Disclaimer

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

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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

Date Run: June 5, 2017

Request Description: The purpose of this report was to compare the frequency of diagnoses for gastrointestinal bleeding using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) versus International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnosis codes. ICD-10-CM code definitions were determined from an algorithm and by mapping from ICD-9-CM code definitions using the Centers for Medicare and Medicaid Services (CMS) General Equivalence Mappings (GEMs). Forward-backward mapping (FBM) was used to map ICD-9-CM to ICD-10-CM codes.[1]

Sentinel Routine Querying Module: Cohort Identification and Descriptive Analysis (CIDA) module, version 3.3.6

Data Source: This request was run against the IBM® MarketScan® Commercial Claims and Encounters Database and Medicare Supplemental Database, which included 121 million members. Data from October 1, 2010 to March 31, 2016 were included in this report. The report includes three separate time periods: 1) October 1, 2010 to March 31, 2016; 2) January 1, 2015 to March 31, 2015; and 3) January 1, 2016 to March 31, 2016. See Appendix A for the dates of available data used in this report.

Study Design: We examined the incidence of gastrointestinal bleeding across the ICD-9-CM era (October 2010 - September 2015) and ICD-10-CM era (October 2015 - June 2016), and additionally from January 2015 to March 2015, and from January 2016 to March 2016 in the United States See Appendix B for specific codes used to define gastrointestinal bleeding in this request.

Cohort Eligibility Criteria: Members included in the cohort were required to be continuously enrolled in health plans with medical coverage for at least six months (183 days) before their diagnosis date, during which gaps in coverage of up to 45 days were allowed. Incident gastrointestinal bleeding was defined as no previous gastrointestinal bleeding diagnosis in the 183 days preceding the index date with respect to ICD-9-CM and ICD-10-CM codes. The following age groups were included in the cohort: 0-17, 18-49, 50-64, and 65+ years.

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

Limitations: Algorithms used to define outcomes are imperfect; thus, it is possible that there may be misclassification. Therefore, data should be interpreted with this limitation in mind. The MarketScan claims databases are based on a large convenience sample. Because the sample is not random, it may contain biases or fail to generalize well to other populations. Data come mostly from large employers; medium and small firms may be underrepresented.[2]

Notes: Please contact the Sentinel Operations Center (info@sentinelsystem.org) for questions and to provide comments/suggestions for future enhancements to this document.

[1]Fung, K. W., et al. (2016). "Preparing for the ICD-10-CM Transition: Automated Methods for Translating ICD Codes in Clinical Phenotype Definitions." EGEMS (Wash DC) 4(1): 1211.

[2]IBM Watson Health (2018). [online] ibm.com. Available at: https://www.ibm.com/downloads/cas/OWZWJ0QO [Accessed 01 Mar. 2019].

Sentinel

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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 Indicator, forms the Care Setting/PDX parameter.

- **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.

Cohort Definition (drug/exposure) - indicates how the cohort will be defined: 01: Cohort includes only the first valid treatment episode during the query period; 02: Cohort includes all valid treatment episodes during the query period; 03: Cohort includes all valid treatment episodes during the query period until an event occurs.

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 enrolled” sequence.

Episodes - treatment episodes; length of episode is determined by days supplied in one dispensing or consecutive dispensings bridged by the episode gap.

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 MP algorithm: 0: Counts all occurrences of an 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 group level).

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 days 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 (diagnosis/procedure/drug dispensing).

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 washout period all divided by 365.25.

Minimum Days Supplied - specifies a minimum number of days in length of the days supplied for the episode to be considered.

Minimum Episode Duration - specifies a minimum number of days in length of the episode for it to be considered. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

Monitoring Period - used to define time periods of interest for both sequential analysis and simple cohort characterization requests.

Principal Diagnosis (PDX) - diagnosis or condition established to be chiefly responsible for admission of the patient to the hospital. 'P' = principal diagnosis, 'S' = secondary diagnosis, 'X' = unspecified diagnosis, '.' = blank. Along with the Care Setting values, forms the Caresetting/PDX parameter.

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

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.

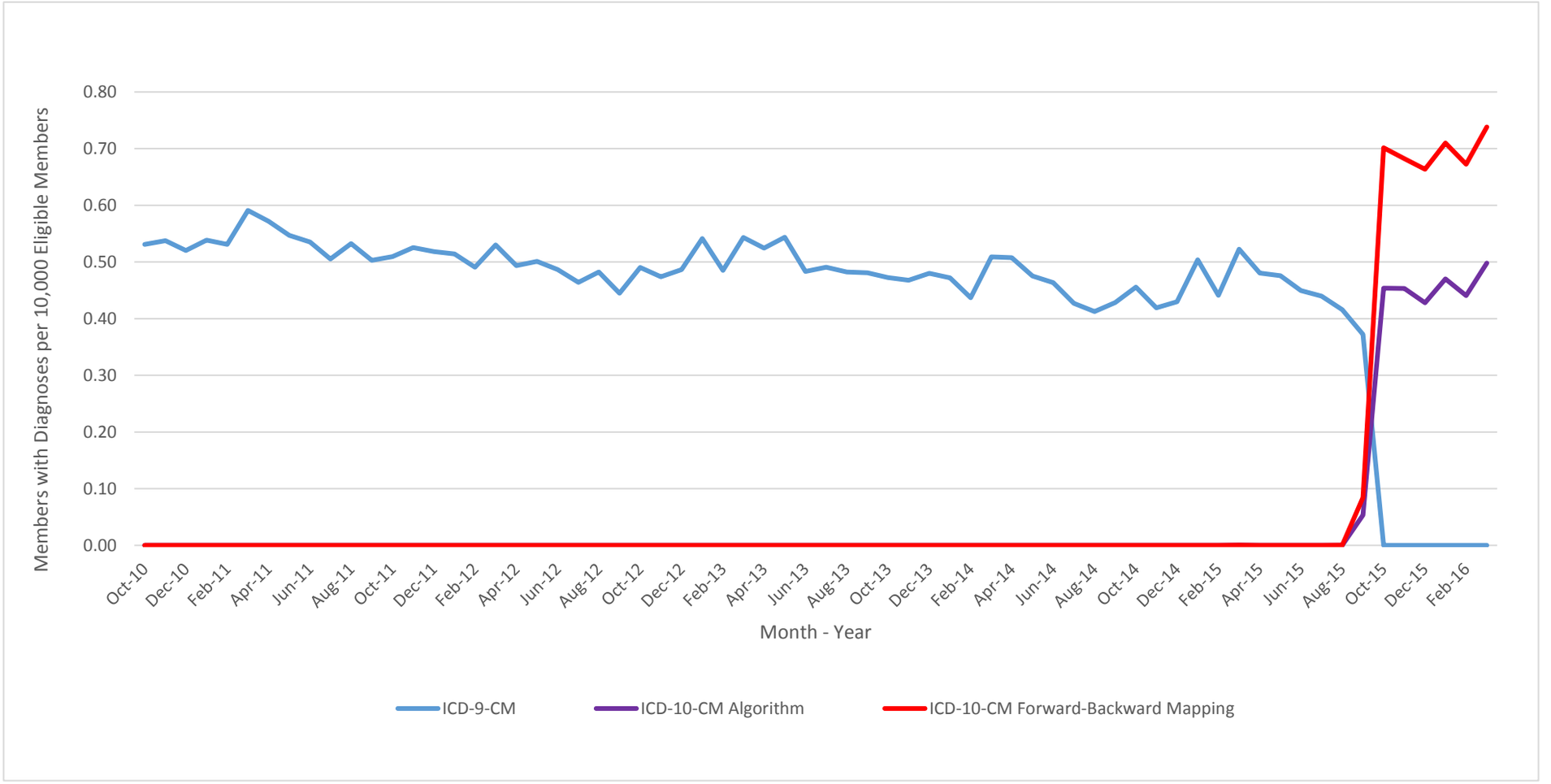
*all terms may not be used in this report

Table 1. Comparison of Incident* Gastrointestinal Bleeding Diagnoses in the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Eras (January 1, 2015 - March 31, 2015 and January 1, 2016 - March 31, 2016)

	Members with Diagnosis	Eligible Members	Members with Diagnosis per 10,000 Eligible Members
Gastrointestinal Bleeding			
ICD-9-CM: January 1, 2015 - March 31, 2015			
	3,558	22,215,242	1.60
ICD-10-CM: Algorithm: January 1, 2016 - March 31, 2016			
	3,288	22,690,741	1.44
ICD-10-CM: Forward-Backward Mapping: January 1, 2016 - March 31, 2016			
	4,942	22,689,258	2.18

*Incidence defined by a 90 day washout

Figure 1. Incidence of Gastrointestinal Bleeding Diagnoses per 10,000 Eligible Members from October 2010 - March 2016 by Code Type, 183-Day Washout



Appendix A. Dates Available for IBM® MarketScan® Commercial and Medicare Supplemental Databases

Databases	Start Date	End Date
IBM MarketScan Commercial and Medicare Supplemental Databases[1]	1/1/2010	3/31/2016

[1] The IBM MarketScan Databases includes a sample of 121 million employees, dependents, and retirees in the United States with primary or Medicare supplemental coverage through privately insured fee-for-service, point-of-service, or capitated health plans. The IBM MarketScan claims databases are based on a large convenience sample. Because the sample is not random, it may contain biases or fail to generalize well to other populations. Data come mostly from large employers; medium and small firms may be underrepresented. For more information on the IBM MarketScan Databases, please review the White Paper here: https://www.ibm.com/downloads/cas/OWZWJ0QO

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Gastrointestinal Bleeding

Code	Description	Code Type
	ICD-9-CM	
530.21	Ulcer of esophagus with bleeding	ICD-9-CM
531.00	Acute gastric ulcer with hemorrhage, without mention of obstruction	ICD-9-CM
531.01	Acute gastric ulcer with hemorrhage and obstruction	ICD-9-CM
531.20	Acute gastric ulcer with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
531.21	Acute gastric ulcer with hemorrhage, perforation, and obstruction	ICD-9-CM
531.40	Chronic or unspecified gastric ulcer with hemorrhage, without mention of obstruction	ICD-9-CM
531.41	Chronic or unspecified gastric ulcer with hemorrhage and obstruction	ICD-9-CM
531.60	Chronic or unspecified gastric ulcer with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
531.61	Chronic or unspecified gastric ulcer with hemorrhage, perforation, and obstruction	ICD-9-CM
532.00	Acute duodenal ulcer with hemorrhage, without mention of obstruction	ICD-9-CM
532.01	Acute duodenal ulcer with hemorrhage and obstruction	ICD-9-CM
532.20	Acute duodenal ulcer with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
532.21	Acute duodenal ulcer with hemorrhage, perforation, and obstruction	ICD-9-CM
532.40	Duodenal ulcer, chronic or unspecified, with hemorrhage, without mention of obstruction	ICD-9-CM
532.41	Chronic or unspecified duodenal ulcer with hemorrhage and obstruction	ICD-9-CM
532.60	Chronic or unspecified duodenal ulcer with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
532.61	Chronic or unspecified duodenal ulcer with hemorrhage, perforation, and obstruction	ICD-9-CM
533.00	Acute peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction	ICD-9-CM
533.01	Acute peptic ulcer, unspecified site, with hemorrhage and obstruction	ICD-9-CM
533.20	Acute peptic ulcer, unspecified site, with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
533.21	Acute peptic ulcer, unspecified site, with hemorrhage, perforation, and obstruction	ICD-9-CM
533.40	Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction	ICD-9-CM
533.41	Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and obstruction	ICD-9-CM
533.60	Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
533.61	Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, perforation, and obstruction	ICD-9-CM
534.00	Acute gastrojejunal ulcer with hemorrhage, without mention of obstruction	ICD-9-CM
534.01	Acute gastrojejunal ulcer, with hemorrhage and obstruction	ICD-9-CM
534.20	Acute gastrojejunal ulcer with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
534.21	Acute gastrojejunal ulcer with hemorrhage, perforation, and obstruction	ICD-9-CM
534.40	Chronic or unspecified gastrojejunal ulcer with hemorrhage, without mention of obstruction	ICD-9-CM
534.41	Chronic or unspecified gastrojejunal ulcer, with hemorrhage and obstruction	ICD-9-CM
534.60	Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation, without mention of obstruction	ICD-9-CM
534.61	Chronic or unspecified gastrojejunal ulcer with hemorrhage, perforation, and obstruction	ICD-9-CM
535.01	Acute gastritis with hemorrhage	ICD-9-CM
535.11	Atrophic gastritis with hemorrhage	ICD-9-CM
535.21	Gastric mucosal hypertrophy with hemorrhage	ICD-9-CM
535.31	Alcoholic gastritis with hemorrhage	ICD-9-CM

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Gastrointestinal Bleeding

Code	Description	Code Type
535.41	Other specified gastritis with hemorrhage	ICD-9-CM
535.51	Unspecified gastritis and gastroduodenitis with hemorrhage	ICD-9-CM
535.61	Duodenitis with hemorrhage	ICD-9-CM
537.83	Angiodysplasia of stomach and duodenum with hemorrhage	ICD-9-CM
537.84	Dieulafoy lesion (hemorrhagic) of stomach and duodenum	ICD-9-CM
562.02	Diverticulosis of small intestine with hemorrhage	ICD-9-CM
562.03	Diverticulitis of small intestine with hemorrhage	ICD-9-CM
562.12	Diverticulosis of colon with hemorrhage	ICD-9-CM
562.13	Diverticulitis of colon with hemorrhage	ICD-9-CM
569.85	Angiodysplasia of intestine with hemorrhage	ICD-9-CM
569.86	Dieulafoy lesion (hemorrhagic) of intestine	ICD-9-CM
578.0	Hematemesis	ICD-9-CM
578.1	Blood in stool	ICD-9-CM
578.9	Hemorrhage of gastrointestinal tract, unspecified	ICD-9-CM
E949.9	Other and unspecified vaccines and biological substances causing adverse effect in therapeutic	ICD-9-CM
	ICD-10-CM (Algorithm)	
K22.11	Ulcer of esophagus with bleeding	ICD-10-CM
K25.0	Acute gastric ulcer with hemorrhage	ICD-10-CM
K25.2	Acute gastric ulcer with both hemorrhage and perforation	ICD-10-CM
K25.4	Chronic or unspecified gastric ulcer with hemorrhage	ICD-10-CM
K25.6	Chronic or unspecified gastric ulcer with both hemorrhage and perforation	ICD-10-CM
K26.0	Acute duodenal ulcer with hemorrhage	ICD-10-CM
K26.2	Acute duodenal ulcer with both hemorrhage and perforation	ICD-10-CM
K26.4	Chronic or unspecified duodenal ulcer with hemorrhage	ICD-10-CM
K26.6	Chronic or unspecified duodenal ulcer with both hemorrhage and perforation	ICD-10-CM
K27.0	Acute peptic ulcer, site unspecified, with hemorrhage	ICD-10-CM
K27.2	Acute peptic ulcer, site unspecified, with both hemorrhage and perforation	ICD-10-CM
K27.4	Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage	ICD-10-CM
K27.6	Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation	ICD-10-CM
K28.0	Acute gastrojejunal ulcer with hemorrhage	ICD-10-CM
K28.2	Acute gastrojejunal ulcer with both hemorrhage and perforation	ICD-10-CM
K28.4	Chronic or unspecified gastrojejunal ulcer with hemorrhage	ICD-10-CM
K28.6	Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation	ICD-10-CM
K29.01	Acute gastritis with bleeding	ICD-10-CM
K29.41	Chronic atrophic gastritis with bleeding	ICD-10-CM
K29.51	Unspecified chronic gastritis with bleeding	ICD-10-CM
K29.61	Other gastritis with bleeding	ICD-10-CM
K29.21	Alcoholic gastritis with bleeding	ICD-10-CM
K29.61	Other gastritis with bleeding	ICD-10-CM
K29.71	Gastritis, unspecified, with bleeding	ICD-10-CM
K29.91	Gastroduodenitis, unspecified, with bleeding	ICD-10-CM
K29.81	Duodenitis with bleeding	ICD-10-CM
K31.811	Angiodysplasia of stomach and duodenum with bleeding	ICD-10-CM
K31.82	Dieulafoy lesion (hemorrhagic) of stomach and duodenum	ICD-10-CM
K57.11	Diverticulosis of small intestine without perforation or abscess with bleeding	ICD-10-CM

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Gastrointestinal Bleeding

Code	Description	Code Type
K57.13	Diverticulitis of small intestine without perforation or abscess with bleeding	ICD-10-CM
K57.31	Diverticulosis of large intestine without perforation or abscess with bleeding	ICD-10-CM
K57.33	Diverticulitis of large intestine without perforation or abscess with bleeding	ICD-10-CM
K55.21	Angiodysplasia of colon with hemorrhage	ICD-10-CM
K63.81	Dieulafoy lesion of intestine	ICD-10-CM
K92.0	Hematemesis	ICD-10-CM
K92.1	Melena	ICD-10-CM
K92.2	Gastrointestinal hemorrhage, unspecified	ICD-10-CM
	ICD-10-CM (Forward-Backward Mapping)	
K22.11	Ulcer of esophagus with bleeding	ICD-10-CM
K25.0	Acute gastric ulcer with hemorrhage	ICD-10-CM
K25.2	Acute gastric ulcer with both hemorrhage and perforation	ICD-10-CM
K25.4	Chronic or unspecified gastric ulcer with hemorrhage	ICD-10-CM
K25.6	Chronic or unspecified gastric ulcer with both hemorrhage and perforation	ICD-10-CM
K26.0	Acute duodenal ulcer with hemorrhage	ICD-10-CM
K26.2	Acute duodenal ulcer with both hemorrhage and perforation	ICD-10-CM
K26.4	Chronic or unspecified duodenal ulcer with hemorrhage	ICD-10-CM
K26.6	Chronic or unspecified duodenal ulcer with both hemorrhage and perforation	ICD-10-CM
K27.0	Acute peptic ulcer, site unspecified, with hemorrhage	ICD-10-CM
K27.2	Acute peptic ulcer, site unspecified, with both hemorrhage and perforation	ICD-10-CM
K27.4	Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage	ICD-10-CM
K27.6	Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation	ICD-10-CM
K28.0	Acute gastrojejunal ulcer with hemorrhage	ICD-10-CM
K28.2	Acute gastrojejunal ulcer with both hemorrhage and perforation	ICD-10-CM
K28.4	Chronic or unspecified gastrojejunal ulcer with hemorrhage	ICD-10-CM
K28.6	Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation	ICD-10-CM
K29.01	Acute gastritis with bleeding	ICD-10-CM
K29.21	Alcoholic gastritis with bleeding	ICD-10-CM
K29.31	Chronic superficial gastritis with bleeding	ICD-10-CM
K29.41	Chronic atrophic gastritis with bleeding	ICD-10-CM
K29.51	Unspecified chronic gastritis with bleeding	ICD-10-CM
K29.61	Other gastritis with bleeding	ICD-10-CM
K29.71	Gastritis, unspecified, with bleeding	ICD-10-CM
K29.81	Duodenitis with bleeding	ICD-10-CM
K29.91	Gastroduodenitis, unspecified, with bleeding	ICD-10-CM
K31.811	Angiodysplasia of stomach and duodenum with bleeding	ICD-10-CM
K31.82	Dieulafoy lesion (hemorrhagic) of stomach and duodenum	ICD-10-CM
K55.21	Angiodysplasia of colon with hemorrhage	ICD-10-CM
K56.60	Unspecified intestinal obstruction	ICD-10-CM
K57.01	Diverticulitis of small intestine with perforation and abscess with bleeding	ICD-10-CM
K57.11	Diverticulosis of small intestine without perforation or abscess with bleeding	ICD-10-CM
K57.13	Diverticulitis of small intestine without perforation or abscess with bleeding	ICD-10-CM
K57.21	Diverticulitis of large intestine with perforation and abscess with bleeding	ICD-10-CM
K57.31	Diverticulosis of large intestine without perforation or abscess with bleeding	ICD-10-CM

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Gastrointestinal Bleeding

Code	Description	Code Type
K57.33	Diverticulitis of large intestine without perforation or abscess with bleeding	ICD-10-CM
K57.41	Diverticulitis of both small and large intestine with perforation and abscess with bleeding	ICD-10-CM
K57.51	Diverticulosis of both small and large intestine without perforation or abscess with bleeding	ICD-10-CM
K57.53	Diverticulitis of both small and large intestine without perforation or abscess with bleeding	ICD-10-CM
K57.81	Diverticulitis of intestine, part unspecified, with perforation and abscess with bleeding	ICD-10-CM
K57.91	Diverticulosis of intestine, part unspecified, without perforation or abscess with bleeding	ICD-10-CM
K57.93	Diverticulitis of intestine, part unspecified, without perforation or abscess with bleeding	ICD-10-CM
K63.81	Dieulafoy lesion of intestine	ICD-10-CM
K92.0	Hematemesis	ICD-10-CM
K92.1	Melena	ICD-10-CM
K92.2	Gastrointestinal hemorrhage, unspecified	ICD-10-CM

Appendix C. Specifications for Parameters for this Request

Sentinel's Cohort Identification and Descriptive Analysis (CIDA) module version 3.3.6 was used to compare the frequency of diagnoses for gastrointestinal bleeding using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes.

Enrollment Gap: 45 days
Age Groups: 0-17, 18-49, 50-64, 65+ years
Enrollment Requirement: 183 days
Coverage Requirement: Medical coverage

			Event					
Scenario	**Query Start Date**	**Query End Date**	**Event**	**Event Code Type**	**Incident with Respect To:**	**Washout (days)**	**Cohort Definition**	**Care Setting**
1	1/1/2015	3/31/2015	Gastrointestinal Bleeding	ICD-9-CM	ICD-9-CM	90	First valid event only	Inpatient Hospital Stay Principal Diagnosis (IPP)
2	1/1/2016	3/31/2016	Gastrointestinal Bleeding	ICD-10-CM	ICD-10-CM algorithm	90	First valid event only	IPP
3	1/1/2016	3/31/2016	Gastrointestinal Bleeding	ICD-10-CM	ICD-10-CM Forward-Backward Mapping (FBM)	90	First valid event only	IPP
4	10/1/2010	3/31/2016	Gastrointestinal Bleeding	ICD-9-CM	ICD-9-CM or ICD-10-CM algorithm	183	First valid event only	IPP
5	10/1/2010	3/31/2016	Gastrointestinal Bleeding	ICD-9-CM	ICD-9-CM or ICD-10-CM FBM	183	First valid event only	IPP
6	10/1/2010	3/31/2016	Gastrointestinal Bleeding	ICD-10-CM	ICD-9-CM or ICD-10-CM algorithm	183	First valid event only	IPP
7	10/1/2010	3/31/2016	Gastrointestinal Bleeding	ICD-10-CM	ICD-9-CM or ICD-10-CM FBM	183	First valid event only	IPP

ICD-9-CM and ICD-10-CM are provided by Optum360. ICD-10-CM codes were mapped from ICD-9-CM codes using the Centers for Medicare and Medicaid Services General Equivalence Mappings.