Disclaimer

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

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

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

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

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Overview

Date Run: October 31, 2017

Request Description: The purpose of this report was to compare the frequency of diagnoses of ischemic heart disease 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. ICD-10-CM code definitions were determined by mapping from ICD-9-CM code definitions using the Centers for Medicare and Medicaid Services (CMS) General Equivalence Mappings (GEMs). Simple forward mapping (SFM) and forward-backward mapping (FBM) were used used to map ICD-9-CM to ICD-10-CM codes.[1]

Sentinel Modular Program Tool Used: Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.0.4

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 September 30, 2016 were included in this report. The report includes three separate time periods: 1) October 1, 2010 to September 30, 2016, 2) April 1, 2015 to September 30, 2015, and 3) April 1, 2016 to September 31, 2016. See Appendix A for the dates of available data used in this report.

Study Design: We examined the prevalence of ischemic heart disease across the ICD-9-CM era (October 2010 - September 2015) and ICD-10-CM era (October 2015 - September 2016) in the US. Incidence was evaluated from April 2015 to September 2015 and April 2016 to September 2016. See Appendix B for specific codes used to define ischemic heart disease.

Cohort Eligibility Criteria: Members included in the cohorts were required to be enrolled in health plans with medical and drug coverage. The following age groups were included in the cohorts: 0-18, 19-24, 25-64, and 65+ years.

Incident Cohorts: Members included in the incident cohorts were required to be continuously enrolled in health plans with medical and drug coverage for at least 183 days prior to the first qualifying (index) ischemic heart disease diagnosis during which gaps in coverage of up to 45 days were allowed. Incident ischemic heart disease was defined as no previous ischemic heart disease diagnoses in the 183 days preceding the index date with respect to ICD-9-CM and ICD-10-CM codes.

Prevalent Cohorts: There was no enrollment time requirement for members in the prevalent cohorts. All qualifying diagnosis codes that occurred between October 1, 2010 and September 30, 2016 were included.

Please refer to 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 Query Fulfillment Team (qf@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].

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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 (PDX), 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 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 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 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.

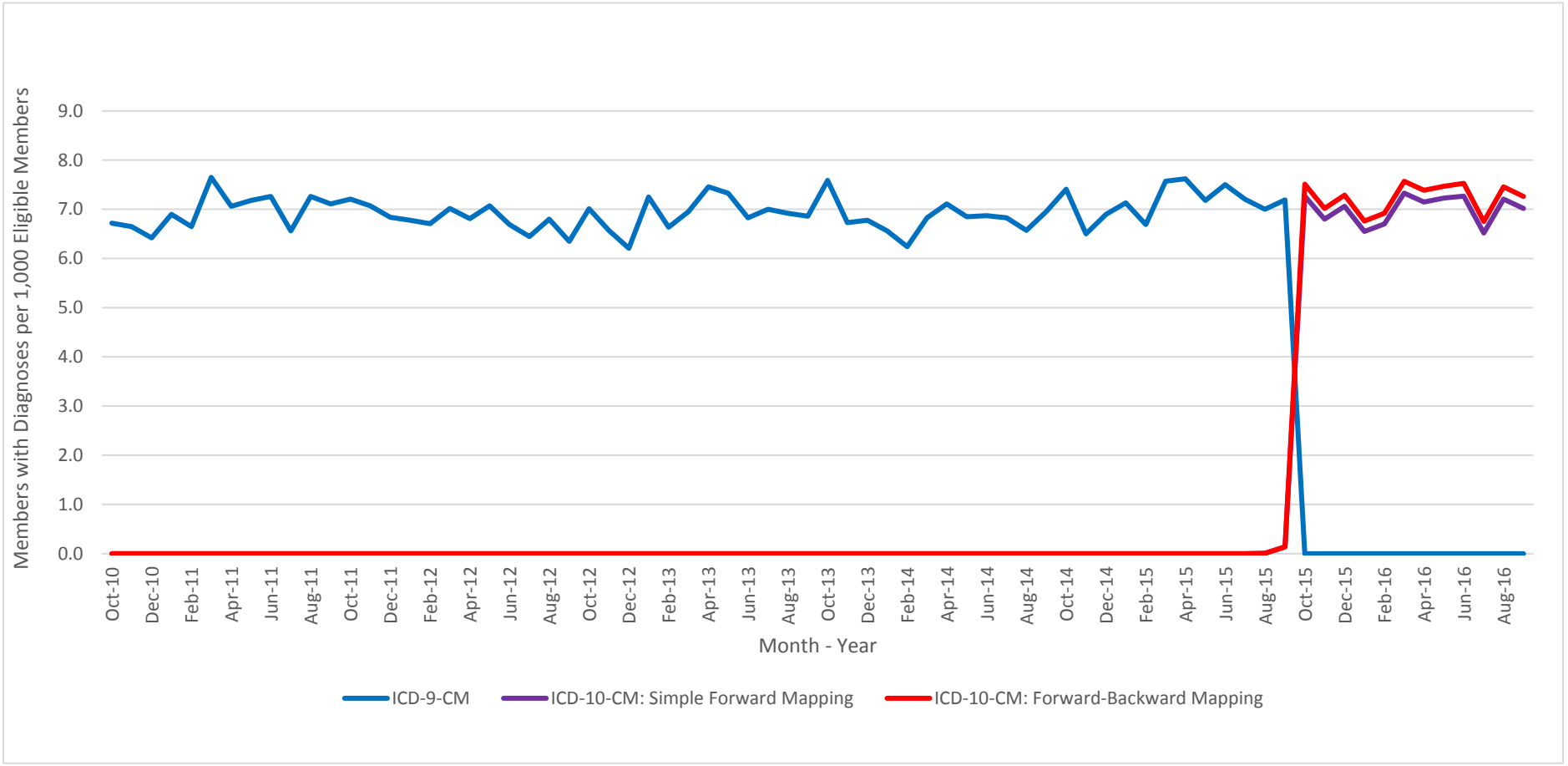
*all terms may not be used in this report

Table 1. Comparison of Incident* Ischemic Heart Disease 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 (April 1, 2015 - September 30, 2015 and April 1, 2016 - September 30, 2016)

	Members with Diagnosis	Eligible Members	Members with Diagnosis per 1,000 Eligible Members
Ischemic Heart Disease			
ICD-9-CM: April 1, 2015 - September 30, 2015			
	303,043	23,651,936	12.81
ICD-10-CM Simple Forward Mapping: April 1, 2016 - September 30, 2016			
	304,901	23,432,841	13.01
ICD-10-CM Forward-Backward Mapping: April 1, 2016 - September 30, 2016			
	307,636	23,422,593	13.13

*Incidence defined by 183 day washout

Figure 1. Prevalence of Ischemic Heart Disease Diagnoses per 1,000 Eligible Members from October 2010 - September 2016 by Code Type, 0-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	9/30/2016

[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 Ischemic Heart Disease

Code	Description	Code Type
	ICD-9-CM	
410	Acute myocardial infarction	ICD-9-CM
410.0	Acute myocardial infarction of anterolateral wall	ICD-9-CM
410.00	Acute myocardial infarction of anterolateral wall, episode of care unspecified	ICD-9-CM
410.01	Acute myocardial infarction of anterolateral wall, initial episode of care	ICD-9-CM
410.02	Acute myocardial infarction of anterolateral wall, subsequent episode of care	ICD-9-CM
410.1	Acute myocardial infarction of other anterior wall	ICD-9-CM
410.10	Acute myocardial infarction of other anterior wall, episode of care unspecified	ICD-9-CM
410.11	Acute myocardial infarction of other anterior wall, initial episode of care	ICD-9-CM
410.12	Acute myocardial infarction of other anterior wall, subsequent episode of care	ICD-9-CM
410.2	Acute myocardial infarction of inferolateral wall	ICD-9-CM
410.20	Acute myocardial infarction of inferolateral wall, episode of care unspecified	ICD-9-CM
410.21	Acute myocardial infarction of inferolateral wall, initial episode of care	ICD-9-CM
410.22	Acute myocardial infarction of inferolateral wall, subsequent episode of care	ICD-9-CM
410.3	Acute myocardial infarction of inferoposterior wall	ICD-9-CM
410.30	Acute myocardial infarction of inferoposterior wall, episode of care unspecified	ICD-9-CM
410.31	Acute myocardial infarction of inferoposterior wall, initial episode of care	ICD-9-CM
410.32	Acute myocardial infarction of inferoposterior wall, subsequent episode of care	ICD-9-CM
410.4	Acute myocardial infarction of other inferior wall	ICD-9-CM
410.40	Acute myocardial infarction of other inferior wall, episode of care unspecified	ICD-9-CM
410.41	Acute myocardial infarction of other inferior wall, initial episode of care	ICD-9-CM
410.42	Acute myocardial infarction of other inferior wall, subsequent episode of care	ICD-9-CM
410.5	Acute myocardial infarction of other lateral wall	ICD-9-CM
410.50	Acute myocardial infarction of other lateral wall, episode of care unspecified	ICD-9-CM
410.51	Acute myocardial infarction of other lateral wall, initial episode of care	ICD-9-CM
410.52	Acute myocardial infarction of other lateral wall, subsequent episode of care	ICD-9-CM
410.6	Acute myocardial infarction, true posterior wall infarction	ICD-9-CM
410.60	Acute myocardial infarction, true posterior wall infarction, episode of care unspecified	ICD-9-CM
410.61	Acute myocardial infarction, true posterior wall infarction, initial episode of care	ICD-9-CM
410.62	Acute myocardial infarction, true posterior wall infarction, subsequent episode of care	ICD-9-CM
410.7	Acute myocardial infarction, subendocardial infarction	ICD-9-CM
410.70	Acute myocardial infarction, subendocardial infarction, episode of care unspecified	ICD-9-CM
410.71	Acute myocardial infarction, subendocardial infarction, initial episode of care	ICD-9-CM
410.72	Acute myocardial infarction, subendocardial infarction, subsequent episode of care	ICD-9-CM
410.8	Acute myocardial infarction of other specified sites	ICD-9-CM
410.80	Acute myocardial infarction of other specified sites, episode of care unspecified	ICD-9-CM
410.81	Acute myocardial infarction of other specified sites, initial episode of care	ICD-9-CM
410.82	Acute myocardial infarction of other specified sites, subsequent episode of care	ICD-9-CM
410.9	Acute myocardial infarction, unspecified site	ICD-9-CM
410.90	Acute myocardial infarction, unspecified site, episode of care unspecified	ICD-9-CM
410.91	Acute myocardial infarction, unspecified site, initial episode of care	ICD-9-CM
410.92	Acute myocardial infarction, unspecified site, subsequent episode of care	ICD-9-CM
411	Other acute and subacute forms of ischemic heart disease	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 Ischemic Heart Disease

Code	Description	Code Type
411.0	Postmyocardial infarction syndrome	ICD-9-CM
411.1	Intermediate coronary syndrome	ICD-9-CM
411.8	Other acute and subacute forms of ischemic heart disease	ICD-9-CM
411.81	Acute coronary occlusion without myocardial infarction	ICD-9-CM
411.89	Other acute and subacute form of ischemic heart disease	ICD-9-CM
412	Old myocardial infarction	ICD-9-CM
413	Angina pectoris	ICD-9-CM
413.0	Angina decubitus	ICD-9-CM
413.1	Prinzmetal angina	ICD-9-CM
413.9	Other and unspecified angina pectoris	ICD-9-CM
414	Other forms of chronic ischemic heart disease	ICD-9-CM
414.0	Coronary atherosclerosis	ICD-9-CM
414.00	Coronary atherosclerosis of unspecified type of vessel, native or graft	ICD-9-CM
414.01	Coronary atherosclerosis of native coronary artery	ICD-9-CM
414.02	Coronary atherosclerosis of autologous vein bypass graft	ICD-9-CM
414.03	Coronary atherosclerosis of nonautologous biological bypass graft	ICD-9-CM
414.04	Coronary atherosclerosis of artery bypass graft	ICD-9-CM
414.05	Coronary atherosclerosis of unspecified type of bypass graft	ICD-9-CM
414.06	Coronary atherosclerosis, of native coronary artery of transplanted heart	ICD-9-CM
414.07	Coronary atherosclerosis, of bypass graft (artery) (vein) of transplanted heart	ICD-9-CM
414.1	Aneurysm and dissection of heart	ICD-9-CM
414.10	Aneurysm of heart	ICD-9-CM
414.11	Aneurysm of coronary vessels	ICD-9-CM
414.12	Dissection of coronary artery	ICD-9-CM
414.19	Other aneurysm of heart	ICD-9-CM
414.2	Chronic total occlusion of coronary artery	ICD-9-CM
414.3	Coronary atherosclerosis due to lipid rich plaque	ICD-9-CM
414.4	Coronary atherosclerosis due to calcified coronary lesion	ICD-9-CM
414.8	Other specified forms of chronic ischemic heart disease	ICD-9-CM
414.9	Unspecified chronic ischemic heart disease	ICD-9-CM
	ICD-10-CM: Simple Forward Mapping	
I25.41	Coronary artery aneurysm	ICD-10-CM
I25.84	Coronary atherosclerosis due to calcified coronary lesion	ICD-10-CM
I25.83	Coronary atherosclerosis due to lipid rich plaque	ICD-10-CM
I21.3	ST elevation (STEMI) myocardial infarction of unspecified site	ICD-10-CM
I24.0	Acute coronary thrombosis not resulting in myocardial infarction	ICD-10-CM
I25.9	Chronic ischemic heart disease, unspecified	ICD-10-CM
I25.5	Ischemic cardiomyopathy	ICD-10-CM
I21.4	Non-ST elevation (NSTEMI) myocardial infarction	ICD-10-CM
I25.810	Atherosclerosis of coronary artery bypass graft(s) without angina pectoris	ICD-10-CM
I25.42	Coronary artery dissection	ICD-10-CM
I21.19	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall	ICD-10-CM
I21.09	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall	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 Ischemic Heart Disease

Code	Description	Code Type
I25.89	Other forms of chronic ischemic heart disease	ICD-10-CM
I21.29	ST elevation (STEMI) myocardial infarction involving other sites	ICD-10-CM
I24.8	Other forms of acute ischemic heart disease	ICD-10-CM
I20.0	Unstable angina	ICD-10-CM
I20.9	Angina pectoris, unspecified	ICD-10-CM
I25.3	Aneurysm of heart	ICD-10-CM
I25.2	Old myocardial infarction	ICD-10-CM
I20.8	Other forms of angina pectoris	ICD-10-CM
I25.812	Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina pectoris	ICD-10-CM
I25.82	Chronic total occlusion of coronary artery	ICD-10-CM
I24.1	Dressler's syndrome	ICD-10-CM
I20.1	Angina pectoris with documented spasm	ICD-10-CM
I21.11	ST elevation (STEMI) myocardial infarction involving right coronary artery	ICD-10-CM
I25.811	Atherosclerosis of native coronary artery of transplanted heart without angina pectoris	ICD-10-CM
I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris	ICD-10-CM
	ICD-10-CM: Forward-Backward Mapping	
I25.711	Atherosclerosis of autologous vein coronary artery bypass graft(s) with angina pectoris with documented spasm	ICD-10-CM
I25.41	Coronary artery aneurysm	ICD-10-CM
I25.111	Atherosclerotic heart disease of native coronary artery with angina pectoris with documented spasm	ICD-10-CM
I25.720	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unstable angina pectoris	ICD-10-CM
I25.84	Coronary atherosclerosis due to calcified coronary lesion	ICD-10-CM
I25.751	Atherosclerosis of native coronary artery of transplanted heart with angina pectoris with documented spasm	ICD-10-CM
I25.83	Coronary atherosclerosis due to lipid rich plaque	ICD-10-CM
I25.730	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unstable angina pectoris	ICD-10-CM
I21.3	ST elevation (STEMI) myocardial infarction of unspecified site	ICD-10-CM
I24.0	Acute coronary thrombosis not resulting in myocardial infarction	ICD-10-CM
I24.9	Acute ischemic heart disease, unspecified	ICD-10-CM
I25.799	Atherosclerosis of other coronary artery bypass graft(s) with unspecified angina pectoris	ICD-10-CM
I25.9	Chronic ischemic heart disease, unspecified	ICD-10-CM
I25.119	Atherosclerotic heart disease of native coronary artery with unspecified angina pectoris	ICD-10-CM
I25.5	Ischemic cardiomyopathy	ICD-10-CM
I21.4	Non-ST elevation (NSTEMI) myocardial infarction	ICD-10-CM
I25.761	Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina pectoris with documented spasm	ICD-10-CM
I25.768	Atherosclerosis of bypass graft of coronary artery of transplanted heart with other forms of angina pectoris	ICD-10-CM
I25.759	Atherosclerosis of native coronary artery of transplanted heart with unspecified angina pectoris	ICD-10-CM
I22.8	Subsequent ST elevation (STEMI) myocardial infarction of other sites	ICD-10-CM
I22.0	Subsequent ST elevation (STEMI) myocardial infarction of anterior wall	ICD-10-CM

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Code	Description	Code Type
I25.710	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unstable angina pectoris	ICD-10-CM
I22.9	Subsequent ST elevation (STEMI) myocardial infarction of unspecified site	ICD-10-CM
I25.731	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with angina pectoris with documented spasm	ICD-10-CM
I25.708	Atherosclerosis of coronary artery bypass graft(s), unspecified, with other forms of angina pectoris	ICD-10-CM
I25.810	Atherosclerosis of coronary artery bypass graft(s) without angina pectoris	ICD-10-CM
I25.760	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable angina	ICD-10-CM
I25.790	Atherosclerosis of other coronary artery bypass graft(s) with unstable angina pectoris	ICD-10-CM
I25.728	Atherosclerosis of autologous artery coronary artery bypass graft(s) with other forms of angina pectoris	ICD-10-CM
I25.42	Coronary artery dissection	ICD-10-CM
I21.19	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall	ICD-10-CM
I21.09	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall	ICD-10-CM
I25.89	Other forms of chronic ischemic heart disease	ICD-10-CM
I25.791	Atherosclerosis of other coronary artery bypass graft(s) with angina pectoris with documented spasm	ICD-10-CM
I21.29	ST elevation (STEMI) myocardial infarction involving other sites	ICD-10-CM
I24.8	Other forms of acute ischemic heart disease	ICD-10-CM
I20.0	Unstable angina	ICD-10-CM
I21.02	ST elevation (STEMI) myocardial infarction involving left anterior descending coronary artery	ICD-10-CM
I25.118	Atherosclerotic heart disease of native coronary artery with other forms of angina pectoris	ICD-10-CM
I20.9	Angina pectoris, unspecified	ICD-10-CM
I25.719	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unspecified angina pectoris	ICD-10-CM
I25.721	Atherosclerosis of autologous artery coronary artery bypass graft(s) with angina pectoris with documented spasm	ICD-10-CM
I25.738	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with other forms of angina pectoris	ICD-10-CM
I25.709	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unspecified angina pectoris	ICD-10-CM
I21.01	ST elevation (STEMI) myocardial infarction involving left main coronary artery	ICD-10-CM
I25.739	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unspecified angina pectoris	ICD-10-CM
I22.2	Subsequent non-ST elevation (NSTEMI) myocardial infarction	ICD-10-CM
I25.3	Aneurysm of heart	ICD-10-CM
I25.701	Atherosclerosis of coronary artery bypass graft(s), unspecified, with angina pectoris with documented spasm	ICD-10-CM
I25.729	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unspecified angina pectoris	ICD-10-CM
I25.2	Old myocardial infarction	ICD-10-CM
I25.718	Atherosclerosis of autologous vein coronary artery bypass graft(s) with other forms of angina pectoris	ICD-10-CM
I20.8	Other forms of angina pectoris	ICD-10-CM
I25.750	Atherosclerosis of native coronary artery of transplanted heart with unstable angina	ICD-10-CM

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Code	Description	Code Type
I21.21	ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery	ICD-10-CM
I25.812	Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina pectoris	ICD-10-CM
I25.798	Atherosclerosis of other coronary artery bypass graft(s) with other forms of angina pectoris	ICD-10-CM
I22.1	Subsequent ST elevation (STEMI) myocardial infarction of inferior wall	ICD-10-CM
I25.110	Atherosclerotic heart disease of native coronary artery with unstable angina pectoris	ICD-10-CM
I25.82	Chronic total occlusion of coronary artery	ICD-10-CM
I24.1	Dressler's syndrome	ICD-10-CM
I20.1	Angina pectoris with documented spasm	ICD-10-CM
I21.11	ST elevation (STEMI) myocardial infarction involving right coronary artery	ICD-10-CM
I25.811	Atherosclerosis of native coronary artery of transplanted heart without angina pectoris	ICD-10-CM
I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris	ICD-10-CM
I25.769	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unspecified angina pectoris	ICD-10-CM
I25.6	Silent myocardial ischemia	ICD-10-CM
I25.758	Atherosclerosis of native coronary artery of transplanted heart with other forms of angina pectoris	ICD-10-CM
I25.700	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unstable angina pectoris	ICD-10-CM

Appendix C. Specifications for Parameters of this Request

Sentinel's Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.0.4, was used to compare the frequency of diagnoses for ischemic heart disease using International Classificiation of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) versus International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes.

Enrollment Gap: 45 days
Enrollment Requirement: 183 days for incidence scenarios; 0 days for prevalence scenarios
Coverage Requirement: Medical and drug coverage
Age Groups: 0-18, 19-24, 25-64, and 65+ years

			Event					
Scenario	**Query Start Date**	**Query End Date**	**Event**	**Code Source**	**Incident with Respect to:**	**Washout (days)**	**Cohort Definition**	**Care Setting**
1	4/1/2015	9/30/2015	Ischemic Heart Disease	ICD-9-CM	ICD-9-CM	183	First valid event only	Any
2	4/1/2016	9/30/2016	Ischemic Heart Disease	ICD-10-CM Simple Forward Mapping (SFM)	ICD-10-CM	183	First valid event only	Any
3	4/1/2016	9/30/2016	Ischemic Heart Disease	ICD-10-CM Forward-Backward Mapping (FBM)	ICD-10-CM	183	First valid event only	Any
4	10/1/2010	9/30/2016	Ischemic Heart Disease	ICD-9-CM	N/A	0	All valid events	Any
5	10/1/2010	9/30/2016	Ischemic Heart Disease	ICD-10-CM SFM	N/A	0	All valid events	Any
6	10/1/2010	9/30/2016	Ischemic Heart Disease	ICD-10-CM FBM	N/A	0	All valid events	Any

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.