatment	HCPCS
J9338	Cancer chemotherapy treatment	HCPCS
J9339	Cancer chemotherapy treatment	HCPCS
J9340	Cancer chemotherapy treatment	HCPCS
J9341	Cancer chemotherapy treatment	HCPCS
J9342	Cancer chemotherapy treatment	HCPCS
J9343	Cancer chemotherapy treatment	HCPCS
J9344	Cancer chemotherapy treatment	HCPCS
J9345	Cancer chemotherapy treatment	HCPCS
J9346	Cancer chemotherapy treatment	HCPCS
J9347	Cancer chemotherapy treatment	HCPCS
J9348	Cancer chemotherapy treatment	HCPCS
J9349	Cancer chemotherapy treatment	HCPCS
J9350	Cancer chemotherapy treatment	HCPCS
J9351	Cancer chemotherapy treatment	HCPCS
J9352	Cancer chemotherapy treatment	HCPCS
J9353	Cancer chemotherapy treatment	HCPCS
J9354	Cancer chemotherapy treatment	HCPCS
J9355	Cancer chemotherapy treatment	HCPCS
J9356	Cancer chemotherapy treatment	HCPCS
J9357	Cancer chemotherapy treatment	HCPCS
J9358	Cancer chemotherapy treatment	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
J9359	Cancer chemotherapy treatment	HCPCS
J9360	Cancer chemotherapy treatment	HCPCS
J9361	Cancer chemotherapy treatment	HCPCS
J9362	Cancer chemotherapy treatment	HCPCS
J9363	Cancer chemotherapy treatment	HCPCS
J9364	Cancer chemotherapy treatment	HCPCS
J9365	Cancer chemotherapy treatment	HCPCS
J9366	Cancer chemotherapy treatment	HCPCS
J9367	Cancer chemotherapy treatment	HCPCS
J9368	Cancer chemotherapy treatment	HCPCS
J9369	Cancer chemotherapy treatment	HCPCS
J9370	Cancer chemotherapy treatment	HCPCS
J9371	Cancer chemotherapy treatment	HCPCS
J9372	Cancer chemotherapy treatment	HCPCS
J9373	Cancer chemotherapy treatment	HCPCS
J9374	Cancer chemotherapy treatment	HCPCS
J9375	Cancer chemotherapy treatment	HCPCS
J9376	Cancer chemotherapy treatment	HCPCS
J9377	Cancer chemotherapy treatment	HCPCS
J9378	Cancer chemotherapy treatment	HCPCS
J9379	Cancer chemotherapy treatment	HCPCS
J9380	Cancer chemotherapy treatment	HCPCS
J9381	Cancer chemotherapy treatment	HCPCS
J9382	Cancer chemotherapy treatment	HCPCS
J9383	Cancer chemotherapy treatment	HCPCS
J9384	Cancer chemotherapy treatment	HCPCS
J9385	Cancer chemotherapy treatment	HCPCS
J9386	Cancer chemotherapy treatment	HCPCS
J9387	Cancer chemotherapy treatment	HCPCS
J9388	Cancer chemotherapy treatment	HCPCS
J9389	Cancer chemotherapy treatment	HCPCS
J9390	Cancer chemotherapy treatment	HCPCS
J9391	Cancer chemotherapy treatment	HCPCS
J9392	Cancer chemotherapy treatment	HCPCS
J9393	Cancer chemotherapy treatment	HCPCS
J9394	Cancer chemotherapy treatment	HCPCS
J9395	Cancer chemotherapy treatment	HCPCS
J9396	Cancer chemotherapy treatment	HCPCS
J9397	Cancer chemotherapy treatment	HCPCS
J9398	Cancer chemotherapy treatment	HCPCS
J9399	Cancer chemotherapy treatment	HCPCS
J9400	Cancer chemotherapy treatment	HCPCS
J9401	Cancer chemotherapy treatment	HCPCS
J9402	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9403	Cancer chemotherapy treatment	HCPCS
J9404	Cancer chemotherapy treatment	HCPCS
J9405	Cancer chemotherapy treatment	HCPCS
J9406	Cancer chemotherapy treatment	HCPCS
J9407	Cancer chemotherapy treatment	HCPCS
J9408	Cancer chemotherapy treatment	HCPCS
J9409	Cancer chemotherapy treatment	HCPCS
J9410	Cancer chemotherapy treatment	HCPCS
J9411	Cancer chemotherapy treatment	HCPCS
J9412	Cancer chemotherapy treatment	HCPCS
J9413	Cancer chemotherapy treatment	HCPCS
J9414	Cancer chemotherapy treatment	HCPCS
J9415	Cancer chemotherapy treatment	HCPCS
J9416	Cancer chemotherapy treatment	HCPCS
J9417	Cancer chemotherapy treatment	HCPCS
J9418	Cancer chemotherapy treatment	HCPCS
J9419	Cancer chemotherapy treatment	HCPCS
J9420	Cancer chemotherapy treatment	HCPCS
J9421	Cancer chemotherapy treatment	HCPCS
J9422	Cancer chemotherapy treatment	HCPCS
J9423	Cancer chemotherapy treatment	HCPCS
J9424	Cancer chemotherapy treatment	HCPCS
J9425	Cancer chemotherapy treatment	HCPCS
J9426	Cancer chemotherapy treatment	HCPCS
J9427	Cancer chemotherapy treatment	HCPCS
J9428	Cancer chemotherapy treatment	HCPCS
J9429	Cancer chemotherapy treatment	HCPCS
J9430	Cancer chemotherapy treatment	HCPCS
J9431	Cancer chemotherapy treatment	HCPCS
J9432	Cancer chemotherapy treatment	HCPCS
J9433	Cancer chemotherapy treatment	HCPCS
J9434	Cancer chemotherapy treatment	HCPCS
J9435	Cancer chemotherapy treatment	HCPCS
J9436	Cancer chemotherapy treatment	HCPCS
J9437	Cancer chemotherapy treatment	HCPCS
J9438	Cancer chemotherapy treatment	HCPCS
J9439	Cancer chemotherapy treatment	HCPCS
J9440	Cancer chemotherapy treatment	HCPCS
J9441	Cancer chemotherapy treatment	HCPCS
J9442	Cancer chemotherapy treatment	HCPCS
J9443	Cancer chemotherapy treatment	HCPCS
J9444	Cancer chemotherapy treatment	HCPCS
J9445	Cancer chemotherapy treatment	HCPCS
J9446	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9447	Cancer chemotherapy treatment	HCPCS
J9448	Cancer chemotherapy treatment	HCPCS
J9449	Cancer chemotherapy treatment	HCPCS
J9450	Cancer chemotherapy treatment	HCPCS
J9451	Cancer chemotherapy treatment	HCPCS
J9452	Cancer chemotherapy treatment	HCPCS
J9453	Cancer chemotherapy treatment	HCPCS
J9454	Cancer chemotherapy treatment	HCPCS
J9455	Cancer chemotherapy treatment	HCPCS
J9456	Cancer chemotherapy treatment	HCPCS
J9457	Cancer chemotherapy treatment	HCPCS
J9458	Cancer chemotherapy treatment	HCPCS
J9459	Cancer chemotherapy treatment	HCPCS
J9460	Cancer chemotherapy treatment	HCPCS
J9461	Cancer chemotherapy treatment	HCPCS
J9462	Cancer chemotherapy treatment	HCPCS
J9463	Cancer chemotherapy treatment	HCPCS
J9464	Cancer chemotherapy treatment	HCPCS
J9465	Cancer chemotherapy treatment	HCPCS
J9466	Cancer chemotherapy treatment	HCPCS
J9467	Cancer chemotherapy treatment	HCPCS
J9468	Cancer chemotherapy treatment	HCPCS
J9469	Cancer chemotherapy treatment	HCPCS
J9470	Cancer chemotherapy treatment	HCPCS
J9471	Cancer chemotherapy treatment	HCPCS
J9472	Cancer chemotherapy treatment	HCPCS
J9473	Cancer chemotherapy treatment	HCPCS
J9474	Cancer chemotherapy treatment	HCPCS
J9475	Cancer chemotherapy treatment	HCPCS
J9476	Cancer chemotherapy treatment	HCPCS
J9477	Cancer chemotherapy treatment	HCPCS
J9478	Cancer chemotherapy treatment	HCPCS
J9479	Cancer chemotherapy treatment	HCPCS
J9480	Cancer chemotherapy treatment	HCPCS
J9481	Cancer chemotherapy treatment	HCPCS
J9482	Cancer chemotherapy treatment	HCPCS
J9483	Cancer chemotherapy treatment	HCPCS
J9484	Cancer chemotherapy treatment	HCPCS
J9485	Cancer chemotherapy treatment	HCPCS
J9486	Cancer chemotherapy treatment	HCPCS
J9487	Cancer chemotherapy treatment	HCPCS
J9488	Cancer chemotherapy treatment	HCPCS
J9489	Cancer chemotherapy treatment	HCPCS
J9490	Cancer chemotherapy treatment	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
J9491	Cancer chemotherapy treatment	HCPCS
J9492	Cancer chemotherapy treatment	HCPCS
J9493	Cancer chemotherapy treatment	HCPCS
J9494	Cancer chemotherapy treatment	HCPCS
J9495	Cancer chemotherapy treatment	HCPCS
J9496	Cancer chemotherapy treatment	HCPCS
J9497	Cancer chemotherapy treatment	HCPCS
J9498	Cancer chemotherapy treatment	HCPCS
J9499	Cancer chemotherapy treatment	HCPCS
J9500	Cancer chemotherapy treatment	HCPCS
J9501	Cancer chemotherapy treatment	HCPCS
J9502	Cancer chemotherapy treatment	HCPCS
J9503	Cancer chemotherapy treatment	HCPCS
J9504	Cancer chemotherapy treatment	HCPCS
J9505	Cancer chemotherapy treatment	HCPCS
J9506	Cancer chemotherapy treatment	HCPCS
J9507	Cancer chemotherapy treatment	HCPCS
J9508	Cancer chemotherapy treatment	HCPCS
J9509	Cancer chemotherapy treatment	HCPCS
J9510	Cancer chemotherapy treatment	HCPCS
J9511	Cancer chemotherapy treatment	HCPCS
J9512	Cancer chemotherapy treatment	HCPCS
J9513	Cancer chemotherapy treatment	HCPCS
J9514	Cancer chemotherapy treatment	HCPCS
J9515	Cancer chemotherapy treatment	HCPCS
J9516	Cancer chemotherapy treatment	HCPCS
J9517	Cancer chemotherapy treatment	HCPCS
J9518	Cancer chemotherapy treatment	HCPCS
J9519	Cancer chemotherapy treatment	HCPCS
J9520	Cancer chemotherapy treatment	HCPCS
J9521	Cancer chemotherapy treatment	HCPCS
J9522	Cancer chemotherapy treatment	HCPCS
J9523	Cancer chemotherapy treatment	HCPCS
J9524	Cancer chemotherapy treatment	HCPCS
J9525	Cancer chemotherapy treatment	HCPCS
J9526	Cancer chemotherapy treatment	HCPCS
J9527	Cancer chemotherapy treatment	HCPCS
J9528	Cancer chemotherapy treatment	HCPCS
J9529	Cancer chemotherapy treatment	HCPCS
J9530	Cancer chemotherapy treatment	HCPCS
J9531	Cancer chemotherapy treatment	HCPCS
J9532	Cancer chemotherapy treatment	HCPCS
J9533	Cancer chemotherapy treatment	HCPCS
J9534	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9535	Cancer chemotherapy treatment	HCPCS
J9536	Cancer chemotherapy treatment	HCPCS
J9537	Cancer chemotherapy treatment	HCPCS
J9538	Cancer chemotherapy treatment	HCPCS
J9539	Cancer chemotherapy treatment	HCPCS
J9540	Cancer chemotherapy treatment	HCPCS
J9541	Cancer chemotherapy treatment	HCPCS
J9542	Cancer chemotherapy treatment	HCPCS
J9543	Cancer chemotherapy treatment	HCPCS
J9544	Cancer chemotherapy treatment	HCPCS
J9545	Cancer chemotherapy treatment	HCPCS
J9546	Cancer chemotherapy treatment	HCPCS
J9547	Cancer chemotherapy treatment	HCPCS
J9548	Cancer chemotherapy treatment	HCPCS
J9549	Cancer chemotherapy treatment	HCPCS
J9550	Cancer chemotherapy treatment	HCPCS
J9551	Cancer chemotherapy treatment	HCPCS
J9552	Cancer chemotherapy treatment	HCPCS
J9553	Cancer chemotherapy treatment	HCPCS
J9554	Cancer chemotherapy treatment	HCPCS
J9555	Cancer chemotherapy treatment	HCPCS
J9556	Cancer chemotherapy treatment	HCPCS
J9557	Cancer chemotherapy treatment	HCPCS
J9558	Cancer chemotherapy treatment	HCPCS
J9559	Cancer chemotherapy treatment	HCPCS
J9560	Cancer chemotherapy treatment	HCPCS
J9561	Cancer chemotherapy treatment	HCPCS
J9562	Cancer chemotherapy treatment	HCPCS
J9563	Cancer chemotherapy treatment	HCPCS
J9564	Cancer chemotherapy treatment	HCPCS
J9565	Cancer chemotherapy treatment	HCPCS
J9566	Cancer chemotherapy treatment	HCPCS
J9567	Cancer chemotherapy treatment	HCPCS
J9568	Cancer chemotherapy treatment	HCPCS
J9569	Cancer chemotherapy treatment	HCPCS
J9570	Cancer chemotherapy treatment	HCPCS
J9571	Cancer chemotherapy treatment	HCPCS
J9572	Cancer chemotherapy treatment	HCPCS
J9573	Cancer chemotherapy treatment	HCPCS
J9574	Cancer chemotherapy treatment	HCPCS
J9575	Cancer chemotherapy treatment	HCPCS
J9576	Cancer chemotherapy treatment	HCPCS
J9577	Cancer chemotherapy treatment	HCPCS
J9578	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9579	Cancer chemotherapy treatment	HCPCS
J9580	Cancer chemotherapy treatment	HCPCS
J9581	Cancer chemotherapy treatment	HCPCS
J9582	Cancer chemotherapy treatment	HCPCS
J9583	Cancer chemotherapy treatment	HCPCS
J9584	Cancer chemotherapy treatment	HCPCS
J9585	Cancer chemotherapy treatment	HCPCS
J9586	Cancer chemotherapy treatment	HCPCS
J9587	Cancer chemotherapy treatment	HCPCS
J9588	Cancer chemotherapy treatment	HCPCS
J9589	Cancer chemotherapy treatment	HCPCS
J9590	Cancer chemotherapy treatment	HCPCS
J9591	Cancer chemotherapy treatment	HCPCS
J9592	Cancer chemotherapy treatment	HCPCS
J9593	Cancer chemotherapy treatment	HCPCS
J9594	Cancer chemotherapy treatment	HCPCS
J9595	Cancer chemotherapy treatment	HCPCS
J9596	Cancer chemotherapy treatment	HCPCS
J9597	Cancer chemotherapy treatment	HCPCS
J9598	Cancer chemotherapy treatment	HCPCS
J9599	Cancer chemotherapy treatment	HCPCS
J9600	Cancer chemotherapy treatment	HCPCS
J9601	Cancer chemotherapy treatment	HCPCS
J9602	Cancer chemotherapy treatment	HCPCS
J9603	Cancer chemotherapy treatment	HCPCS
J9604	Cancer chemotherapy treatment	HCPCS
J9605	Cancer chemotherapy treatment	HCPCS
J9606	Cancer chemotherapy treatment	HCPCS
J9607	Cancer chemotherapy treatment	HCPCS
J9608	Cancer chemotherapy treatment	HCPCS
J9609	Cancer chemotherapy treatment	HCPCS
J9610	Cancer chemotherapy treatment	HCPCS
J9611	Cancer chemotherapy treatment	HCPCS
J9612	Cancer chemotherapy treatment	HCPCS
J9613	Cancer chemotherapy treatment	HCPCS
J9614	Cancer chemotherapy treatment	HCPCS
J9615	Cancer chemotherapy treatment	HCPCS
J9616	Cancer chemotherapy treatment	HCPCS
J9617	Cancer chemotherapy treatment	HCPCS
J9618	Cancer chemotherapy treatment	HCPCS
J9619	Cancer chemotherapy treatment	HCPCS
J9620	Cancer chemotherapy treatment	HCPCS
J9621	Cancer chemotherapy treatment	HCPCS
J9622	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9623	Cancer chemotherapy treatment	HCPCS
J9624	Cancer chemotherapy treatment	HCPCS
J9625	Cancer chemotherapy treatment	HCPCS
J9626	Cancer chemotherapy treatment	HCPCS
J9627	Cancer chemotherapy treatment	HCPCS
J9628	Cancer chemotherapy treatment	HCPCS
J9629	Cancer chemotherapy treatment	HCPCS
J9630	Cancer chemotherapy treatment	HCPCS
J9631	Cancer chemotherapy treatment	HCPCS
J9632	Cancer chemotherapy treatment	HCPCS
J9633	Cancer chemotherapy treatment	HCPCS
J9634	Cancer chemotherapy treatment	HCPCS
J9635	Cancer chemotherapy treatment	HCPCS
J9636	Cancer chemotherapy treatment	HCPCS
J9637	Cancer chemotherapy treatment	HCPCS
J9638	Cancer chemotherapy treatment	HCPCS
J9639	Cancer chemotherapy treatment	HCPCS
J9640	Cancer chemotherapy treatment	HCPCS
J9641	Cancer chemotherapy treatment	HCPCS
J9642	Cancer chemotherapy treatment	HCPCS
J9643	Cancer chemotherapy treatment	HCPCS
J9644	Cancer chemotherapy treatment	HCPCS
J9645	Cancer chemotherapy treatment	HCPCS
J9646	Cancer chemotherapy treatment	HCPCS
J9647	Cancer chemotherapy treatment	HCPCS
J9648	Cancer chemotherapy treatment	HCPCS
J9649	Cancer chemotherapy treatment	HCPCS
J9650	Cancer chemotherapy treatment	HCPCS
J9651	Cancer chemotherapy treatment	HCPCS
J9652	Cancer chemotherapy treatment	HCPCS
J9653	Cancer chemotherapy treatment	HCPCS
J9654	Cancer chemotherapy treatment	HCPCS
J9655	Cancer chemotherapy treatment	HCPCS
J9656	Cancer chemotherapy treatment	HCPCS
J9657	Cancer chemotherapy treatment	HCPCS
J9658	Cancer chemotherapy treatment	HCPCS
J9659	Cancer chemotherapy treatment	HCPCS
J9660	Cancer chemotherapy treatment	HCPCS
J9661	Cancer chemotherapy treatment	HCPCS
J9662	Cancer chemotherapy treatment	HCPCS
J9663	Cancer chemotherapy treatment	HCPCS
J9664	Cancer chemotherapy treatment	HCPCS
J9665	Cancer chemotherapy treatment	HCPCS
J9666	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9667	Cancer chemotherapy treatment	HCPCS
J9668	Cancer chemotherapy treatment	HCPCS
J9669	Cancer chemotherapy treatment	HCPCS
J9670	Cancer chemotherapy treatment	HCPCS
J9671	Cancer chemotherapy treatment	HCPCS
J9672	Cancer chemotherapy treatment	HCPCS
J9673	Cancer chemotherapy treatment	HCPCS
J9674	Cancer chemotherapy treatment	HCPCS
J9675	Cancer chemotherapy treatment	HCPCS
J9676	Cancer chemotherapy treatment	HCPCS
J9677	Cancer chemotherapy treatment	HCPCS
J9678	Cancer chemotherapy treatment	HCPCS
J9679	Cancer chemotherapy treatment	HCPCS
J9680	Cancer chemotherapy treatment	HCPCS
J9681	Cancer chemotherapy treatment	HCPCS
J9682	Cancer chemotherapy treatment	HCPCS
J9683	Cancer chemotherapy treatment	HCPCS
J9684	Cancer chemotherapy treatment	HCPCS
J9685	Cancer chemotherapy treatment	HCPCS
J9686	Cancer chemotherapy treatment	HCPCS
J9687	Cancer chemotherapy treatment	HCPCS
J9688	Cancer chemotherapy treatment	HCPCS
J9689	Cancer chemotherapy treatment	HCPCS
J9690	Cancer chemotherapy treatment	HCPCS
J9691	Cancer chemotherapy treatment	HCPCS
J9692	Cancer chemotherapy treatment	HCPCS
J9693	Cancer chemotherapy treatment	HCPCS
J9694	Cancer chemotherapy treatment	HCPCS
J9695	Cancer chemotherapy treatment	HCPCS
J9696	Cancer chemotherapy treatment	HCPCS
J9697	Cancer chemotherapy treatment	HCPCS
J9698	Cancer chemotherapy treatment	HCPCS
J9699	Cancer chemotherapy treatment	HCPCS
J9700	Cancer chemotherapy treatment	HCPCS
J9701	Cancer chemotherapy treatment	HCPCS
J9702	Cancer chemotherapy treatment	HCPCS
J9703	Cancer chemotherapy treatment	HCPCS
J9704	Cancer chemotherapy treatment	HCPCS
J9705	Cancer chemotherapy treatment	HCPCS
J9706	Cancer chemotherapy treatment	HCPCS
J9707	Cancer chemotherapy treatment	HCPCS
J9708	Cancer chemotherapy treatment	HCPCS
J9709	Cancer chemotherapy treatment	HCPCS
J9710	Cancer chemotherapy treatment	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
J9711	Cancer chemotherapy treatment	HCPCS
J9712	Cancer chemotherapy treatment	HCPCS
J9713	Cancer chemotherapy treatment	HCPCS
J9714	Cancer chemotherapy treatment	HCPCS
J9715	Cancer chemotherapy treatment	HCPCS
J9716	Cancer chemotherapy treatment	HCPCS
J9717	Cancer chemotherapy treatment	HCPCS
J9718	Cancer chemotherapy treatment	HCPCS
J9719	Cancer chemotherapy treatment	HCPCS
J9720	Cancer chemotherapy treatment	HCPCS
J9721	Cancer chemotherapy treatment	HCPCS
J9722	Cancer chemotherapy treatment	HCPCS
J9723	Cancer chemotherapy treatment	HCPCS
J9724	Cancer chemotherapy treatment	HCPCS
J9725	Cancer chemotherapy treatment	HCPCS
J9726	Cancer chemotherapy treatment	HCPCS
J9727	Cancer chemotherapy treatment	HCPCS
J9728	Cancer chemotherapy treatment	HCPCS
J9729	Cancer chemotherapy treatment	HCPCS
J9730	Cancer chemotherapy treatment	HCPCS
J9731	Cancer chemotherapy treatment	HCPCS
J9732	Cancer chemotherapy treatment	HCPCS
J9733	Cancer chemotherapy treatment	HCPCS
J9734	Cancer chemotherapy treatment	HCPCS
J9735	Cancer chemotherapy treatment	HCPCS
J9736	Cancer chemotherapy treatment	HCPCS
J9737	Cancer chemotherapy treatment	HCPCS
J9738	Cancer chemotherapy treatment	HCPCS
J9739	Cancer chemotherapy treatment	HCPCS
J9740	Cancer chemotherapy treatment	HCPCS
J9741	Cancer chemotherapy treatment	HCPCS
J9742	Cancer chemotherapy treatment	HCPCS
J9743	Cancer chemotherapy treatment	HCPCS
J9744	Cancer chemotherapy treatment	HCPCS
J9745	Cancer chemotherapy treatment	HCPCS
J9746	Cancer chemotherapy treatment	HCPCS
J9747	Cancer chemotherapy treatment	HCPCS
J9748	Cancer chemotherapy treatment	HCPCS
J9749	Cancer chemotherapy treatment	HCPCS
J9750	Cancer chemotherapy treatment	HCPCS
J9751	Cancer chemotherapy treatment	HCPCS
J9752	Cancer chemotherapy treatment	HCPCS
J9753	Cancer chemotherapy treatment	HCPCS
J9754	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9755	Cancer chemotherapy treatment	HCPCS
J9756	Cancer chemotherapy treatment	HCPCS
J9757	Cancer chemotherapy treatment	HCPCS
J9758	Cancer chemotherapy treatment	HCPCS
J9759	Cancer chemotherapy treatment	HCPCS
J9760	Cancer chemotherapy treatment	HCPCS
J9761	Cancer chemotherapy treatment	HCPCS
J9762	Cancer chemotherapy treatment	HCPCS
J9763	Cancer chemotherapy treatment	HCPCS
J9764	Cancer chemotherapy treatment	HCPCS
J9765	Cancer chemotherapy treatment	HCPCS
J9766	Cancer chemotherapy treatment	HCPCS
J9767	Cancer chemotherapy treatment	HCPCS
J9768	Cancer chemotherapy treatment	HCPCS
J9769	Cancer chemotherapy treatment	HCPCS
J9770	Cancer chemotherapy treatment	HCPCS
J9771	Cancer chemotherapy treatment	HCPCS
J9772	Cancer chemotherapy treatment	HCPCS
J9773	Cancer chemotherapy treatment	HCPCS
J9774	Cancer chemotherapy treatment	HCPCS
J9775	Cancer chemotherapy treatment	HCPCS
J9776	Cancer chemotherapy treatment	HCPCS
J9777	Cancer chemotherapy treatment	HCPCS
J9778	Cancer chemotherapy treatment	HCPCS
J9779	Cancer chemotherapy treatment	HCPCS
J9780	Cancer chemotherapy treatment	HCPCS
J9781	Cancer chemotherapy treatment	HCPCS
J9782	Cancer chemotherapy treatment	HCPCS
J9783	Cancer chemotherapy treatment	HCPCS
J9784	Cancer chemotherapy treatment	HCPCS
J9785	Cancer chemotherapy treatment	HCPCS
J9786	Cancer chemotherapy treatment	HCPCS
J9787	Cancer chemotherapy treatment	HCPCS
J9788	Cancer chemotherapy treatment	HCPCS
J9789	Cancer chemotherapy treatment	HCPCS
J9790	Cancer chemotherapy treatment	HCPCS
J9791	Cancer chemotherapy treatment	HCPCS
J9792	Cancer chemotherapy treatment	HCPCS
J9793	Cancer chemotherapy treatment	HCPCS
J9794	Cancer chemotherapy treatment	HCPCS
J9795	Cancer chemotherapy treatment	HCPCS
J9796	Cancer chemotherapy treatment	HCPCS
J9797	Cancer chemotherapy treatment	HCPCS
J9798	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9799	Cancer chemotherapy treatment	HCPCS
J9800	Cancer chemotherapy treatment	HCPCS
J9801	Cancer chemotherapy treatment	HCPCS
J9802	Cancer chemotherapy treatment	HCPCS
J9803	Cancer chemotherapy treatment	HCPCS
J9804	Cancer chemotherapy treatment	HCPCS
J9805	Cancer chemotherapy treatment	HCPCS
J9806	Cancer chemotherapy treatment	HCPCS
J9807	Cancer chemotherapy treatment	HCPCS
J9808	Cancer chemotherapy treatment	HCPCS
J9809	Cancer chemotherapy treatment	HCPCS
J9810	Cancer chemotherapy treatment	HCPCS
J9811	Cancer chemotherapy treatment	HCPCS
J9812	Cancer chemotherapy treatment	HCPCS
J9813	Cancer chemotherapy treatment	HCPCS
J9814	Cancer chemotherapy treatment	HCPCS
J9815	Cancer chemotherapy treatment	HCPCS
J9816	Cancer chemotherapy treatment	HCPCS
J9817	Cancer chemotherapy treatment	HCPCS
J9818	Cancer chemotherapy treatment	HCPCS
J9819	Cancer chemotherapy treatment	HCPCS
J9820	Cancer chemotherapy treatment	HCPCS
J9821	Cancer chemotherapy treatment	HCPCS
J9822	Cancer chemotherapy treatment	HCPCS
J9823	Cancer chemotherapy treatment	HCPCS
J9824	Cancer chemotherapy treatment	HCPCS
J9825	Cancer chemotherapy treatment	HCPCS
J9826	Cancer chemotherapy treatment	HCPCS
J9827	Cancer chemotherapy treatment	HCPCS
J9828	Cancer chemotherapy treatment	HCPCS
J9829	Cancer chemotherapy treatment	HCPCS
J9830	Cancer chemotherapy treatment	HCPCS
J9831	Cancer chemotherapy treatment	HCPCS
J9832	Cancer chemotherapy treatment	HCPCS
J9833	Cancer chemotherapy treatment	HCPCS
J9834	Cancer chemotherapy treatment	HCPCS
J9835	Cancer chemotherapy treatment	HCPCS
J9836	Cancer chemotherapy treatment	HCPCS
J9837	Cancer chemotherapy treatment	HCPCS
J9838	Cancer chemotherapy treatment	HCPCS
J9839	Cancer chemotherapy treatment	HCPCS
J9840	Cancer chemotherapy treatment	HCPCS
J9841	Cancer chemotherapy treatment	HCPCS
J9842	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9843	Cancer chemotherapy treatment	HCPCS
J9844	Cancer chemotherapy treatment	HCPCS
J9845	Cancer chemotherapy treatment	HCPCS
J9846	Cancer chemotherapy treatment	HCPCS
J9847	Cancer chemotherapy treatment	HCPCS
J9848	Cancer chemotherapy treatment	HCPCS
J9849	Cancer chemotherapy treatment	HCPCS
J9850	Cancer chemotherapy treatment	HCPCS
J9851	Cancer chemotherapy treatment	HCPCS
J9852	Cancer chemotherapy treatment	HCPCS
J9853	Cancer chemotherapy treatment	HCPCS
J9854	Cancer chemotherapy treatment	HCPCS
J9855	Cancer chemotherapy treatment	HCPCS
J9856	Cancer chemotherapy treatment	HCPCS
J9857	Cancer chemotherapy treatment	HCPCS
J9858	Cancer chemotherapy treatment	HCPCS
J9859	Cancer chemotherapy treatment	HCPCS
J9860	Cancer chemotherapy treatment	HCPCS
J9861	Cancer chemotherapy treatment	HCPCS
J9862	Cancer chemotherapy treatment	HCPCS
J9863	Cancer chemotherapy treatment	HCPCS
J9864	Cancer chemotherapy treatment	HCPCS
J9865	Cancer chemotherapy treatment	HCPCS
J9866	Cancer chemotherapy treatment	HCPCS
J9867	Cancer chemotherapy treatment	HCPCS
J9868	Cancer chemotherapy treatment	HCPCS
J9869	Cancer chemotherapy treatment	HCPCS
J9870	Cancer chemotherapy treatment	HCPCS
J9871	Cancer chemotherapy treatment	HCPCS
J9872	Cancer chemotherapy treatment	HCPCS
J9873	Cancer chemotherapy treatment	HCPCS
J9874	Cancer chemotherapy treatment	HCPCS
J9875	Cancer chemotherapy treatment	HCPCS
J9876	Cancer chemotherapy treatment	HCPCS
J9877	Cancer chemotherapy treatment	HCPCS
J9878	Cancer chemotherapy treatment	HCPCS
J9879	Cancer chemotherapy treatment	HCPCS
J9880	Cancer chemotherapy treatment	HCPCS
J9881	Cancer chemotherapy treatment	HCPCS
J9882	Cancer chemotherapy treatment	HCPCS
J9883	Cancer chemotherapy treatment	HCPCS
J9884	Cancer chemotherapy treatment	HCPCS
J9885	Cancer chemotherapy treatment	HCPCS
J9886	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9887	Cancer chemotherapy treatment	HCPCS
J9888	Cancer chemotherapy treatment	HCPCS
J9889	Cancer chemotherapy treatment	HCPCS
J9890	Cancer chemotherapy treatment	HCPCS
J9891	Cancer chemotherapy treatment	HCPCS
J9892	Cancer chemotherapy treatment	HCPCS
J9893	Cancer chemotherapy treatment	HCPCS
J9894	Cancer chemotherapy treatment	HCPCS
J9895	Cancer chemotherapy treatment	HCPCS
J9896	Cancer chemotherapy treatment	HCPCS
J9897	Cancer chemotherapy treatment	HCPCS
J9898	Cancer chemotherapy treatment	HCPCS
J9899	Cancer chemotherapy treatment	HCPCS
J9900	Cancer chemotherapy treatment	HCPCS
J9901	Cancer chemotherapy treatment	HCPCS
J9902	Cancer chemotherapy treatment	HCPCS
J9903	Cancer chemotherapy treatment	HCPCS
J9904	Cancer chemotherapy treatment	HCPCS
J9905	Cancer chemotherapy treatment	HCPCS
J9906	Cancer chemotherapy treatment	HCPCS
J9907	Cancer chemotherapy treatment	HCPCS
J9908	Cancer chemotherapy treatment	HCPCS
J9909	Cancer chemotherapy treatment	HCPCS
J9910	Cancer chemotherapy treatment	HCPCS
J9911	Cancer chemotherapy treatment	HCPCS
J9912	Cancer chemotherapy treatment	HCPCS
J9913	Cancer chemotherapy treatment	HCPCS
J9914	Cancer chemotherapy treatment	HCPCS
J9915	Cancer chemotherapy treatment	HCPCS
J9916	Cancer chemotherapy treatment	HCPCS
J9917	Cancer chemotherapy treatment	HCPCS
J9918	Cancer chemotherapy treatment	HCPCS
J9919	Cancer chemotherapy treatment	HCPCS
J9920	Cancer chemotherapy treatment	HCPCS
J9921	Cancer chemotherapy treatment	HCPCS
J9922	Cancer chemotherapy treatment	HCPCS
J9923	Cancer chemotherapy treatment	HCPCS
J9924	Cancer chemotherapy treatment	HCPCS
J9925	Cancer chemotherapy treatment	HCPCS
J9926	Cancer chemotherapy treatment	HCPCS
J9927	Cancer chemotherapy treatment	HCPCS
J9928	Cancer chemotherapy treatment	HCPCS
J9929	Cancer chemotherapy treatment	HCPCS
J9930	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9931	Cancer chemotherapy treatment	HCPCS
J9932	Cancer chemotherapy treatment	HCPCS
J9933	Cancer chemotherapy treatment	HCPCS
J9934	Cancer chemotherapy treatment	HCPCS
J9935	Cancer chemotherapy treatment	HCPCS
J9936	Cancer chemotherapy treatment	HCPCS
J9937	Cancer chemotherapy treatment	HCPCS
J9938	Cancer chemotherapy treatment	HCPCS
J9939	Cancer chemotherapy treatment	HCPCS
J9940	Cancer chemotherapy treatment	HCPCS
J9941	Cancer chemotherapy treatment	HCPCS
J9942	Cancer chemotherapy treatment	HCPCS
J9943	Cancer chemotherapy treatment	HCPCS
J9944	Cancer chemotherapy treatment	HCPCS
J9945	Cancer chemotherapy treatment	HCPCS
J9946	Cancer chemotherapy treatment	HCPCS
J9947	Cancer chemotherapy treatment	HCPCS
J9948	Cancer chemotherapy treatment	HCPCS
J9949	Cancer chemotherapy treatment	HCPCS
J9950	Cancer chemotherapy treatment	HCPCS
J9951	Cancer chemotherapy treatment	HCPCS
J9952	Cancer chemotherapy treatment	HCPCS
J9953	Cancer chemotherapy treatment	HCPCS
J9954	Cancer chemotherapy treatment	HCPCS
J9955	Cancer chemotherapy treatment	HCPCS
J9956	Cancer chemotherapy treatment	HCPCS
J9957	Cancer chemotherapy treatment	HCPCS
J9958	Cancer chemotherapy treatment	HCPCS
J9959	Cancer chemotherapy treatment	HCPCS
J9960	Cancer chemotherapy treatment	HCPCS
J9961	Cancer chemotherapy treatment	HCPCS
J9962	Cancer chemotherapy treatment	HCPCS
J9963	Cancer chemotherapy treatment	HCPCS
J9964	Cancer chemotherapy treatment	HCPCS
J9965	Cancer chemotherapy treatment	HCPCS
J9966	Cancer chemotherapy treatment	HCPCS
J9967	Cancer chemotherapy treatment	HCPCS
J9968	Cancer chemotherapy treatment	HCPCS
J9969	Cancer chemotherapy treatment	HCPCS
J9970	Cancer chemotherapy treatment	HCPCS
J9971	Cancer chemotherapy treatment	HCPCS
J9972	Cancer chemotherapy treatment	HCPCS
J9973	Cancer chemotherapy treatment	HCPCS
J9974	Cancer chemotherapy treatment	HCPCS

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Code	Description	Code Type
J9975	Cancer chemotherapy treatment	HCPCS
J9976	Cancer chemotherapy treatment	HCPCS
J9977	Cancer chemotherapy treatment	HCPCS
J9978	Cancer chemotherapy treatment	HCPCS
J9979	Cancer chemotherapy treatment	HCPCS
J9980	Cancer chemotherapy treatment	HCPCS
J9981	Cancer chemotherapy treatment	HCPCS
J9982	Cancer chemotherapy treatment	HCPCS
J9983	Cancer chemotherapy treatment	HCPCS
J9984	Cancer chemotherapy treatment	HCPCS
J9985	Cancer chemotherapy treatment	HCPCS
J9986	Cancer chemotherapy treatment	HCPCS
J9987	Cancer chemotherapy treatment	HCPCS
J9988	Cancer chemotherapy treatment	HCPCS
J9989	Cancer chemotherapy treatment	HCPCS
J9990	Cancer chemotherapy treatment	HCPCS
J9991	Cancer chemotherapy treatment	HCPCS
J9992	Cancer chemotherapy treatment	HCPCS
J9993	Cancer chemotherapy treatment	HCPCS
J9994	Cancer chemotherapy treatment	HCPCS
J9995	Cancer chemotherapy treatment	HCPCS
J9996	Cancer chemotherapy treatment	HCPCS
J9997	Cancer chemotherapy treatment	HCPCS
J9998	Cancer chemotherapy treatment	HCPCS
J9999	Cancer chemotherapy treatment	HCPCS
G0256	Radiation therapy	HCPCS
G0261	Radiation therapy	HCPCS
99.25	Cancer chemotherapy treatment	ICD-9-CM Procedure
92.21	Radiation therapy	ICD-9-CM Procedure
92.22	Radiation therapy	ICD-9-CM Procedure
92.23	Radiation therapy	ICD-9-CM Procedure
92.24	Radiation therapy	ICD-9-CM Procedure
92.25	Radiation therapy	ICD-9-CM Procedure
92.26	Radiation therapy	ICD-9-CM Procedure
92.27	Radiation therapy	ICD-9-CM Procedure
92.28	Radiation therapy	ICD-9-CM Procedure
92.29	Radiation therapy	ICD-9-CM Procedure
Substance abuse history		
571.1	Acute alcoholic hepatitis	ICD-9-CM Diagnosis
303.0	Acute alcoholic intoxication	ICD-9-CM Diagnosis
303.01	Acute alcoholic intoxication, continuous	ICD-9-CM Diagnosis
303.02	Acute alcoholic intoxication, episodic	ICD-9-CM Diagnosis
303.03	Acute alcoholic intoxication, in remission	ICD-9-CM Diagnosis
303.00	Acute alcoholic intoxication, unspecified	ICD-9-CM Diagnosis

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Code	Description	Code Type
291	Alcohol-induced mental disorders	ICD-9-CM Diagnosis
291.1	Alcohol-induced persisting amnesic disorder	ICD-9-CM Diagnosis
291.2	Alcohol-induced persisting dementia	ICD-9-CM Diagnosis
291.5	Alcohol-induced psychotic disorder with delusions	ICD-9-CM Diagnosis
291.3	Alcohol-induced psychotic disorder with hallucinations	ICD-9-CM Diagnosis
303	Alcohol dependence syndrome	ICD-9-CM Diagnosis
291.82	Alcohol induced sleep disorders	ICD-9-CM Diagnosis
291.81	Alcohol withdrawal	ICD-9-CM Diagnosis
291.0	Alcohol withdrawal delirium	ICD-9-CM Diagnosis
571.2	Alcoholic cirrhosis of liver	ICD-9-CM Diagnosis
571.0	Alcoholic fatty liver	ICD-9-CM Diagnosis
304.4	Amphetamine and other psychostimulant dependence	ICD-9-CM Diagnosis
304.41	Amphetamine and other psychostimulant dependence, continuous	ICD-9-CM Diagnosis
304.42	Amphetamine and other psychostimulant dependence, episodic	ICD-9-CM Diagnosis
304.43	Amphetamine and other psychostimulant dependence, in remission	ICD-9-CM Diagnosis
304.40	Amphetamine and other psychostimulant dependence, unspecified	ICD-9-CM Diagnosis
304.3	Cannabis dependence	ICD-9-CM Diagnosis
304.31	Cannabis dependence, continuous	ICD-9-CM Diagnosis
304.32	Cannabis dependence, episodic	ICD-9-CM Diagnosis
304.33	Cannabis dependence, in remission	ICD-9-CM Diagnosis
304.30	Cannabis dependence, unspecified	ICD-9-CM Diagnosis
304.2	Cocaine dependence	ICD-9-CM Diagnosis
304.21	Cocaine dependence, continuous	ICD-9-CM Diagnosis
304.22	Cocaine dependence, episodic	ICD-9-CM Diagnosis
304.23	Cocaine dependence, in remission	ICD-9-CM Diagnosis
304.20	Cocaine dependence, unspecified	ICD-9-CM Diagnosis
304.8	Combinations of drug dependence excluding opioid type drug	ICD-9-CM Diagnosis
304.81	Combinations of drug dependence excluding opioid type drug, continuous	ICD-9-CM Diagnosis
304.82	Combinations of drug dependence excluding opioid type drug, episodic	ICD-9-CM Diagnosis
304.83	Combinations of drug dependence excluding opioid type drug, in remission	ICD-9-CM Diagnosis
304.80	Combinations of drug dependence excluding opioid type drug, unspecified	ICD-9-CM Diagnosis
304.7	Combinations of opioid type drug with any other drug dependence	ICD-9-CM Diagnosis
304.71	Combinations of opioid type drug with any other drug dependence, continuous	ICD-9-CM Diagnosis
304.72	Combinations of opioid type drug with any other drug dependence, episodic	ICD-9-CM Diagnosis
304.73	Combinations of opioid type drug with any other drug dependence, in remission	ICD-9-CM Diagnosis
304.70	Combinations of opioid type drug with any other drug dependence, unspecified	ICD-9-CM Diagnosis
292.81	Drug-induced delirium	ICD-9-CM Diagnosis
292	Drug-induced mental disorders	ICD-9-CM Diagnosis
292.84	Drug-induced mood disorder	ICD-9-CM Diagnosis
292.83	Drug-induced persisting amnesic disorder	ICD-9-CM Diagnosis
292.82	Drug-induced persisting dementia	ICD-9-CM Diagnosis
292.1	Drug-induced psychotic disorder	ICD-9-CM Diagnosis
292.11	Drug-induced psychotic disorder with delusions	ICD-9-CM Diagnosis
292.12	Drug-induced psychotic disorder with hallucinations	ICD-9-CM Diagnosis

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Code	Description	Code Type
304	Drug dependence	ICD-9-CM Diagnosis
292.85	Drug induced sleep disorders	ICD-9-CM Diagnosis
292.0	Drug withdrawal	ICD-9-CM Diagnosis
304.5	Hallucinogen dependence	ICD-9-CM Diagnosis
304.51	Hallucinogen dependence, continuous	ICD-9-CM Diagnosis
304.52	Hallucinogen dependence, episodic	ICD-9-CM Diagnosis
304.53	Hallucinogen dependence, in remission	ICD-9-CM Diagnosis
304.50	Hallucinogen dependence, unspecified	ICD-9-CM Diagnosis
291.4	Idiosyncratic alcohol intoxication	ICD-9-CM Diagnosis
648.3	Maternal drug dependence complicating pregnancy, childbirth, or the puerperium	ICD-9-CM Diagnosis
305	Nondependent abuse of drugs	ICD-9-CM Diagnosis
305.0	Nondependent alcohol abuse	ICD-9-CM Diagnosis
305.01	Nondependent alcohol abuse, continuous	ICD-9-CM Diagnosis
305.02	Nondependent alcohol abuse, episodic	ICD-9-CM Diagnosis
305.03	Nondependent alcohol abuse, in remission	ICD-9-CM Diagnosis
305.00	Nondependent alcohol abuse, unspecified	ICD-9-CM Diagnosis
305.7	Nondependent amphetamine or related acting sympathomimetic abuse	ICD-9-CM Diagnosis
305.71	Nondependent amphetamine or related acting sympathomimetic abuse, continuous	ICD-9-CM Diagnosis
305.72	Nondependent amphetamine or related acting sympathomimetic abuse, episodic	ICD-9-CM Diagnosis
305.73	Nondependent amphetamine or related acting sympathomimetic abuse, in remission	ICD-9-CM Diagnosis
305.70	Nondependent amphetamine or related acting sympathomimetic abuse, unspecified	ICD-9-CM Diagnosis
305.8	Nondependent antidepressant type abuse	ICD-9-CM Diagnosis
305.81	Nondependent antidepressant type abuse, continuous	ICD-9-CM Diagnosis
305.82	Nondependent antidepressant type abuse, episodic	ICD-9-CM Diagnosis
305.83	Nondependent antidepressant type abuse, in remission	ICD-9-CM Diagnosis
305.80	Nondependent antidepressant type abuse, unspecified	ICD-9-CM Diagnosis
305.2	Nondependent cannabis abuse	ICD-9-CM Diagnosis
305.21	Nondependent cannabis abuse, continuous	ICD-9-CM Diagnosis
305.22	Nondependent cannabis abuse, episodic	ICD-9-CM Diagnosis
305.23	Nondependent cannabis abuse, in remission	ICD-9-CM Diagnosis
305.20	Nondependent cannabis abuse, unspecified	ICD-9-CM Diagnosis
305.6	Nondependent cocaine abuse	ICD-9-CM Diagnosis
305.61	Nondependent cocaine abuse, continuous	ICD-9-CM Diagnosis
305.62	Nondependent cocaine abuse, episodic	ICD-9-CM Diagnosis
305.63	Nondependent cocaine abuse, in remission	ICD-9-CM Diagnosis
305.60	Nondependent cocaine abuse, unspecified	ICD-9-CM Diagnosis
305.3	Nondependent hallucinogen abuse	ICD-9-CM Diagnosis
305.31	Nondependent hallucinogen abuse, continuous	ICD-9-CM Diagnosis
305.32	Nondependent hallucinogen abuse, episodic	ICD-9-CM Diagnosis
305.33	Nondependent hallucinogen abuse, in remission	ICD-9-CM Diagnosis
305.30	Nondependent hallucinogen abuse, unspecified	ICD-9-CM Diagnosis
305.5	Nondependent opioid abuse	ICD-9-CM Diagnosis
305.51	Nondependent opioid abuse, continuous	ICD-9-CM Diagnosis
305.52	Nondependent opioid abuse, episodic	ICD-9-CM Diagnosis

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Code	Description	Code Type
305.53	Nondependent opioid abuse, in remission	ICD-9-CM Diagnosis
305.50	Nondependent opioid abuse, unspecified	ICD-9-CM Diagnosis
305.41	Nondependent sedative hypnotic or anxiolytic abuse, continuous	ICD-9-CM Diagnosis
305.4	Nondependent sedative, hypnotic or anxiolytic abuse	ICD-9-CM Diagnosis
305.42	Nondependent sedative, hypnotic or anxiolytic abuse, episodic	ICD-9-CM Diagnosis
305.43	Nondependent sedative, hypnotic or anxiolytic abuse, in remission	ICD-9-CM Diagnosis
305.40	Nondependent sedative, hypnotic or anxiolytic abuse, unspecified	ICD-9-CM Diagnosis
304.0	Opioid type dependence	ICD-9-CM Diagnosis
304.01	Opioid type dependence, continuous	ICD-9-CM Diagnosis
304.02	Opioid type dependence, episodic	ICD-9-CM Diagnosis
304.03	Opioid type dependence, in remission	ICD-9-CM Diagnosis
304.00	Opioid type dependence, unspecified	ICD-9-CM Diagnosis
303.9	Other and unspecified alcohol dependence	ICD-9-CM Diagnosis
303.91	Other and unspecified alcohol dependence, continuous	ICD-9-CM Diagnosis
303.92	Other and unspecified alcohol dependence, episodic	ICD-9-CM Diagnosis
303.93	Other and unspecified alcohol dependence, in remission	ICD-9-CM Diagnosis
303.90	Other and unspecified alcohol dependence, unspecified	ICD-9-CM Diagnosis
291.8	Other specified alcohol-induced mental disorders	ICD-9-CM Diagnosis
291.89	Other specified alcohol-induced mental disorders	ICD-9-CM Diagnosis
292.89	Other specified drug-induced mental disorder	ICD-9-CM Diagnosis
292.8	Other specified drug-induced mental disorders	ICD-9-CM Diagnosis
304.6	Other specified drug dependence	ICD-9-CM Diagnosis
304.61	Other specified drug dependence, continuous	ICD-9-CM Diagnosis
304.62	Other specified drug dependence, episodic	ICD-9-CM Diagnosis
304.63	Other specified drug dependence, in remission	ICD-9-CM Diagnosis
304.60	Other specified drug dependence, unspecified	ICD-9-CM Diagnosis
305.9	Other, mixed, or unspecified nondependent drug abuse	ICD-9-CM Diagnosis
305.91	Other, mixed, or unspecified nondependent drug abuse, continuous	ICD-9-CM Diagnosis
305.92	Other, mixed, or unspecified nondependent drug abuse, episodic	ICD-9-CM Diagnosis
305.93	Other, mixed, or unspecified nondependent drug abuse, in remission	ICD-9-CM Diagnosis
305.90	Other, mixed, or unspecified nondependent drug abuse, unspecified	ICD-9-CM Diagnosis
292.2	Pathological drug intoxication	ICD-9-CM Diagnosis
304.1	Sedative, hypnotic or anxiolytic dependence	ICD-9-CM Diagnosis
304.11	Sedative, hypnotic or anxiolytic dependence, continuous	ICD-9-CM Diagnosis
304.12	Sedative, hypnotic or anxiolytic dependence, episodic	ICD-9-CM Diagnosis
304.13	Sedative, hypnotic or anxiolytic dependence, in remission	ICD-9-CM Diagnosis
304.10	Sedative, hypnotic or anxiolytic dependence, unspecified	ICD-9-CM Diagnosis
291.9	Unspecified alcohol-induced mental disorders	ICD-9-CM Diagnosis
571.3	Unspecified alcoholic liver damage	ICD-9-CM Diagnosis
292.9	Unspecified drug-induced mental disorder	ICD-9-CM Diagnosis
304.9	Unspecified drug dependence	ICD-9-CM Diagnosis
304.91	Unspecified drug dependence, continuous	ICD-9-CM Diagnosis
304.92	Unspecified drug dependence, episodic	ICD-9-CM Diagnosis
304.93	Unspecified drug dependence, in remission	ICD-9-CM Diagnosis

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
304.90	Unspecified drug dependence, unspecified	ICD-9-CM Diagnosis
94.62	Alcohol detoxification	ICD-9-CM Procedure
94.61	Alcohol rehabilitation	ICD-9-CM Procedure
94.63	Alcohol rehabilitation and detoxification	ICD-9-CM Procedure
94.6	Alcohol and drug rehabilitation and detoxification	ICD-9-CM Procedure
94.46	Alcoholism counseling	ICD-9-CM Procedure
94.69	Combined alcohol and drug rehabilitation and detoxification	ICD-9-CM Procedure
94.68	Combined alcohol and drug detoxification	ICD-9-CM Procedure
94.67	Combined alcohol and drug rehabilitation	ICD-9-CM Procedure
94.53	Referral for alcoholism rehabilitation	ICD-9-CM Procedure
H0020	Alcohol and/or drug services; methadone administration and/or service (provision of the drug by a licensed program)	HCPCS
H0015	Alcohol and/or drug services; intensive outpatient (treatment program that operates at least 3 hours/day and at least 3 days/week and is based on an individualized treatment plan), including assessment, counseling; crisis intervention, and activity therapies or education	HCPCS
H0011	Alcohol and/or drug services; acute detoxification (residential addiction program inpatient)	HCPCS
H0013	Alcohol and/or drug services; acute detoxification (residential addiction program outpatient)	HCPCS
H0010	Alcohol and/or drug services; subacute detoxification (residential addiction program inpatient)	HCPCS
H0012	Alcohol and/or drug services; subacute detoxification (residential addiction program outpatient)	HCPCS
H0014	Alcohol and/or drug services; ambulatory detoxification	HCPCS
H0007	Alcohol and/or drug services; crisis intervention (outpatient)	HCPCS
H0005	Alcohol and/or drug services; group counseling by a clinician	HCPCS
H0008	Alcohol and/or drug services; subacute detoxification (hospital inpatient)	HCPCS
H2036	Alcohol and/or other drug treatment program, per diem	HCPCS
H2035	Alcohol and/or other drug treatment program, per hour	HCPCS
T1006	Alcohol and/or substance abuse services, family/couple counseling	HCPCS
H0022	Alcohol and/or drug intervention service (planned facilitation)	HCPCS
T1012	Alcohol and/or substance abuse services, skills development	HCPCS
T1007	Alcohol and/or substance abuse services, treatment plan development and/or modification	HCPCS
T1008	Day treatment for individual alcohol and/or substance abuse services	HCPCS
T1010	Meals for individuals receiving alcohol and/or substance abuse services (when meals not included in the program)	HCPCS
4320F	Patient counseled regarding psychosocial and pharmacologic treatment options for alcohol dependence (SUD)	CPT-II
1034F	Current tobacco smoker (CAD, CAP, COPD, PV) (DM)	CPT-II
1035F	Current smokeless tobacco user (eg, chew, snuff) (PV)	CPT-II
305.1	Tobacco use disorder	CPT-II
4000F	Tobacco use cessation intervention, counseling (COPD, CAP, CAD, Asthma)(DM)(PV)	ICD-9-CM Diagnosis
4001F	Tobacco use cessation intervention, pharmacologic therapy (COPD, CAD, CAP, PV, Asthma) (DM)(PV)	CPT-II
4004F	Patient screened for tobacco use and received tobacco cessation intervention (counseling, pharmacotherapy, or both), if identified as a tobacco user (PV, CAD)	CPT-II
649.0	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium	CPT-II

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
649.03	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, antepartum condition or complication	ICD-9-CM Diagnosis
649.02	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication	ICD-9-CM Diagnosis
649.01	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition	ICD-9-CM Diagnosis
649.04	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, postpartum condition or complication	ICD-9-CM Diagnosis
649.00	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, unspecified as to episode of care or not applicable	ICD-9-CM Diagnosis
83887	Nicotine	CPT-4
989.84	Toxic effect of tobacco	ICD-9-CM Diagnosis
99406	Smoking and tobacco use cessation counseling visit; intermediate, greater than 3 minutes up to 10 minutes	CPT-4
99407	Smoking and tobacco use cessation counseling visit; intensive, greater than 10 minutes	CPT-4
C9801	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intermediate, greater than 3 minutes, up to 10 minutes	HCPCS
C9802	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intensive, greater than 10 minutes	HCPCS
G0375	Smoking and tobacco use cessation counseling visit; intermediate, greater than 3 minutes up to 10 minutes	HCPCS
G0376	Smoking and tobacco use cessation counseling visit; intensive, greater than 10 minutes	HCPCS
G0436	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intermediate, greater than 3 minutes, up to 10 minutes	HCPCS
G0437	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intensive, greater than 10 minutes	HCPCS
G8093	Newly diagnosed chronic obstructive pulmonary disease (copd) patient documented to have received smoking cessation intervention, within 3 months of diagnosis	HCPCS
G8094	Newly diagnosed chronic obstructive pulmonary disease (copd) patient not documented to have received smoking cessation intervention, within 3 months of diagnosis	HCPCS
G8402	Tobacco (smoke) use cessation intervention, counseling	HCPCS
G8403	Tobacco (smoke) use cessation intervention not counseled	HCPCS
G8453	Tobacco use cessation intervention, counseling	HCPCS
G8454	Tobacco use cessation intervention not counseled, reason not specified	HCPCS
G8455	Current tobacco smoker	HCPCS
G8456	Current smokeless tobacco user	HCPCS
G8688	Currently a smokeless tobacco user (eg, chew, snuff) and no exposure to secondhand smoke	HCPCS
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]	HCPCS
S4990	Nicotine patches, legend	HCPCS
S4991	Nicotine patches, non-legend	HCPCS
S4995	Smoking cessation gum	HCPCS
S9075	Smoking cessation treatment	HCPCS
S9453	Smoking cessation classes, non-physician provider, per session	HCPCS

Appendix D. List of International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Category II (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) Diagnosis and Procedure Codes Used to Define Exclusion Criteria in this Request

Code	Description	Code Type
V15.82	Personal history of tobacco use	ICD-9-CM Diagnosis
J0571	Buprenorphine, oral, 1 mg	HCPCS
J0570	Buprenorphine implant, 74.2 mg	HCPCS
J0575	Buprenorphine/naloxone, oral, greater than 10 mg buprenorphine	HCPCS
J0592	Injection, buprenorphine HCl, 0.1 mg	HCPCS
J1230	Injection, methadone HCl, up to 10 mg	HCPCS
J0573	Buprenorphine/naloxone, oral, greater than 3 mg, but less than or equal to 6 mg buprenorphine	HCPCS
J2212	Injection, methylnaltrexone, 0.1 mg	HCPCS
J0574	Buprenorphine/naloxone, oral, greater than 6 mg, but less than or equal to 10 mg buprenorphine	HCPCS
J2315	Injection, naltrexone, depot form, 1 mg	HCPCS
J0572	Buprenorphine/naloxone, oral, less than or equal to 3 mg buprenorphine	HCPCS
S0109	Methadone, oral, 5 mg	HCPCS

Appendix E. List of Generic and Brand Names of Medical Products Used to Define Exclusion Criteria in this Request

Generic Name	Brand Name
Substance abuse history or fentanyl use	
BUPRENORPHINE	buprenorphine
BUPRENORPHINE	Butrans
BUPRENORPHINE HCL	Belbuca
BUPRENORPHINE HCL	Buprenex
BUPRENORPHINE HCL	buprenorphine HCl
BUPRENORPHINE HCL	buprenorphine HCl (bulk)
BUPRENORPHINE HCL	Probuphine
BUPRENORPHINE HCL	Subutex
BUPRENORPHINE HCL/NALOXONE HCL	Bunavail
BUPRENORPHINE HCL/NALOXONE HCL	buprenorphine-naloxone
BUPRENORPHINE HCL/NALOXONE HCL	Suboxone
BUPRENORPHINE HCL/NALOXONE HCL	Zubsolv
FENTANYL	Duragesic
FENTANYL	fentanyl
FENTANYL	fentanyl (bulk)
FENTANYL	Subsys
FENTANYL CITRATE	Abstral
FENTANYL CITRATE	Actiq
FENTANYL CITRATE	fentanyl citrate
FENTANYL CITRATE	fentanyl citrate (bulk)
FENTANYL CITRATE	Fentora
FENTANYL CITRATE	Lazanda
FENTANYL CITRATE	Onsolis
FENTANYL CITRATE IN 0.9 % SODIUM CHLORIDE/PF	fentanyl citrate-0.9%NaCl (PF)
FENTANYL CITRATE IN DEXTROSE 5% IN WATER/PF	fentanyl citrate in D5W (PF)
FENTANYL CITRATE/BUPIVACAINE HCL IN 0.9 % SODIUM CHLORIDE/PF	fentanyl (PF)-bupivacaine-NaCl
FENTANYL CITRATE/DROPERIDOL	fentanyl-droperidol
FENTANYL CITRATE/PF	fentanyl citrate (PF)
FENTANYL CITRATE/PF	Sublimaze (PF)
FENTANYL CITRATE/ROPIVACAINE HCL/SODIUM CHLORIDE 0.9%/PF	fentanyl-ropivacaine-NaCl (PF)
FENTANYL HCL	lonsys
METHADONE HCL	Diskets
METHADONE HCL	Dolophine
METHADONE HCL	methadone
METHADONE HCL	methadone (bulk)
METHADONE HCL	Methadone Intensol
METHADONE HCL	Methadose
METHADONE HYDROCHLORIDE IN 0.9 % SODIUM CHLORIDE	methadone in 0.9 % sod. chlor
METHYLNALTREXONE BROMIDE	Relistor
MORPHINE SULFATE/NALTREXONE HCL	Embeda
NALTREXONE	naltrexone (bulk)
NALTREXONE HCL	naltrexone
NALTREXONE HCL	naltrexone HCl (bulk)
NALTREXONE HCL	Revia
NALTREXONE HYDROCHLORIDE DIHYDRATE	naltrexone HCl dihydrate(bulk)
NALTREXONE MICROSPHERES	Vivitrol

Appendix F. List of Morphine Milligram Equivalent (MME) Conversion Factors

Ingredient	Conversion Factor
Codeine	0.15
Dihydrocodeine	0.25
Hydrocodone	1
Hydromorphone	4
Levorphanol	11
Meperidine	0.1
Morphine	1
Oxycodone	1.5
Oxymorphone	3
Pentazocine	0.37
Propoxyphene	0.23
Tapentadol	0.4
Tramadol	0.1

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

Generic Name	Brand Name
Benzodiazepines	
ALPRAZOLAM	Xanax
ALPRAZOLAM	Xanax XR
ALPRAZOLAM	Alprazolam Intensol
ALPRAZOLAM	Niravam
ALPRAZOLAM	alprazolam
ALPRAZOLAM	alprazolam (bulk)
ALPRAZOLAM/DIETARY SUPPLEMENT,MISC COMBO NO.17	Gabazolamine
AMITRIPTYLINE HCL/CHLORDIAZEPOXIDE	Limbitrol
AMITRIPTYLINE HCL/CHLORDIAZEPOXIDE	Limbitrol DS
AMITRIPTYLINE HCL/CHLORDIAZEPOXIDE	amitriptyline-chlordiazepoxide
CHLORDIAZEPOXIDE HCL	Librium
CHLORDIAZEPOXIDE HCL	chlordiazepoxide HCl
CHLORDIAZEPOXIDE/CLIDINIUM BROMIDE	Librax (with clidinium)
CHLORDIAZEPOXIDE/CLIDINIUM BROMIDE	chlordiazepoxide-clidinium
CLOBAZAM	Onfi
CLONAZEPAM	Klonopin
CLONAZEPAM	clonazepam
CLONAZEPAM	clonazepam (bulk)
CLORAZEPATE DIPOTASSIUM	clorazepate dipotassium
CLORAZEPATE DIPOTASSIUM	Tranxene T-Tab
CLORAZEPATE DIPOTASSIUM	Tranxene-SD
DIAZEPAM	Diazepam Intensol
DIAZEPAM	diazepam
DIAZEPAM	Valium
DIAZEPAM	diazepam (bulk)
DIAZEPAM	Diastat AcuDial
DIAZEPAM	Diastat
ESTAZOLAM	estazolam
ESTAZOLAM	Prosom
FLURAZEPAM HCL	flurazepam
FLURAZEPAM HCL	Dalmane
LORAZEPAM	Lorazepam Intensol
LORAZEPAM	lorazepam
LORAZEPAM	Ativan
LORAZEPAM	lorazepam (bulk)
LORAZEPAM IN 0.9 % SODIUM CHLORIDE	lorazepam in 0.9% sod chloride
LORAZEPAM IN 5 % DEXTROSE AND WATER	lorazepam in dextrose 5 %
MIDAZOLAM	midazolam (bulk)
MIDAZOLAM HCL	midazolam
MIDAZOLAM HCL IN 0.9 % SODIUM CHLORIDE	midazolam in 0.9 % sod chlorid
MIDAZOLAM HCL IN 0.9 % SODIUM CHLORIDE/PF	midazolam (PF) in 0.9 % NaCl
MIDAZOLAM HCL IN 5 % DEXTROSE AND WATER/PF	midazolam in dextrose 5 % (PF)
MIDAZOLAM HCL IN DEXTROSE 5% IN WATER	midazolam in dextrose 5 %

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

Generic Name	Brand Name
MIDAZOLAM HCL/PF	midazolam (PF)
OXAZEPAM	oxazepam
QUAZEPAM	quazepam
QUAZEPAM	Doral
TEMAZEPAM	temazepam
TEMAZEPAM	Restoril
TEMAZEPAM/DIETARY SUPPLEMENT NO.8	Strazepam
TRIAZOLAM	Halcion
TRIAZOLAM	triazolam
Gabapentinoids	
GABAPENTIN	Fanatrex
GABAPENTIN	gabapentin
GABAPENTIN	Gralise
GABAPENTIN	Gralise 30-Day Starter Pack
GABAPENTIN	Neurontin
GABAPENTIN ENACARBIL	Horizant
GABAPENTIN/DIETARY SUPPLEMENT, MISC COMBO NO.11	Therapentin-60
GABAPENTIN/DIETARY SUPPLEMENT, MISC COMBO NO.11	Therapentin-90
PREGABALIN	Lyrica
Sedative hypnotics	
AMOBARBITAL SODIUM	Amytal
BUTABARBITAL SODIUM	Butisol
CHLORAL HYDRATE	chloral hydrate
CHLORAL HYDRATE	chloral hydrate (bulk)
CHLORAL HYDRATE	Somnote
DICHLORALPHENAZONE	dichloralphenazone (bulk)
DOXEPIN HCL	Silenor
ESZOPICLONE	eszopiclone
ESZOPICLONE	Lunesta
MELATONIN	melatonin (bulk)
MEPHOBARBITAL	Mebaral
MEPHOBARBITAL	mephobarbital
PENTOBARBITAL SODIUM	Nembutal Sodium
PENTOBARBITAL SODIUM	pentobarbital sodium
PENTOBARBITAL SODIUM	pentobarbital sodium (bulk)
PHENOBARBITAL	phenobarbital
PHENOBARBITAL SODIUM	Luminal
PHENOBARBITAL SODIUM	phenobarbital sodium
PHENOBARBITAL SODIUM IN 0.9 % SODIUM CHLORIDE	phenobarbital in 0.9 % sod chl
RAMELTEON	Rozerem
SECOBARBITAL SODIUM	Seconal
SECOBARBITAL SODIUM	Seconal Sodium
SUVOREXANT	Belsomra
TASIMELTEON	Hetlioz

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

Generic Name	Brand Name
ZALEPLON	Sonata
ZALEPLON	zaleplon
ZOLPIDEM TARTRATE	Ambien
ZOLPIDEM TARTRATE	Ambien CR
ZOLPIDEM TARTRATE	Edluar
ZOLPIDEM TARTRATE	Intermezzo
ZOLPIDEM TARTRATE	zolpidem
ZOLPIDEM TARTRATE	Zolpimist

Appendix H. Specifications for Parameters for this Request

This request utilized the Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.4.4 with custom code, to assess refill rates associated with initial opioid prescriptions following surgery in the Sentinel Distributed Database (SDD).

Query Period: October 1, 2009 - September 30, 2015
Pre-Exposure Enrollment Requirement: 365 days
Post-Exposure Enrollment Requirement: 111 days
Enrollment Gap: 0 days
Coverage Requirement: Medical and Drug
Age Groups: 18-40, 41-64, 65+ years
Sex: Male and female*

Scenario	Exposure					Pre-existing Conditions				Outcome						
	Exposure	Caresetting	Incidence Criteria	Washout (days)	Intent to Treat-Surgery (days)	Cohort Definition	Censor due to Query End	Censor due to Evidence of Death	Inclusion or Exclusion Condition	Caresetting	Lookback	Outcome	Care Setting	Washout (days)	Blackout Period (days)	
1	All surgeries	IP, AV	n/a	0	7	Include the first valid exposure per patient	No	Yes	Cancer Substance abuse history	Exclude Exclude	Any Any	-365, 0 -365, 0	Opioid dispensing (any opioid)	Any	365	0

Note: International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM), Current Procedural Terminology, Second Revision (CPT-II), Current Procedural Terminology, Fourth Edition (CPT-4), and Healthcare Common Procedure Coding System (HCPCS) codes are provided by Optum360. NDC codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus"

*The final groups for cesarean section and hysterectomy were restricted to females only

Covariate	Evaluation	
	Window	Caresetting
Benzodiazepines	-30, 0	
Gabapentinoids	-30, 0	
Sedative Hypnotics	-30, 0	
Comorbidity Score	-365, 0	
IS encounter	-365, -1	IS
IS encounter	0, 7	IS
Appendectomy (laparoscopic)	0, 0	IP*, AV*
Appendectomy (nonspecific)	0, 0	IP*, AV*
Bunionectomy	0, 0	IP*, AV*
Cesarean section	0, 0	IP*, AV*
Cholecystectomy (laparoscopic)	0, 0	IP*, AV*
Cholecystectomy (nonspecific)	0, 0	IP*, AV*
Coronary artery bypass graft	0, 0	IP*, AV*
Hip fracture treatment	0, 0	IP*, AV*
Hip replacement, total/partial	0, 0	IP*, AV*

Covariate	Evaluation	
	Window	Caresetting
Hysterectomy (abdominal/vaginal non-laparoscopic)	0, 0	IP*, AV*
Hysterectomy (laparoscopic)	0, 0	IP*, AV*
Knee arthroplasty	0, 0	IP*, AV*
Laminectomy, discectomy	0, 0	IP*, AV*
Spinal fusion (nonspecific)	0, 0	IP*, AV*
Spinal fusion (1-3 levels)	0, 0	IP*, AV*
Spinal fusion (4+ levels)	0, 0	IP*, AV*
Tooth extraction	0, 0	IP*, AV*
All surgeries	-365, -1	IP*, AV*
Hospital LOS (implemented with custom code)	0, 1, 2-5, 6+	IP*, AV*