Disclaimer

The following report(s) provides findings from an FDA-initiated query using its Mini-Sentinel pilot. While Mini-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 Mini-Sentinel, and seeking to better understand the capabilities of the Mini-Sentinel pilot.

Data obtained through Mini-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 the Mini-Sentinel pilot in the public domain as soon as possible. Any public health actions taken by FDA regarding products involved in Mini-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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Request ID: to16_cap_mpl2r_wp005_nsdp_v02

Report Description: An evaluation of the association between dabigatran and ischemic stroke, with warfarin as the comparison exposure among individuals 21 years of age and older. This is report 3 of 8. The additional seven reports evaluate intracranial hemorrhage, gastrointestinal hemorrhage, and acute myocardial infarction among individuals 21 years of age and older and among individuals 65 years of age and older, as well as ischemic stroke among individuals 65 years of age and older.

Sentinel Modular Program Tool Used: Cohort Identification and Descriptive Analysis (CIDA) tool with Propensity Score Matching (PSM), version 2.0.6

Data Source: This request was distributed to Data Partners on July 8, 2015. This report contains data between November 1, 2010 and December 31, 2013 from four Data Partners contributing to the Mini-Sentinel Distributed Database (MSDD).

Study Design: Retrospective, new-user cohort design.

Cohort of Interest: New dabigatran (exposure) users and new warfarin (comparator) users, defined using National Drug Codes (NDCs).

Cohort Eligibility Criteria: All patients 21 years of age or older with a diagnosis of atrial fibrillation in the six months prior to drug initiation (dabigatran or warfarin) were included in this cohort. Cohort members were required to have maintained continuous enrollment in plans providing both medical and drug coverage for at least six months (183 days) before dabigatran or warfarin initiation, during which gaps in medical and drug coverage of up to 45 days were allowed. New use of dabigatran or warfarin was defined as no use of any anticoagulant (apixaban, dabigatran, rivaroxaban, or warfarin) in the previous six months (183 days).

Moreover, patients in the cohort were not eligible if they had evidence of the following conditions/procedures in the six months prior to drug initiation: valvular disease, dialysis, kidney transplant, deep vein thrombosis, pulmonary embolism, and joint replacement. Inclusions and exclusions in this request were defined using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) discharge diagnosis codes and Current Procedural Terminology (CPT) codes (see Appendix B).

Follow-up: Follow-up began on the first day any of the study drugs was dispensed and continued until the first occurrence of any of the following: 1) outcome diagnosis; 2) a dispensing of a different anticoagulant; 3) disenrollment; 4) cessation of study drug use (defined as when the days' supply was exhausted for longer than 14 days without a subsequent dispensing; 5) December 31, 2013.

Outcome: Ischemic stroke operationally defined by the ICD-9-CM discharge diagnosis codes (see Appendix C) flagged as a primary diagnosis in an inpatient encounter.

Analysis: The predefined covariates for the propensity score model included age, sex, comorbidity score, health service utilization, advanced kidney disease, advanced liver disease, alcoholism, anemia, cane use, central venous thrombosis, chronic heart failure, coagulation defects, commode chair use, coronary artery bypass grafting, diabetes mellitus, falls, hospitalized gastrointestinal bleed, hospitalized intracranial bleed, hyperlipidemia, hypertension, ischemic stroke, myocardial infarction, major surgery, metastatic cancer, non-specific cerebrovascular symptoms, osteoporotic fracture, other arterial embolism, other gastrointestinal ulcer disease, other hospitalized bleed, other ischemic cerebrovascular disease, other ischemic heart disease, smoking/tobacco use, percutaneous coronary intervention, peripheral vascular disease, transient ischemic attack , trauma with likely immobilization, use of home oxygen, venous thromboembolism, venous thromboembolism risk not otherwise specified, walker use, wheelchair use, and use of angiotensin-converting-enzyme inhibitors, aldosterone antagonists, anti-anginal agents, anti-arrhythmic medications, angiotensin receptor blockers, aspirin, beta-blockers, calcium channel blockers, cyclooxygenase-2 inhibitors, diuretics, estrogen, H2 antagonists, helicobacter pylori combinations, heparins and related medications, inducers of cytochrome P450 3A4, inhibitors of cytochrome P450 3A4, insulin cytochrome P450 3A4, non-statin lipid-lowering medications, non-steroidal anti-inflammatory drugs, oral anti-diabetic medications, other anti-hypertensive medications, platelet inhibitors, proton pump inhibitors, progestin, selective serotonin reuptake inhibitors/serotonin–norepinephrine reuptake inhibitors, and statins (see Appendix D).

The matching ratio for the propensity score was 1:1, and the matching calipers were 0.025 and 0.050. Patients in the exposed and comparator cohorts were nearest neighbor matched without replacement, meaning that each comparator patient was matched one time, at most, to an exposed patient. A Cox regression model stratified on Data Partner site and matched set was used to estimate the adjusted hazard ratio and 95% confidence interval.

See Appendix E for complete specifications for this request.

Limitations: 1) As with all observational studies, this evaluation is limited in its ability to perfectly control for all sources of potential bias; 2) The exposure, outcome, and covariates may have been misclassified due to imperfect algorithms used to identify them; 3) This assessment was one-time, and did not examine the performance of the tools in a sequential testing setting.

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.

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Glossary of Terms for Analyses Using
Cohort Idendification and Descriptive Analyis (CIDA) Tool*

Amount Supplied - number of units (pills, tablets, vials) dispensed. Net amount per NDC per dispensing. This is equivalent to

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),

Cohort Definition (drug/exposure)- Indicates how the cohort will be defined: (1): Cohort includes only the first valid incident treatment episode during the query period; (2): Cohort includes all valid incident treatment episodes during the query period; (3): Cohort includes all valid incident treatment episodes during the query period until an event occurs

Days Supplied - number of days supplied for all dispensings in qualifying treatment episodes

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

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

Episode Gap - number of days allowed between two (or more) consecutive exposures (dispensings/procedures) to be

Event Deduplication - specifies how events are counted by the MP algorithm: (0) Counts all occurrences of and HOI during an exposure episode; (1) de-duplicates occurrences of the same HOI code and code type on the same day; (3) de-duplicates occurrences of the same HOI group on the same day (eg. de-duplicates at the group level)

Exposure Extension Period - number of days post treatment period in which the outcomes/events are counted for a

Exposure Episode Length - number of days after exposure initiation that is considered "exposed time"

Induction 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

Lookback Period (pre-existing condition) - number of days wherein a member is required to have evidence of pre-existing condition (diagnosis/procedure/drug dispensing)

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

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

Treatment Episode Truncation Indicator - indicates whether observation of the incident query code during follow-up requires truncation of valid treatment episodes. A value of Y indicates that the treatment episodes should be truncated at the first occurrence of an incident query code. A value of N indicates that the treatment episodes should not be truncated at

Users - number of members with exposure during the query period. Member must have no evidence of exposure (s) of interest (defined by incidence criteria) in the prior washout period. A user may only be counted once in a query period.

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
**incident treatment episodes must be incident to both the exposure and the event

Glossary of Terms for Analyses Using
Propensity Score Match (PSM) Tool*

Bias Ranking - method for ranking/prioritizing covariates for inclusion in the hdPS model. This method yields a variable list in which variables are selected as ranked by the Bross bias formula.

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

Covariate Grouping Indicator - a requester-defined name used to indicate how codes should be grouped to identify a single

Exposure association ranking- default method for ranking/prioritizing covariates for inclusion in the hdPS model. This method yields a variable list in which the variables are selected as ranked by the strength of the relationship between confounder and exposure. This is most suitable for cases where there are fewer than 150 exposed outcomes.

High dimensional Propensity Score (hdPS) - allows for selection of empirically identified covariates in addition to and/or without predefined covariates based on the potential for confounding the exposure/outcome association under

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

Matching Caliper- maximum allowed difference in propensity scores between treatment and control patients. Options are

Matching Ratio - patients in exposed and comparators are nearest neighbor matched by a 1:1 or 1:100 (up to 100) matching

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

Number of covariates from pool of considered covariates to keep in hdPS model - The total number of covariates to keep in the hdPS model. Default value is the fewest of 1) 200; or 2) the number of initiators of the exposure of interest.

considered for inclusion in the hdPS model for each claim type (NDC, ICD9 diagnosis, ICD9 procedure, HCPCS, and CPT). If a value of 100 is specified in this field, then 500 covariates will be considered for inclusion (100 for each of the 5 claim types), Default value is 100.

yields a variable list in which the variables are selected as ranked by the strength of the relationship between confounder and the outcome. This is most suitable for disease risk scores.

Predefined Propensity Score Matched Analysis - performed by default using the Propensity Score Match Tool. Requester-defined covariates are included along with 12 other covariates: 1. Age (continuous) 2. Sex 3. Time (monitoring period) 4. Year of Exposure 5. Comorbidity Score (calculated during requester-defined lookback) 6. Medical Utilization- number of inpatient stays (during requester-defined lookback) 7. Medical Utilization- number of institutional stays (during requester-defined lookback) 8. Medical utilization- number of emergency department visits (during requester-defined lookback) 9. Medical utilization- number of outpatient visits (during requester-defined lookback) 10. Health care utilization- number of other ambulatory encounters (e.g telemedicine, email consults during requester-defined lookback) 11. Drug utilization- number of dispensings (during requester-defined lookback) 12. Drug utilization- number of unique generics dispensed (during requester-

Propensity Score Match Tool - performs effect estimation by comparing exposure propensity-score matched parallel new user cohorts. The Propensity Score Match Tool generates tables of patient characteristics, stratified by exposure group, for the unmatched cohort and for the 1:1 matched cohort. Tables include measures of covariate balance and the Mahalanobis distance. The program also generates histograms depicting the propensity score distributions for each exposure group, separately for each Data Partner and each monitoring period, before and after matching. Figures include c-statistics. This program provides hazard ratios and 95% confidence intervals, Mantel-Haenszel rate differences, the number needed to

Query Level - Mini-Sentinel routine data queries are grouped into three distinct "levels," indicative of the level of complexity, extent of analytic adjustment, and need for repeated execution and alerting tools (i.e., prospective surveillance).

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

*all terms may not be used in this report

Table 1. Cohort of New Initiators of Dabigatran and Warfarin at Risk for Ischemic Stroke[1] (Unmatched)

Characteristic	Dabigatran		Warfarin		Absolute Difference	Standardized Difference
			Primary Analysis		Covariate Balance	
	N	%/Std Dev[2]	N	%/Std Dev[2]		
Patients	30,913	100.0%	84,556	100.0%	0.00	-
Events while on therapy	96	0.3%	441	0.5%	-0.20	0.00
Mean person-days at risk	145.3	187.4	157	192.6	-11.70	-0.10
Patient Characteristics						
Gender (F)	10,694	34.6%	34,425	40.7%	-6.10	-0.10
Mean age (std dev)	68	11.2	73	10.7	-4.70	-0.40
21-44	1,046	3.4%	1,350	1.6%	1.80	0.10
45-64	11,519	37.3%	18,761	22.2%	15.10	0.30
65-74	8,898	28.8%	25,139	29.7%	-0.90	0.00
75-84	7,232	23.4%	28,278	33.4%	-10.00	-0.20
85+	2,218	7.2%	11,028	13.0%	-5.80	-0.20
Recorded History of[3]:						
Combined Comorbidity Score	2.0	2.1	2.7	2.5	-0.70	-0.30
Advanced Diagnosed Kidney Dysfunction	2,822	9.1%	14,953	17.7%	-8.60	-0.30
Advanced Liver Disease	56	0.2%	249	0.3%	-0.10	0.00
Alcoholism	130	0.4%	392	0.5%	-0.10	0.00
Anemia	1,282	4.1%	5,186	6.1%	-2.00	-0.10
Cane Use	56	0.2%	250	0.3%	-0.10	0.00
Chronic Heart Failure	10,059	32.5%	35,136	41.6%	-9.10	-0.20
Coagulation Defects	343	1.1%	2,707	3.2%	-2.10	-0.10
Commode Chair Use	206	0.7%	992	1.2%	-0.50	-0.10
Coronary Artery Bypass Surgery	1,731	5.6%	7,101	8.4%	-2.80	-0.10
Diabetes Mellitus	8,543	27.6%	29,366	34.7%	-7.10	-0.20
Falls	564	1.8%	2,575	3.0%	-1.20	-0.10
Hospitalized Gastrointestinal Bleed	308	1.0%	1,787	2.1%	-1.10	-0.10
Hospitalized Intracranial Bleed	99	0.3%	625	0.7%	-0.40	-0.10
Hyperlipidemia	9,689	31.3%	24,211	28.6%	2.70	0.10
Hypertension	23,058	74.6%	66,598	78.8%	-4.20	-0.10
Ischemic Stroke	2,100	6.8%	8,906	10.5%	-3.70	-0.10
Major Surgery	613	2.0%	2,445	2.9%	-0.90	-0.10
Metastatic Cancer	278	0.9%	1,341	1.6%	-0.70	-0.10
Myocardial Infarction	1,130	3.7%	5,288	6.3%	-2.60	-0.10
Non-specific Cerebrovascular Symptoms	468	1.5%	2,139	2.5%	-1.00	-0.10
Osteoporotic Fracture	392	1.3%	1,946	2.3%	-1.00	-0.10
Other Arterial Embolism	167	0.5%	1,091	1.3%	-0.80	-0.10
Other Gastrointestinal Ulcer Disease	222	0.7%	922	1.1%	-0.40	0.00
Other Hospitalized Bleed	289	0.9%	1,647	1.9%	-1.00	-0.10
Other Ischemic Cerebrovascular events	4,194	13.6%	15,338	18.1%	-4.50	-0.10
Other Ischemic Heart Disease	1,130	3.7%	4,126	4.9%	-1.20	-0.10
Percutaneous Coronary Intervention	2,778	9.0%	9,086	10.7%	-1.70	-0.10
Peripheral Vascular Disease	3,884	12.6%	15,586	18.4%	-5.80	-0.20
Central Venous Thrombosis	1	0.0%	21	0.0%	0.00	0.00
Venous Thromboembolism/ Phlebitis	643	2.1%	3,260	3.9%	-1.80	-0.10
Smoking or Tobacco Use	3,557	11.5%	9,308	11.0%	0.50	0.00
Transient Ischemic Attack	1,558	5.0%	5,292	6.3%	-1.30	-0.10
Trauma with likely Immobilization	887	2.9%	3,766	4.5%	-1.60	-0.10
Use of Home Oxygen	1,340	4.3%	5,904	7.0%	-2.70	-0.10
Venous Thromboembolism Risk, Not Otherwise Specified	0	0.0%	7	0.0%	0.00	-
Walker Use	459	1.5%	2,339	2.8%	-1.30	-0.10
Wheelchair Use	213	0.7%	1,106	1.3%	-0.60	-0.10

Table 1. Cohort of New Initiators of Dabigatran and Warfarin at Risk for Ischemic Stroke[1] (Unmatched)

| Characteristic | Primary Analysis | | | | Covariate Balance | |
| | Dabigatran | | Warfarin | | | |
	N	%/Std Dev[2]	N	%/Std Dev[2]	Absolute Difference	Standardized Difference
History of Use[4]:						
Angiotensin-Converting-Enzyme Inhibitors	10,127	32.8%	29,549	34.9%	-2.10	0.00
Aldosterone Antagonists	1,100	3.6%	4,069	4.8%	-1.20	-0.10
Antianginal Agents	2,012	6.5%	7,555	8.9%	-2.40	-0.10
Antiarrhythmic Medications	6,691	21.6%	15,210	18.0%	3.60	0.10
Angiotensin Receptor Blockers	5,867	19.0%	14,427	17.1%	1.90	0.00
Aspirin	93	0.3%	233	0.3%	0.00	0.00
Beta Blocker	17,628	57.0%	46,822	55.4%	1.60	0.00
Calcium Channel Blockers	9,398	30.4%	25,431	30.1%	0.30	0.00
Cyclooxygenase-2 Inhibitors	545	1.8%	1,181	1.4%	0.40	0.00
Diuretics	8,891	28.8%	30,812	36.4%	-7.60	-0.20
Estrogen	824	2.7%	1,770	2.1%	0.60	0.00
H2 Antagonists	793	2.6%	2,938	3.5%	-0.90	-0.10
Helicobacter Pylori Combinations	15	0.0%	22	0.0%	0.00	0.00
Heparins and Related Medications	200	0.6%	1,630	1.9%	-1.30	-0.10
Inducers of Cytochrome P450 3A4	186	0.6%	605	0.7%	-0.10	0.00
Inhibitors of Cytochrome P450 3A4	48	0.2%	96	0.1%	0.10	0.00
Insulin Cytochrome P450 3A4	1,527	4.9%	5,776	6.8%	-1.90	-0.10
Non-Statin Lipid-Lowering Medications	3,563	11.5%	8,530	10.1%	1.40	0.00
Non-Steroidal Anti-Inflammatory Drugs	4,132	13.4%	9,857	11.7%	1.70	0.10
Oral Antidiabetic Medications	5,356	17.3%	16,589	19.6%	-2.30	-0.10
Other Antihypertensive Medications	2,139	6.9%	7,810	9.2%	-2.30	-0.10
Platelet Inhibitors	3,498	11.3%	9,443	11.2%	0.10	0.00
Proton Pump Inhibitors	5,647	18.3%	16,814	19.9%	-1.60	0.00
Progestin	127	0.4%	470	0.6%	-0.20	0.00
Selective Serotonin Reuptake Inhibitors/Serotonin–Norepinephrine Reuptake Inhibitors	4,007	13.0%	11,363	13.4%	-0.40	0.00
Statins	13,916	45.0%	39,525	46.7%	-1.70	0.00
Health Service Utilization Intensity:						
Number of generic drugs	7.2	4.7	7.5	4.8	-0.30	-0.10
Number of filled prescriptions	17.8	14.6	18.2	14.7	-0.40	0.00
Number of inpatient hospital encounters (IP)	0.5	0.7	0.6	0.8	-0.10	-0.20
Number of non-acute institutional encounters (IS)	0.2	1.2	0.4	1.8	-0.20	-0.10
Number of emergency room encounters (ED)	0.4	0.9	0.4	1.1	0.00	0.00
Number of ambulatory encounters (AV)	9.8	8.3	11.5	9.8	-1.60	-0.20
Number of other ambulatory encounters (OA)	1.8	3.4	2.5	4.4	-0.70	-0.20

[1]See Appendix C for the list of codes used to define events

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

[3]See Appendix D for list of codes used to define these covariates

[4]See Appendix E for list of codes used to define these covariates

Table 2. Cohort of New Initiators of Dabigatran and Warfarin at Risk for Ischemic Stroke[1] (Matched 1:1 Predefined Propensity Score, Caliper = .025)

Characteristic	Primary Analysis				Covariate Balance	
	Dabigatran		Warfarin			
	N	%/Std Dev[2]	N	%/Std Dev[2]	Absolute Difference	Standardized Difference
Patients	30,004	97.1%	30,004	35.5%	0.00	1.30
Events while on therapy	96	0.3%	119	0.4%	-0.10	0.00
Mean person-days at risk	145.7	187.7	157.2	194.2	-11.50	-0.10
Patient Characteristics						
Gender (F)	10,554	35.2%	10,590	35.3%	-0.10	0.00
Mean age (std dev)	69	11.0	68	11.3	0.10	0.00
21-44	866	2.9%	1,054	3.5%	-0.60	0.00
45-64	10,906	36.3%	10,480	34.9%	1.40	0.00
65-74	8,800	29.3%	8,873	29.6%	-0.30	0.00
75-84	7,214	24.0%	7,454	24.8%	-0.80	0.00
85+	2,218	7.4%	2,143	7.1%	0.30	0.00
Recorded History of[3]:						
Combined Comorbidity Score	2.0	2.1	2.1	2.1	0.00	0.00
Advanced Diagnosed Kidney Dysfunction	2,821	9.4%	2,846	9.5%	-0.10	0.00
Advanced Liver Disease	55	0.2%	58	0.2%	0.00	0.00
Alcoholism	127	0.4%	121	0.4%	0.00	0.00
Anemia	1,265	4.2%	1,231	4.1%	0.10	0.00
Cane Use	56	0.2%	50	0.2%	0.00	0.00
Chronic Heart Failure	9,922	33.1%	10,073	33.6%	-0.50	0.00
Coagulation Defects	343	1.1%	358	1.2%	-0.10	0.00
Commode Chair Use	205	0.7%	226	0.8%	-0.10	0.00
Coronary Artery Bypass Surgery	1,723	5.7%	1,733	5.8%	-0.10	0.00
Diabetes Mellitus	8,421	28.1%	8,479	28.3%	-0.20	0.00
Falls	561	1.9%	558	1.9%	0.00	0.00
Hospitalized Gastrointestinal Bleed	305	1.0%	291	1.0%	0.00	0.00
Hospitalized Intracranial Bleed	99	0.3%	111	0.4%	-0.10	0.00
Hyperlipidemia	9,273	30.9%	9,174	30.6%	0.30	0.00
Hypertension	22,408	74.7%	22,380	74.6%	0.10	0.00
Ischemic Stroke	2,091	7.0%	2,085	6.9%	0.10	0.00
Major Surgery	608	2.0%	586	2.0%	0.00	0.00
Metastatic Cancer	277	0.9%	275	0.9%	0.00	0.00
Myocardial Infarction	1,126	3.8%	1,140	3.8%	0.00	0.00
Non-specific Cerebrovascular Symptoms	464	1.5%	432	1.4%	0.10	0.00
Osteoporotic Fracture	391	1.3%	384	1.3%	0.00	0.00
Other Arterial Embolism	167	0.6%	158	0.5%	0.10	0.00
Other Gastrointestinal Ulcer Disease	218	0.7%	221	0.7%	0.00	0.00
Other Hospitalized Bleed	287	1.0%	303	1.0%	0.00	0.00
Other Ischemic Cerebrovascular events	4,137	13.8%	4,149	13.8%	0.00	0.00
Other Ischemic Heart Disease	1,113	3.7%	1,155	3.8%	-0.10	0.00
Percutaneous Coronary Intervention	2,735	9.1%	2,809	9.4%	-0.30	0.00
Peripheral Vascular Disease	3,847	12.8%	3,849	12.8%	0.00	0.00
Central Venous Thrombosis	1	0.0%	2	0.0%	0.00	0.00
Venous Thromboembolism/ Phlebitis	642	2.1%	657	2.2%	-0.10	0.00
Smoking or Tobacco Use	3,402	11.3%	3,408	11.4%	-0.10	0.00
Transient Ischemic Attack	1,540	5.1%	1,479	4.9%	0.20	0.00
Trauma with likely Immobilization	876	2.9%	909	3.0%	-0.10	0.00
Use of Home Oxygen	1,328	4.4%	1,408	4.7%	-0.30	0.00
Venous Thromboembolism Risk, Not Otherwise Specified	0	0.0%	0	0.0%	0.00	-
Walker Use	458	1.5%	473	1.6%	-0.10	0.00
Wheelchair Use	211	0.7%	230	0.8%	-0.10	0.00

Table 2. Cohort of New Initiators of Dabigatran and Warfarin at Risk for Ischemic Stroke[1] (Matched 1:1 Predefined Propensity Score, Caliper = .025)

Characteristic	Primary Analysis				Covariate Balance	
	Dabigatran		Warfarin		Absolute Difference	Standardized Difference
	N	%/Std Dev[2]	N	%/Std Dev[2]		
History of Use[4]:						
Angiotensin-Converting-Enzyme Inhibitors	9,929	33.1%	9,840	32.8%	0.30	0.00
Aldosterone Antagonists	1,084	3.6%	1,163	3.9%	-0.30	0.00
Antianginal Agents	1,984	6.6%	1,997	6.7%	-0.10	0.00
Antiarrhythmic Medications	6,354	21.2%	6,430	21.4%	-0.20	0.00
Angiotensin Receptor Blockers	5,599	18.7%	5,685	18.9%	-0.20	0.00
Aspirin	90	0.3%	93	0.3%	0.00	0.00
Beta Blocker	17,024	56.7%	17,135	57.1%	-0.40	0.00
Calcium Channel Blockers	9,100	30.3%	9,097	30.3%	0.00	0.00
Cyclooxygenase-2 Inhibitors	520	1.7%	536	1.8%	-0.10	0.00
Diuretics	8,791	29.3%	8,841	29.5%	-0.20	0.00
Estrogen	794	2.6%	808	2.7%	-0.10	0.00
H2 Antagonists	788	2.6%	796	2.7%	-0.10	0.00
Helicobacter Pylori Combinations	12	0.0%	14	0.0%	0.00	0.00
Heparins and Related Medications	199	0.7%	215	0.7%	0.00	0.00
Inducers of Cytochrome P450 3A4	184	0.6%	187	0.6%	0.00	0.00
Inhibitors of Cytochrome P450 3A4	45	0.1%	44	0.1%	0.00	0.00
Insulin Cytochrome P450 3A4	1,512	5.0%	1,508	5.0%	0.00	0.00
Non-Statin Lipid-Lowering Medications	3,429	11.4%	3,412	11.4%	0.00	0.00
Non-Steroidal Anti-Inflammatory Drugs	3,939	13.1%	3,979	13.3%	-0.20	0.00
Oral Antidiabetic Medications	5,260	17.5%	5,374	17.9%	-0.40	0.00
Other Antihypertensive Medications	2,113	7.0%	2,104	7.0%	0.00	0.00
Platelet Inhibitors	3,391	11.3%	3,417	11.4%	-0.10	0.00
Proton Pump Inhibitors	5,522	18.4%	5,390	18.0%	0.40	0.00
Progestin	124	0.4%	119	0.4%	0.00	0.00
Selective Serotonin Reuptake Inhibitors/Serotonin–Norepinephrine Reuptake Inhibitors	3,892	13.0%	3,953	13.2%	-0.20	0.00
Statins	13,574	45.2%	13,576	45.2%	0.00	0.00
Health Service Utilization Intensity:						
Number of generic drugs	7.2	4.7	7.2	4.7	0.00	0.00
Number of filled prescriptions	17.8	14.6	17.9	14.5	-0.10	0.00
Number of inpatient hospital encounters (IP)	0.5	0.7	0.5	0.7	0.00	0.00
Number of non-acute institutional encounters (IS)	0.2	1.2	0.2	1.1	0.00	0.000
Number of emergency room encounters (ED)	0.4	0.9	0.4	0.9	0.00	0.00
Number of ambulatory encounters (AV)	9.9	8.4	10.0	8.2	-0.10	0.00
Number of other ambulatory encounters (OA)	1.9	3.5	1.9	3.4	0.00	0.00

[1]See Appendix C for the list of codes used to define events

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

[3]See Appendix D for list of codes used to define these covariates

[4]See Appendix E for list of codes used to define these covariates

Table 3. Cohort of New Initiators of Dabigatran and Warfarin at Risk for Ischemic Stroke[1] (Matched 1:1 Predefined Propensity Score, Caliper = .050)

Characteristic					Primary Analysis	Covariate Balance
		Dabigatran		Warfarin		
	N	%/Std Dev[2]	N	%/Std Dev[2]	Absolute Difference	Standardized Difference
Patients	30,080	97.3%	30,080	35.6%	0.00	1.30
Events while on therapy	96	0.3%	119	0.4%	-0.10	0.00
Mean person-days at risk	145.8	187.8	157.2	194.1	-11.40	-0.10
Patient Characteristics						
Gender (F)	10,570	35.1%	10,607	35.3%	-0.20	0.00
Mean age (std dev)	68	11.1	68	11.3	0.10	0.00
21-44	870	2.9%	1,055	3.5%	-0.60	0.00
45-64	10,960	36.4%	10,529	35.0%	1.40	0.00
65-74	8,816	29.3%	8,893	29.6%	-0.30	0.00
75-84	7,216	24.0%	7,460	24.8%	-0.80	0.00
85+	2,218	7.4%	2,143	7.1%	0.30	0.00
Recorded History of[3]:						
Combined Comorbidity Score	2.0	2.1	2.1	2.1	0.00	0.00
Advanced Diagnosed Kidney Dysfunction	2,821	9.4%	2,847	9.5%	-0.10	0.00
Advanced Liver Disease	55	0.2%	58	0.2%	0.00	0.00
Alcoholism	127	0.4%	121	0.4%	0.00	0.00
Anemia	1,266	4.2%	1,234	4.1%	0.10	0.00
Cane Use	56	0.2%	50	0.2%	0.00	0.00
Chronic Heart Failure	9,941	33.0%	10,091	33.5%	-0.50	0.00
Coagulation Defects	343	1.1%	358	1.2%	-0.10	0.00
Commode Chair Use	205	0.7%	227	0.8%	-0.10	0.00
Coronary Artery Bypass Surgery	1,724	5.7%	1,735	5.8%	-0.10	0.00
Diabetes Mellitus	8,433	28.0%	8,497	28.2%	-0.20	0.00
Falls	561	1.9%	558	1.9%	0.00	0.00
Hospitalized Gastrointestinal Bleed	305	1.0%	291	1.0%	0.00	0.00
Hospitalized Intracranial Bleed	99	0.3%	111	0.4%	-0.10	0.00
Hyperlipidemia	9,303	30.9%	9,202	30.6%	0.30	0.00
Hypertension	22,461	74.7%	22,434	74.6%	0.10	0.00
Ischemic Stroke	2,092	7.0%	2,086	6.9%	0.10	0.00
Major Surgery	609	2.0%	587	2.0%	0.00	0.00
Metastatic Cancer	277	0.9%	275	0.9%	0.00	0.00
Myocardial Infarction	1,126	3.7%	1,140	3.8%	-0.10	0.00
Non-specific Cerebrovascular Symptoms	464	1.5%	432	1.4%	0.10	0.00
Osteoporotic Fracture	391	1.3%	385	1.3%	0.00	0.00
Other Arterial Embolism	167	0.6%	159	0.5%	0.10	0.00
Other Gastrointestinal Ulcer Disease	218	0.7%	221	0.7%	0.00	0.00
Other Hospitalized Bleed	287	1.0%	304	1.0%	0.00	0.00
Other Ischemic Cerebrovascular events	4,142	13.8%	4,156	13.8%	0.00	0.00
Other Ischemic Heart Disease	1,114	3.7%	1,158	3.8%	-0.10	0.00
Percutaneous Coronary Intervention	2,739	9.1%	2,816	9.4%	-0.30	0.00
Peripheral Vascular Disease	3,850	12.8%	3,854	12.8%	0.00	0.00
Central Venous Thrombosis	1	0.0%	2	0.0%	0.00	0.00
Venous Thromboembolism/ Phlebitis	642	2.1%	657	2.2%	-0.10	0.00
Smoking or Tobacco Use	3,414	11.3%	3,412	11.3%	0.00	0.00
Transient Ischemic Attack	1,542	5.1%	1,482	4.9%	0.20	0.00
Trauma with likely Immobilization	879	2.9%	909	3.0%	-0.10	0.00
Use of Home Oxygen	1,328	4.4%	1,408	4.7%	-0.30	0.00
Venous Thromboembolism Risk, Not Otherwise Specified	0	0.0%	0	0.0%	0.00	-
Walker Use	458	1.5%	473	1.6%	-0.10	0.00
Wheelchair Use	211	0.7%	230	0.8%	-0.10	0.00

Table 3. Cohort of New Initiators of Dabigatran and Warfarin at Risk for Ischemic Stroke[1] (Matched 1:1 Predefined Propensity Score, Caliper = .050)

| Characteristic | Primary Analysis | | | | Covariate Balance | |
| | Dabigatran | | Warfarin | | | |
	N	%/Std Dev[2]	N	%/Std Dev[2]	Absolute Difference	Standardized Difference
History of Use[4]:						
Angiotensin-Converting-Enzyme Inhibitors	9,953	33.1%	9,862	32.8%	0.30	0.00
Aldosterone Antagonists	1,088	3.6%	1,163	3.9%	-0.30	0.00
Antianginal Agents	1,985	6.6%	1,997	6.6%	0.00	0.00
Antiarrhythmic Medications	6,380	21.2%	6,445	21.4%	-0.20	0.00
Angiotensin Receptor Blockers	5,619	18.7%	5,696	18.9%	-0.20	0.00
Aspirin	90	0.3%	93	0.3%	0.00	0.00
Beta Blocker	17,068	56.7%	17,181	57.1%	-0.40	0.00
Calcium Channel Blockers	9,116	30.3%	9,125	30.3%	0.00	0.00
Cyclooxygenase-2 Inhibitors	524	1.7%	541	1.8%	-0.10	0.00
Diuretics	8,801	29.3%	8,857	29.4%	-0.10	0.00
Estrogen	798	2.7%	810	2.7%	0.00	0.00
H2 Antagonists	790	2.6%	798	2.7%	-0.10	0.00
Helicobacter Pylori Combinations	12	0.0%	14	0.0%	0.00	0.00
Heparins and Related Medications	200	0.7%	215	0.7%	0.00	0.00
Inducers of Cytochrome P450 3A4	184	0.6%	187	0.6%	0.00	0.00
Inhibitors of Cytochrome P450 3A4	45	0.1%	46	0.2%	-0.10	0.00
Insulin Cytochrome P450 3A4	1,514	5.0%	1,510	5.0%	0.00	0.00
Non-Statin Lipid-Lowering Medications	3,437	11.4%	3,426	11.4%	0.00	0.00
Non-Steroidal Anti-Inflammatory Drugs	3,950	13.1%	3,992	13.3%	-0.20	0.00
Oral Antidiabetic Medications	5,270	17.5%	5,388	17.9%	-0.40	0.00
Other Antihypertensive Medications	2,115	7.0%	2,107	7.0%	0.00	0.00
Platelet Inhibitors	3,398	11.3%	3,428	11.4%	-0.10	0.00
Proton Pump Inhibitors	5,531	18.4%	5,403	18.0%	0.40	0.00
Progestin	125	0.4%	119	0.4%	0.00	0.00
Selective Serotonin Reuptake Inhibitors/Serotonin–Norepinephrine Reuptake Inhibitors	3,905	13.0%	3,965	13.2%	-0.20	0.00
Statins	13,608	45.2%	13,608	45.2%	0.00	0.00
Health Service Utilization Intensity:						
Number of generic drugs	7.2	4.7	7.2	4.7	0.00	0.00
Number of filled prescriptions	17.8	14.6	17.9	14.5	-0.10	0.00
Number of inpatient hospital encounters (IP)	0.5	0.7	0.5	0.7	0.00	0.00
Number of non-acute institutional encounters (IS)	0.2	1.2	0.2	1.1	0.00	0.00
Number of emergency room encounters (ED)	0.4	0.9	0.4	0.9	0.00	0.00
Number of ambulatory encounters (AV)	9.9	8.4	10.0	8.2	-0.10	0.00
Number of other ambulatory encounters (OA)	1.9	3.5	1.9	3.3	0.00	0.00

[1]See Appendix C for the list of codes used to define events

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

[3]See Appendix D for list of codes used to define these covariates

[4]See Appendix E for list of codes used to define these covariates

Table 4. Sequential Estimates for Ischemic Stroke* by Analysis Type

Exposure Definition	New Users	Person-Years at Risk	Average Person-Years at Risk	Number of Events	Incidence Rate per 1000 Person-Years	Risk per 1000 New Users	Incidence Rate Difference per 1000 Person-Years	Difference in Risk per 1000 New Users	Hazard Ratio (95% CI)	Wald P-Value
Unmatched Analysis (Site-adjusted only)										
Dabigatran	30,913	12,299.36	0.40	96	7.81	3.11	-4.33	-2.11	0.68 (0.55, 0.86)	0.0009
Warfarin	84,556	36,352.53	0.43	441	12.13	5.22				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	30,004	11,972.15	0.40	96	8.02	3.20	-1.19	-0.77	0.78 (0.55, 1.10)	0.1616
Warfarin	30,004	12,916.88	0.43	119	9.21	3.97				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	30,004	11,972.15	0.40	96	8.02	3.20	-1.19	-0.77	0.87 (0.66, 1.13)	0.2951
Warfarin	30,004	12,916.88	0.43	119	9.21	3.97				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	30,080	12,003.67	0.40	96	8.00	3.19	-1.20	-0.76	0.78 (0.55, 1.10)	0.1616
Warfarin	30,080	12,945.06	0.43	119	9.19	3.96				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	30,080	12,003.67	0.40	96	8.00	3.19	-1.20	-0.76	0.87 (0.66, 1.13)	0.2945
Warfarin	30,080	12,945.06	0.43	119	9.19	3.96				

*See Appendix C for the list of codes used to define events

Table 5. Sequential Estimates for Ischemic Stroke* by Analysis Type and Age Group

Exposure Definition	New Users	Person-Years at Risk	Average Person-Years at Risk	Number of Events	Incidence Rate per 1000 Person-Years	Risk per 1000 New Users	Incidence Rate Difference per 1000 Person-Years	Difference in Risk per 1000 New Users	Hazard Ratio (95% CI)	Wald P-Value
Ages 21-44 Years										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	1,046	225.45	0.22	1	4.44	0.96	1.78	0.22	2.07 (0.13, 33.53)	0.6073
Warfarin	1,350	376.60	0.28	1	2.66	0.74				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	841	178.71	0.21	1	5.60	1.19	5.60	1.19	. (. , .)	.
Warfarin	841	244.51	0.29	0	0.00	0.00				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	841	178.71	0.21	1	5.60	1.19	5.60	1.19	665E5 (0.00, .)	0.9976
Warfarin	841	244.51	0.29	0	0.00	0.00				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	854	182.39	0.21	1	5.48	1.17	5.48	1.17	. (. , .)	.
Warfarin	854	246.85	0.29	0	0.00	0.00				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	854	182.39	0.21	1	5.48	1.17	5.48	1.17	68E6 (0.00, .)	0.9976
Warfarin	854	246.85	0.29	0	0.00	0.00				
Ages 45-64 Years										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	11,519	4,167.36	0.36	21	5.04	1.82	-3.14	-1.00	0.67 (0.40, 1.11)	0.1203
Warfarin	18,761	6,481.13	0.35	53	8.18	2.83				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	10,327	3,729.85	0.36	21	5.63	2.03	-0.36	-0.10	0.73 (0.34, 1.60)	0.4346
Warfarin	10,327	3,669.89	0.36	22	5.99	2.13				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	10,327	3,729.85	0.36	21	5.63	2.03	-0.36	-0.10	0.95 (0.52, 1.73)	0.8607
Warfarin	10,327	3,669.89	0.36	22	5.99	2.13				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	10,416	3,768.58	0.36	21	5.57	2.02	-0.37	-0.10	0.73 (0.34, 1.60)	0.4346
Warfarin	10,416	3,699.92	0.36	22	5.95	2.11				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	10,416	3,768.58	0.36	21	5.57	2.02	-0.37	-0.10	0.95 (0.52, 1.72)	0.8563
Warfarin	10,416	3,699.92	0.36	22	5.95	2.11				

Table 5. Sequential Estimates for Ischemic Stroke* by Analysis Type and Age Group

Exposure Definition	New Users	Person-Years at Risk	Average Person-Years at Risk	Number of Events	Incidence Rate per 1000 Person-Years	Risk per 1000 New Users	Incidence Rate Difference per 1000 Person-Years	Difference in Risk per 1000 New Users	Hazard Ratio (95% CI)	Wald P-Value
Ages 65-74 Years										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	8,898	3,710.13	0.42	27	7.28	3.03	-2.60	-1.46	0.73 (0.48, 1.12)	0.1542
Warfarin	25,139	11,443.89	0.46	113	9.87	4.50				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	8,468	3,522.33	0.42	27	7.67	3.19	-2.01	-1.42	0.87 (0.48, 1.58)	0.6476
Warfarin	8,468	4,031.16	0.48	39	9.67	4.61				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	8,468	3,522.33	0.42	27	7.67	3.19	-2.01	-1.42	0.76 (0.46, 1.25)	0.2831
Warfarin	8,468	4,031.16	0.48	39	9.67	4.61				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	8,528	3,545.98	0.42	27	7.61	3.17	-2.01	-1.41	0.87 (0.48, 1.58)	0.6476
Warfarin	8,528	4,052.46	0.48	39	9.62	4.57				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	8,528	3,545.98	0.42	27	7.61	3.17	-2.01	-1.41	0.76 (0.47, 1.25)	0.2841
Warfarin	8,528	4,052.46	0.48	39	9.62	4.57				
Ages 75-84 Years										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	7,232	3,242.11	0.45	37	11.41	5.12	-2.81	-1.46	0.82 (0.57, 1.17)	0.2714
Warfarin	28,278	13,080.31	0.46	186	14.22	6.58				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	7,034	3,152.38	0.45	37	11.74	5.26	1.54	0.28	1.28 (0.69, 2.37)	0.4360
Warfarin	7,034	3,432.76	0.49	35	10.20	4.98				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	7,034	3,152.38	0.45	37	11.74	5.26	1.54	0.28	1.13 (0.71, 1.79)	0.6141
Warfarin	7,034	3,432.76	0.49	35	10.20	4.98				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	7,079	3,172.33	0.45	37	11.66	5.23	1.22	0.14	1.28 (0.69, 2.37)	0.4360
Warfarin	7,079	3,448.52	0.49	36	10.44	5.09				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	7,079	3,172.33	0.45	37	11.663	5.23	1.22	0.14	1.09 (0.69, 1.73)	0.7059
Warfarin	7,079	3,448.52	0.49	36	10.439	5.09				

Exposure Definition	New Users	Person-Years at Risk	Average Person-Years at Risk	Number of Events	Incidence Rate per 1000 Person-Years	Risk per 1000 New Users	Incidence Rate Difference per 1000 Person-Years	Difference in Risk per 1000 New Users	Hazard Ratio (95% CI)	Wald P-Value
Ages 85+ Years										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	2,218	954.30	0.43	10	10.48	4.51	-7.23	-3.47	0.59 (0.31, 1.14)	0.1162
Warfarin	11,028	4,970.61	0.45	88	17.70	7.98				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	2,037	874.66	0.43	8	9.15	3.93	-7.19	-3.93	0.40 (0.13, 1.28)	0.1214
Warfarin	2,037	979.21	0.48	16	16.34	7.85				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	2,037	874.66	0.43	8	9.15	3.93	-7.19	-3.93	0.54 (0.23, 1.27)	0.1567
Warfarin	2,037	979.21	0.48	16	16.34	7.85				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	2,059	882.83	0.43	8	9.06	3.89	-7.07	-3.89	0.40 (0.13, 1.28)	0.1214
Warfarin	2,059	992.00	0.48	16	16.13	7.77				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	2,059	882.83	0.43	8	9.06	3.89	-7.07	-3.89	0.54 (0.23, 1.27)	0.1591
Warfarin	2,059	992.00	0.48	16	16.13	7.77				

*See Appendix C for the list of codes used to define events

Note: Subgroup re-matching was limited to members who were matched in the full analysis.

Table 6. Sequential Estimates for Ischemic Stroke* by Analysis Type and Sex

Exposure Definition	New Users	Person-Years at Risk	Average Person-Years at Risk	Number of Events	Incidence Rate per 1000 Person-Years	Risk per 1000 New Users	Incidence Rate Difference per 1000 Person-Years	Difference in Risk per 1000 New Users	Hazard Ratio (95% CI)	Wald P-Value
Females										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	10,694	4,442.09	0.42	46	10.355	4.30	-4.68	-2.38	0.73 (0.53, 1.01)	0.0553
Warfarin	34,425	15,300.02	0.44	230	15.033	6.68				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	10,219	4,272.66	0.42	45	10.53	4.40	0.18	-0.29	1.00 (0.59, 1.69)	1.0000
Warfarin	10,219	4,637.98	0.45	48	10.35	4.70				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	10,219	4,272.66	0.42	45	10.53	4.40	0.18	-0.29	1.01 (0.67, 1.52)	0.9659
Warfarin	10,219	4,637.98	0.45	48	10.35	4.70				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	10,313	4,305.42	0.42	45	10.45	4.36	-0.25	-0.48	0.93 (0.56, 1.56)	0.7930
Warfarin	10,313	4,672.27	0.45	50	10.70	4.85				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	10,313	4,305.42	0.42	45	10.45	4.36	-0.25	-0.48	0.97 (0.65, 1.45)	0.8716
Warfarin	10,313	4,672.27	0.45	50	10.70	4.85				
Males										
Unmatched Analysis (Site-adjusted only)										
Dabigatran	20,218	7,856.74	0.39	50	6.36	2.47	-3.66	-1.74	0.66 (0.48, 0.90)	0.0088
Warfarin	50,127	21,050.47	0.42	211	10.02	4.21				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model Stratified by Matched Pair)										
Dabigatran	19,075	7,423.08	0.39	47	6.33	2.46	-1.82	-0.94	0.63 (0.39, 1.02)	0.0581
Warfarin	19,075	7,971.88	0.42	65	8.15	3.41				
1:1 Matched Predefined PS Analysis; Caliper=0.025 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	19,075	7,423.08	0.39	47	6.33	2.46	-1.82	-0.94	0.78 (0.53, 1.14)	0.1943
Warfarin	19,075	7,971.88	0.42	65	8.15	3.41				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model Stratified by Matched Pair)										
Dabigatran	19,206	7,488.10	0.39	49	6.54	2.55	-1.55	-0.83	0.67 (0.42, 1.08)	0.1012
Warfarin	19,206	8,027.14	0.42	65	8.10	3.38				
1:1 Matched Predefined PS Analysis; Caliper=0.050 (Cox Model NOT Stratified by Matched Pair)										
Dabigatran	19,206	7,488.10	0.39	49	6.54	2.55	-1.55	-0.83	0.81 (0.56, 1.18)	0.2700
Warfarin	19,206	8,027.14	0.42	65	8.10	3.38				

*See Appendix C for the list of codes used to define events

Note: Subgroup re-matching was limited to members who were matched in the full analysis.

DPID	Start Date	End Date
DP001	11/1/2010	12/31/2013
DP002	11/1/2010	12/31/2013
DP003	11/1/2010	12/31/2013
DP004	11/1/2010	12/31/2013

Appendix B. International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), and Current Procedural Terminology, Fourth Edition (CPT-4) Codes and Algorithm Used to Define Inclusions and Exclusions in this Request

Inclusions

Code	Code Type	Description	Caresetting
42731	ICD-9-CM Diagnosis	Atrial Fibrillation	Any
42732	ICD-9-CM Diagnosis	Atrial Flutter	Any

Exclusions

Code	Code Type	Description	Caresetting
7925	ICD-9-CM Diagnosis	Dialysis	Any
7925*	ICD-9-CM Diagnosis	Dialysis	Any
3995	ICD-9-CM Procedure	Dialysis	Any
5498	ICD-9-CM Procedure	Dialysis	Any
90935	CPT-4 Procedure	Dialysis	Outpatient
90937	CPT-4 Procedure	Dialysis	Outpatient
90945	CPT-4 Procedure	Dialysis	Outpatient
90947	CPT-4 Procedure	Dialysis	Outpatient
99512	CPT-4 Procedure	Dialysis	Outpatient
99601	CPT-4 Procedure	Dialysis	Outpatient
99602	CPT-4 Procedure	Dialysis	Outpatient
V562	ICD-9-CM Diagnosis	Dialysis	Any
V562*	ICD-9-CM Diagnosis	Dialysis	Any
556	ICD-9-CM Procedure	Kidney replacement	Any
556*	ICD-9-CM Procedure	Kidney replacement	Any
99681	ICD-9-CM Diagnosis	Kidney replacement	Any
V420	ICD-9-CM Diagnosis	Kidney replacement	Any
V420*	ICD-9-CM Diagnosis	Kidney replacement	Any
50340	CPT-4 Procedure	Kidney replacement	Any
50360	CPT-4 Procedure	Kidney replacement	Any
50365	CPT-4 Procedure	Kidney replacement	Any
50370	CPT-4 Procedure	Kidney replacement	Any
50380	CPT-4 Procedure	Kidney replacement	Any
4534	ICD-9-CM Diagnosis	DVT	Any
45340	ICD-9-CM Diagnosis	DVT	Any
45341	ICD-9-CM Diagnosis	DVT	Any
45342	ICD-9-CM Diagnosis	DVT	Any
4511	ICD-9-CM Diagnosis	DVT	Any
45111	ICD-9-CM Diagnosis	DVT	Any
45119	ICD-9-CM Diagnosis	DVT	Any
4512	ICD-9-CM Diagnosis	DVT	Any
45181	ICD-9-CM Diagnosis	DVT	Any
45183	ICD-9-CM Diagnosis	DVT	Any
45384	ICD-9-CM Diagnosis	DVT	Any
4151	ICD-9-CM Diagnosis	PE	Any
41511	ICD-9-CM Diagnosis	PE	Any
41512	ICD-9-CM Diagnosis	PE	Any

Exclusions

Code	Code Type	Description	Caresetting
41519	ICD-9-CM Diagnosis	PE	Any
V436	ICD-9-CM Diagnosis	Joint replacement	Any
V4360	ICD-9-CM Diagnosis	Joint replacement	Any
V4361	ICD-9-CM Diagnosis	Joint replacement	Any
V4362	ICD-9-CM Diagnosis	Joint replacement	Any
V4363	ICD-9-CM Diagnosis	Joint replacement	Any
V4364	ICD-9-CM Diagnosis	Joint replacement	Any
V4365	ICD-9-CM Diagnosis	Joint replacement	Any
V4366	ICD-9-CM Diagnosis	Joint replacement	Any
V4369	ICD-9-CM Diagnosis	Joint replacement	Any
815	ICD-9-CM Procedure	Joint replacement	Any
8151	ICD-9-CM Procedure	Joint replacement	Any
8152	ICD-9-CM Procedure	Joint replacement	Any
8153	ICD-9-CM Procedure	Joint replacement	Any
8154	ICD-9-CM Procedure	Joint replacement	Any
8155	ICD-9-CM Procedure	Joint replacement	Any
8156	ICD-9-CM Procedure	Joint replacement	Any
8157	ICD-9-CM Procedure	Joint replacement	Any
8159	ICD-9-CM Procedure	Joint replacement	Any
818	ICD-9-CM Procedure	Joint replacement	Any
8180	ICD-9-CM Procedure	Joint replacement	Any
8181	ICD-9-CM Procedure	Joint replacement	Any
8182	ICD-9-CM Procedure	Joint replacement	Any
8183	ICD-9-CM Procedure	Joint replacement	Any
8184	ICD-9-CM Procedure	Joint replacement	Any
8185	ICD-9-CM Procedure	Joint replacement	Any
24363	CPT-4 Procedure	Joint replacement	Any
27130	CPT-4 Procedure	Joint replacement	Any
27132	CPT-4 Procedure	Joint replacement	Any
27134	CPT-4 Procedure	Joint replacement	Any
27137	CPT-4 Procedure	Joint replacement	Any
27138	CPT-4 Procedure	Joint replacement	Any
27447	CPT-4 Procedure	Joint replacement	Any
3940	ICD-9-CM Diagnosis	Valvular disease	Any
3940*	ICD-9-CM Diagnosis	Valvular disease	Any
3942	ICD-9-CM Diagnosis	Valvular disease	Any
3942*	ICD-9-CM Diagnosis	Valvular disease	Any
3960	ICD-9-CM Diagnosis	Valvular disease	Any
3960*	ICD-9-CM Diagnosis	Valvular disease	Any
3961	ICD-9-CM Diagnosis	Valvular disease	Any
3961*	ICD-9-CM Diagnosis	Valvular disease	Any
7465	ICD-9-CM Diagnosis	Valvular disease	Any
7465*	ICD-9-CM Diagnosis	Valvular disease	Any
3623	ICD-9-CM Procedure	Valvular disease	Any
3597	ICD-9-CM Procedure	Valvular disease	Any

Exclusions

Code	Code Type	Description	Caresetting
92987	CPT-4 Procedure	Valvular disease	Any
33427	CPT-4 Procedure	Valvular disease	Any
33426	CPT-4 Procedure	Valvular disease	Any
33425	CPT-4 Procedure	Valvular disease	Any
33422	CPT-4 Procedure	Valvular disease	Any
33420	CPT-4 Procedure	Valvular disease	Any
33430	CPT-4 Procedure	Valvular disease	Any
99602	ICD-9-CM Diagnosis	Valvular disease	Any
99671	ICD-9-CM Diagnosis	Valvular disease	Any
3520	ICD-9-CM Procedure	Valvular disease	Any
3522	ICD-9-CM Procedure	Valvular disease	Any
3524	ICD-9-CM Procedure	Valvular disease	Any
33405	CPT-4 Procedure	Valvular disease	Any

Appendix C. International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Codes and Algorithm Used to Define Ischemic Stroke in this Request

Code	Code Type	Description
433*1	ICD-9-CM Diagnosis	Occlusion and stenosis with cerebral infarction
434*1	ICD-9-CM Diagnosis	Occlusion and stenosis with cerebral infarction
436	ICD-9-CM Diagnosis	Acute, but ill-defined, cerebrovascular disease

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

Covariate	Code	Code Type	Description
Advanced diagnosed kidney dysfunction	40311	ICD-9-CM Diagnosis	Hypertensive chronic kidney disease, benign, with chronic kidney disease stage V or end stage renal disease
Advanced diagnosed kidney dysfunction	40391	ICD-9-CM Diagnosis	Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage V or end stage renal disease
Advanced diagnosed kidney dysfunction	40412	ICD-9-CM Diagnosis	Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V or end stage renal disease
Advanced diagnosed kidney dysfunction	40492	ICD-9-CM Diagnosis	Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V or end stage renal disease
Advanced diagnosed kidney dysfunction	585	ICD-9-CM Diagnosis	Chronic kidney disease
Advanced diagnosed kidney dysfunction	585*	ICD-9-CM Diagnosis	Chronic kidney disease
Advanced diagnosed kidney dysfunction	586	ICD-9-CM Diagnosis	Renal failure, unspecified
Advanced diagnosed kidney dysfunction	V420	ICD-9-CM Diagnosis	Kidney replaced by transplant
Advanced diagnosed kidney dysfunction	V420*	ICD-9-CM Diagnosis	Kidney replaced by transplant
Advanced diagnosed kidney dysfunction	V451	ICD-9-CM Diagnosis	Postsurgical renal dialysis status
Advanced diagnosed kidney dysfunction	V451*	ICD-9-CM Diagnosis	Postsurgical renal dialysis status
Advanced diagnosed kidney dysfunction	V560	ICD-9-CM Diagnosis	Encounter for extracorporeal dialysis
Advanced diagnosed kidney dysfunction	V560*	ICD-9-CM Diagnosis	Encounter for extracorporeal dialysis
Advanced diagnosed kidney dysfunction	V568	ICD-9-CM Diagnosis	Encounter for other dialysis
Advanced diagnosed kidney dysfunction	V568*	ICD-9-CM Diagnosis	Encounter for other dialysis
Advanced liver disease	4560	ICD-9-CM Diagnosis	Esophageal varices with bleeding
Advanced liver disease	4560*	ICD-9-CM Diagnosis	Esophageal varices with bleeding
Advanced liver disease	4561	ICD-9-CM Diagnosis	Esophageal varices without mention of bleeding
Advanced liver disease	4561*	ICD-9-CM Diagnosis	Esophageal varices without mention of bleeding
Advanced liver disease	4562	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
Advanced liver disease	4562*	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
Advanced liver disease	5722	ICD-9-CM Diagnosis	Hepatic encephalopathy
Advanced liver disease	5722*	ICD-9-CM Diagnosis	Hepatic encephalopathy
Advanced liver disease	5723	ICD-9-CM Diagnosis	Portal hypertension
Advanced liver disease	5723*	ICD-9-CM Diagnosis	Portal hypertension
Advanced liver disease	5724	ICD-9-CM Diagnosis	Hepatorenal syndrome
Advanced liver disease	5724*	ICD-9-CM Diagnosis	Hepatorenal syndrome
Advanced liver disease	5728	ICD-9-CM Diagnosis	Other sequelae of chronic liver disease
Advanced liver disease	5728*	ICD-9-CM Diagnosis	Other sequelae of chronic liver disease

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

Covariate	Code	Code Type	Description
Alcoholism	291	ICD-9-CM Diagnosis	Alcohol-induced mental disorders
Alcoholism	291*	ICD-9-CM Diagnosis	Alcohol-induced mental disorders
Alcoholism	291**	ICD-9-CM Diagnosis	Alcohol-induced mental disorders
Alcoholism	30393	ICD-9-CM Diagnosis	Alcohol dependence syndrome
Alcoholism	V113	ICD-9-CM Diagnosis	Personal history of alcoholism
Alcoholism	V113*	ICD-9-CM Diagnosis	Personal history of alcoholism
Anemia	2801	ICD-9-CM Diagnosis	Iron deficiency anemia secondary to inadequate dietary iron intake
Anemia	2801*	ICD-9-CM Diagnosis	Iron deficiency anemia secondary to inadequate dietary iron intake
Anemia	2808	ICD-9-CM Diagnosis	Other specified iron deficiency anemias
Anemia	2808*	ICD-9-CM Diagnosis	Other specified iron deficiency anemias
Anemia	2809	ICD-9-CM Diagnosis	Iron deficiency anemia, unspecified
Anemia	2809*	ICD-9-CM Diagnosis	Iron deficiency anemia, unspecified
Anemia	281	ICD-9-CM Diagnosis	Other deficiency anemias
Anemia	281*	ICD-9-CM Diagnosis	Other deficiency anemias
Cane Use	E0100	HCPCS Procedure	Cane, includes canes of all materials, adjustable or fixed, with tip
Cane Use	E0105	HCPCS Procedure	Cane, quad or three prong, includes canes of all materials, adjustable or fixed, with tips
Chronic heart failure	40201	ICD-9-CM Diagnosis	Malignant hypertensive heart disease with heart failure
Chronic heart failure	40211	ICD-9-CM Diagnosis	Benign hypertensive heart disease with heart failure
Chronic heart failure	40291	ICD-9-CM Diagnosis	Unspecified hypertensive heart disease with heart failure
Chronic heart failure	425	ICD-9-CM Diagnosis	Cardiomyopathy
Chronic heart failure	425*	ICD-9-CM Diagnosis	Cardiomyopathy
Chronic heart failure	425**	ICD-9-CM Diagnosis	Cardiomyopathy
Chronic heart failure	428	ICD-9-CM Diagnosis	Heart failure
Chronic heart failure	428*	ICD-9-CM Diagnosis	Heart failure
Chronic heart failure	428**	ICD-9-CM Diagnosis	Heart failure
Chronic heart failure	4293	ICD-9-CM Diagnosis	Cardiomegaly
Chronic heart failure	4293*	ICD-9-CM Diagnosis	Cardiomegaly
Coagulation defects	286	ICD-9-CM Diagnosis	Coagulation defects
Coagulation defects	286*	ICD-9-CM Diagnosis	Coagulation defects
Coagulation defects	286**	ICD-9-CM Diagnosis	Coagulation defects
Commode chair use	E0163	HCPCS Procedure	Commode chair, mobile or stationary, with fixed arms
Commode chair use	E0165	HCPCS Procedure	Commode chair, mobile or stationary, with detachable arms

Covariate	Code	Code Type	Description
Commode chair use	E0167	HCPCS Procedure	Pail or pan for use with commode chair, replacement only
Commode chair use	E0168	HCPCS Procedure	Commode chair, extra wide and/or heavy duty, stationary or mobile, with or without arms, any type, each
Commode chair use	E0170	HCPCS Procedure	Commode chair with integrated seat lift mechanism, electric, any type
Commode chair use	E0171	HCPCS Procedure	Commode chair with integrated seat lift mechanism, non-electric, any type
Commode chair use	E0175	HCPCS Procedure	Foot rest, for use with commode chair, each
Coronary artery bypass surgery (CABG)	99603	ICD-9-CM Diagnosis	Mechanical complication due to coronary bypass graft
Coronary artery bypass surgery (CABG)	V4581	ICD-9-CM Diagnosis	Aortocoronary bypass status
Coronary artery bypass surgery (CABG)	361	ICD-9-CM Procedure	Bypass Anastomosis For Heart Revascularization
Coronary artery bypass surgery (CABG)	361*	ICD-9-CM Procedure	Bypass Anastomosis For Heart Revascularization
Coronary artery bypass surgery (CABG)	362	ICD-9-CM Procedure	Heart Revascularization By Arterial Implant
Coronary artery bypass surgery (CABG)	362*	ICD-9-CM Procedure	Heart Revascularization By Arterial Implant
Coronary artery bypass surgery (CABG)	33510	CPT Procedure	CABG VEIN SINGLE
Coronary artery bypass surgery (CABG)	33511	CPT Procedure	CABG VEIN TWO
Coronary artery bypass surgery (CABG)	33512	CPT Procedure	CABG VEIN THREE
Coronary artery bypass surgery (CABG)	33513	CPT Procedure	CABG VEIN FOUR
Coronary artery bypass surgery (CABG)	33514	CPT Procedure	CABG VEIN FIVE
Coronary artery bypass surgery (CABG)	33516	CPT Procedure	CABG VEIN SIX OR MORE
Coronary artery bypass surgery (CABG)	33517	CPT Procedure	CABG ARTERY-VEIN SINGLE
Coronary artery bypass surgery (CABG)	33518	CPT Procedure	CABG ARTERY-VEIN TWO
Coronary artery bypass surgery (CABG)	33519	CPT Procedure	CABG ARTERY-VEIN THREE
Coronary artery bypass surgery (CABG)	33520	CPT Procedure	
Coronary artery bypass surgery (CABG)	33521	CPT Procedure	CABG ARTERY-VEIN FOUR
Coronary artery bypass surgery (CABG)	33522	CPT Procedure	CABG ARTERY-VEIN FIVE
Coronary artery bypass surgery (CABG)	33523	CPT Procedure	CABG ART-VEIN SIX OR MORE
Coronary artery bypass surgery (CABG)	33525	CPT Procedure	
Coronary artery bypass surgery (CABG)	S2205	HCPCS Procedure	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using arterial graft(s), single coronary arterial graft

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

Covariate	Code	Code Type	Description
Coronary artery bypass surgery (CABG)	S2206	HCPCS Procedure	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using arterial graft(s), two coronary arterial grafts
Coronary artery bypass surgery (CABG)	S2207	HCPCS Procedure	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using venous graft only, single coronary venous graft
Coronary artery bypass surgery (CABG)	S2208	HCPCS Procedure	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using single arterial and venous graft(s), single venous graft
Coronary artery bypass surgery (CABG)	S2209	HCPCS Procedure	Minimally invasive direct coronary artery bypass surgery involving mini-thoracotomy or mini-sternotomy surgery, performed under direct vision; using two arterial grafts and single venous graft
Diabetes mellitus	250	ICD-9-CM Diagnosis	Diabetes mellitus
Diabetes mellitus	250*	ICD-9-CM Diagnosis	Diabetes mellitus
Diabetes mellitus	250**	ICD-9-CM Diagnosis	Diabetes mellitus
Diabetes mellitus	3572	ICD-9-CM Diagnosis	Polyneuropathy in diabetes
Diabetes mellitus	3572*	ICD-9-CM Diagnosis	Polyneuropathy in diabetes
Diabetes mellitus	3620	ICD-9-CM Diagnosis	Diabetic retinopathy
Diabetes mellitus	3620*	ICD-9-CM Diagnosis	Diabetic retinopathy
Diabetes mellitus	36641	ICD-9-CM Diagnosis	Diabetic cataract
Falls	E880	ICD-9-CM Diagnosis	Fall on or from stairs or steps
Falls	E880*	ICD-9-CM Diagnosis	Fall on or from stairs or steps
Falls	E881	ICD-9-CM Diagnosis	Fall on or from ladders or scaffolding
Falls	E881*	ICD-9-CM Diagnosis	Fall on or from ladders or scaffolding
Falls	E882	ICD-9-CM Diagnosis	Fall from or out of building or other structure
Falls	E882*	ICD-9-CM Diagnosis	Fall from or out of building or other structure
Falls	E883	ICD-9-CM Diagnosis	Fall into hole or other opening in surface

Covariate	Code	Code Type	Description
Falls	E883*	ICD-9-CM Diagnosis	Fall into hole or other opening in surface
Falls	E884	ICD-9-CM Diagnosis	Other accidental falls from one level to another
Falls	E884*	ICD-9-CM Diagnosis	Other accidental falls from one level to another
Falls	E885	ICD-9-CM Diagnosis	Accidental fall on same level from slipping tripping or stumbling
Falls	E885*	ICD-9-CM Diagnosis	Accidental fall on same level from slipping tripping or stumbling
Falls	E886	ICD-9-CM Diagnosis	Fall on same level from collision, pushing, or shoving, by or with other person
Falls	E886*	ICD-9-CM Diagnosis	Fall on same level from collision, pushing, or shoving, by or with other person
Falls	E887	ICD-9-CM Diagnosis	Fracture, cause unspecified
Falls	E887*	ICD-9-CM Diagnosis	Fracture, cause unspecified
Falls	E888	ICD-9-CM Diagnosis	Other and unspecified fall
Falls	E888*	ICD-9-CM Diagnosis	Other and unspecified fall
Hospitalized gastrointestinal bleed	5310	ICD-9-CM Diagnosis	Acute gastric ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5310*	ICD-9-CM Diagnosis	Acute gastric ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5311	ICD-9-CM Diagnosis	Acute gastric ulcer with perforation
Hospitalized gastrointestinal bleed	5311*	ICD-9-CM Diagnosis	Acute gastric ulcer with perforation
Hospitalized gastrointestinal bleed	5312	ICD-9-CM Diagnosis	Acute gastric ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5312*	ICD-9-CM Diagnosis	Acute gastric ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5313	ICD-9-CM Diagnosis	Acute gastric ulcer without mention of hemorrhage or perforation
Hospitalized gastrointestinal bleed	5313*	ICD-9-CM Diagnosis	Acute gastric ulcer without mention of hemorrhage or perforation
Hospitalized gastrointestinal bleed	5314	ICD-9-CM Diagnosis	Chronic or unspecified gastric ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5314*	ICD-9-CM Diagnosis	Chronic or unspecified gastric ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5315	ICD-9-CM Diagnosis	Chronic or unspecified gastric ulcer with perforation
Hospitalized gastrointestinal bleed	5315*	ICD-9-CM Diagnosis	Chronic or unspecified gastric ulcer with perforation
Hospitalized gastrointestinal bleed	5316	ICD-9-CM Diagnosis	Chronic or unspecified gastric ulcer with hemorrhage and perforation

Covariate	Code	Code Type	Description
Hospitalized gastrointestinal bleed	5316*	ICD-9-CM Diagnosis	Chronic or unspecified gastric ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5320	ICD-9-CM Diagnosis	Acute duodenal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5320*	ICD-9-CM Diagnosis	Acute duodenal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5321	ICD-9-CM Diagnosis	Acute duodenal ulcer with perforation
Hospitalized gastrointestinal bleed	5321*	ICD-9-CM Diagnosis	Acute duodenal ulcer with perforation
Hospitalized gastrointestinal bleed	5322	ICD-9-CM Diagnosis	Acute duodenal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5322*	ICD-9-CM Diagnosis	Acute duodenal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5323	ICD-9-CM Diagnosis	Acute duodenal ulcer without mention of hemorrhage or perforation
Hospitalized gastrointestinal bleed	5323*	ICD-9-CM Diagnosis	Acute duodenal ulcer without mention of hemorrhage or perforation
Hospitalized gastrointestinal bleed	5324	ICD-9-CM Diagnosis	Chronic or unspecified duodenal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5324*	ICD-9-CM Diagnosis	Chronic or unspecified duodenal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5325	ICD-9-CM Diagnosis	Chronic or unspecified duodenal ulcer with perforation
Hospitalized gastrointestinal bleed	5325*	ICD-9-CM Diagnosis	Chronic or unspecified duodenal ulcer with perforation
Hospitalized gastrointestinal bleed	5326	ICD-9-CM Diagnosis	Chronic or unspecified duodenal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5326*	ICD-9-CM Diagnosis	Chronic or unspecified duodenal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5330	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site with hemorrhage
Hospitalized gastrointestinal bleed	5330*	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site with hemorrhage
Hospitalized gastrointestinal bleed	5331	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site with perforation
Hospitalized gastrointestinal bleed	5331*	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site with perforation
Hospitalized gastrointestinal bleed	5332	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5332*	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5333	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site without mention of hemorrhage and perforation

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

Covariate	Code	Code Type	Description
Hospitalized gastrointestinal bleed	5333*	ICD-9-CM Diagnosis	Acute peptic ulcer of unspecified site without mention of hemorrhage and perforation
Hospitalized gastrointestinal bleed	5334	ICD-9-CM Diagnosis	Chronic or unspecified peptic ulcer of unspecified site with hemorrhage
Hospitalized gastrointestinal bleed	5334*	ICD-9-CM Diagnosis	Chronic or unspecified peptic ulcer of unspecified site with hemorrhage
Hospitalized gastrointestinal bleed	5335	ICD-9-CM Diagnosis	Chronic or unspecified peptic ulcer of unspecified site with perforation
Hospitalized gastrointestinal bleed	5335*	ICD-9-CM Diagnosis	Chronic or unspecified peptic ulcer of unspecified site with perforation
Hospitalized gastrointestinal bleed	5336	ICD-9-CM Diagnosis	Chronic or unspecified peptic ulcer of unspecified site with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5336*	ICD-9-CM Diagnosis	Chronic or unspecified peptic ulcer of unspecified site with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5340	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5340*	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5341	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer with perforation
Hospitalized gastrointestinal bleed	5341*	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer with perforation
Hospitalized gastrointestinal bleed	5342	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5342*	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	5343	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer without mention of hemorrhage or perforation
Hospitalized gastrointestinal bleed	5343*	ICD-9-CM Diagnosis	Acute gastrojejunal ulcer without mention of hemorrhage or perforation
Hospitalized gastrointestinal bleed	5344	ICD-9-CM Diagnosis	Chronic or unspecified gastrojejunal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5344*	ICD-9-CM Diagnosis	Chronic or unspecified gastrojejunal ulcer with hemorrhage
Hospitalized gastrointestinal bleed	5345	ICD-9-CM Diagnosis	Chronic or unspecified gastrojejunal ulcer with perforation
Hospitalized gastrointestinal bleed	5345*	ICD-9-CM Diagnosis	Chronic or unspecified gastrojejunal ulcer with perforation
Hospitalized gastrointestinal bleed	5346	ICD-9-CM Diagnosis	Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation

Covariate	Code	Code Type	Description
Hospitalized gastrointestinal bleed	5346*	ICD-9-CM Diagnosis	Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation
Hospitalized gastrointestinal bleed	53501	ICD-9-CM Diagnosis	Acute gastritis with hemorrhage
Hospitalized gastrointestinal bleed	53511	ICD-9-CM Diagnosis	Atrophic gastritis with hemorrhage
Hospitalized gastrointestinal bleed	53521	ICD-9-CM Diagnosis	Gastric mucosal hypertrophy with hemorrhage
Hospitalized gastrointestinal bleed	53531	ICD-9-CM Diagnosis	Alcoholic gastritis with hemorrhage
Hospitalized gastrointestinal bleed	53541	ICD-9-CM Diagnosis	Other specified gastritis with hemorrhage
Hospitalized gastrointestinal bleed	53561	ICD-9-CM Diagnosis	Duodenitis with hemorrhage
Hospitalized gastrointestinal bleed	53783	ICD-9-CM Diagnosis	Angiodysplasia of stomach and duodenum with hemorrhage
Hospitalized gastrointestinal bleed	56202	ICD-9-CM Diagnosis	Diverticulosis of small intestine with hemorrhage
Hospitalized gastrointestinal bleed	56203	ICD-9-CM Diagnosis	Diverticulitis of small intestine with hemorrhage
Hospitalized gastrointestinal bleed	56212	ICD-9-CM Diagnosis	Diverticulosis of colon with hemorrhage
Hospitalized gastrointestinal bleed	56213	ICD-9-CM Diagnosis	Diverticulitis of colon with hemorrhage
Hospitalized gastrointestinal bleed	56881	ICD-9-CM Diagnosis	Hemoperitoneum (nontraumatic)
Hospitalized gastrointestinal bleed	5693	ICD-9-CM Diagnosis	Hemorrhage of rectum and anus
Hospitalized gastrointestinal bleed	5693*	ICD-9-CM Diagnosis	Hemorrhage of rectum and anus
Hospitalized gastrointestinal bleed	56985	ICD-9-CM Diagnosis	Angiodysplasia of intestine with hemorrhage
Hospitalized gastrointestinal bleed	578	ICD-9-CM Diagnosis	Gastrointestinal hemorrhage
Hospitalized gastrointestinal bleed	578*	ICD-9-CM Diagnosis	Gastrointestinal hemorrhage
Hospitalized intracranial bleed	430	ICD-9-CM Diagnosis	Subarachnoid hemorrhage
Hospitalized intracranial bleed	431	ICD-9-CM Diagnosis	Intracerebral hemorrhage
Hospitalized intracranial bleed	432	ICD-9-CM Diagnosis	Other and unspecified intracranial hemorrhage
Hospitalized intracranial bleed	432*	ICD-9-CM Diagnosis	Other and unspecified intracranial hemorrhage
Hospitalized intracranial bleed	8520	ICD-9-CM Diagnosis	Subarachnoid hemorrhage following injury without mention of open intracranial wound
Hospitalized intracranial bleed	8520*	ICD-9-CM Diagnosis	Subarachnoid hemorrhage following injury without mention of open intracranial wound
Hospitalized intracranial bleed	8522	ICD-9-CM Diagnosis	Subdural hemorrhage following injury without mention of open intracranial wound
Hospitalized intracranial bleed	8522*	ICD-9-CM Diagnosis	Subdural hemorrhage following injury without mention of open intracranial wound

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

Covariate	Code	Code Type	Description
Hospitalized intracranial bleed	8524	ICD-9-CM Diagnosis	Extradural hemorrhage following injury without mention of open intracranial wound
Hospitalized intracranial bleed	8524*	ICD-9-CM Diagnosis	Extradural hemorrhage following injury without mention of open intracranial wound
Hospitalized intracranial bleed	8530	ICD-9-CM Diagnosis	Other and unspecified intracranial hemorrhage following injury without mention of open intracranial
Hospitalized intracranial bleed	8530*	ICD-9-CM Diagnosis	Other and unspecified intracranial hemorrhage following injury without mention of open intracranial
Hyperlipidemia	2720	ICD-9-CM Diagnosis	Pure hypercholesterolemia
Hyperlipidemia	2720*	ICD-9-CM Diagnosis	Pure hypercholesterolemia
Hyperlipidemia	2721	ICD-9-CM Diagnosis	Pure hyperglyceridemia
Hyperlipidemia	2721*	ICD-9-CM Diagnosis	Pure hyperglyceridemia
Hyperlipidemia	2722	ICD-9-CM Diagnosis	Mixed hyperlipidemia
Hyperlipidemia	2722*	ICD-9-CM Diagnosis	Mixed hyperlipidemia
Hyperlipidemia	2723	ICD-9-CM Diagnosis	Hyperchylomicronemia
Hyperlipidemia	2723*	ICD-9-CM Diagnosis	Hyperchylomicronemia
Hypertension	401	ICD-9-CM Diagnosis	Essential hypertension
Hypertension	401*	ICD-9-CM Diagnosis	Essential hypertension
Hypertension	402	ICD-9-CM Diagnosis	Hypertensive heart disease
Hypertension	402*	ICD-9-CM Diagnosis	Hypertensive heart disease
Hypertension	402**	ICD-9-CM Diagnosis	Hypertensive heart disease
Hypertension	403	ICD-9-CM Diagnosis	Hypertensive chronic kidney disease
Hypertension	403*	ICD-9-CM Diagnosis	Hypertensive chronic kidney disease
Hypertension	403**	ICD-9-CM Diagnosis	Hypertensive chronic kidney disease
Hypertension	404	ICD-9-CM Diagnosis	Hypertensive heart and chronic kidney disease
Hypertension	404*	ICD-9-CM Diagnosis	Hypertensive heart and chronic kidney disease
Hypertension	404**	ICD-9-CM Diagnosis	Hypertensive heart and chronic kidney disease
Hypertension	405	ICD-9-CM Diagnosis	Secondary hypertension
Hypertension	405*	ICD-9-CM Diagnosis	Secondary hypertension
Hypertension	405**	ICD-9-CM Diagnosis	Secondary hypertension
Hypertension	4050F	CPT Procedure	Hypertension plan of care documented as appropriate
Ischemic stroke	433*1	ICD-9-CM Diagnosis	Occlusion and stenosis of precerebral arteries with cerebral infarction
Ischemic stroke	434*1	ICD-9-CM Diagnosis	Occlusion of cerebral arteries with cerebral infarction

Covariate	Code	Code Type	Description
Ischemic stroke	436	ICD-9-CM Diagnosis	Acute, but ill-defined, cerebrovascular disease
Major Surgery	V670	ICD-9-CM Diagnosis	
Major Surgery	V670*	ICD-9-CM Diagnosis	
Major Surgery	50010	CPT Procedure	
Major Surgery	50011	CPT Procedure	
Major Surgery	50012	CPT Procedure	
Major Surgery	50013	CPT Procedure	
Major Surgery	50014	CPT Procedure	
Major Surgery	50015	CPT Procedure	
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Major Surgery	50043	CPT Procedure	
Major Surgery	50044	CPT Procedure	
Major Surgery	50045	CPT Procedure	
Major Surgery	50070	CPT Procedure	
Major Surgery	50100	CPT Procedure	
Major Surgery	50101	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50102	CPT Procedure	
Major Surgery	50103	CPT Procedure	
Major Surgery	50104	CPT Procedure	
Major Surgery	50105	CPT Procedure	
Major Surgery	50106	CPT Procedure	
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Major Surgery	50209	CPT Procedure	
Major Surgery	50210	CPT Procedure	
Major Surgery	50211	CPT Procedure	
Major Surgery	50212	CPT Procedure	
Major Surgery	50213	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50214	CPT Procedure	
Major Surgery	50215	CPT Procedure	
Major Surgery	50216	CPT Procedure	
Major Surgery	50217	CPT Procedure	
Major Surgery	50218	CPT Procedure	
Major Surgery	50219	CPT Procedure	
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Major Surgery	50251	CPT Procedure	
Major Surgery	50252	CPT Procedure	
Major Surgery	50253	CPT Procedure	
Major Surgery	50254	CPT Procedure	
Major Surgery	50255	CPT Procedure	
Major Surgery	50256	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50257	CPT Procedure	
Major Surgery	50258	CPT Procedure	
Major Surgery	50259	CPT Procedure	
Major Surgery	50260	CPT Procedure	
Major Surgery	50261	CPT Procedure	
Major Surgery	50262	CPT Procedure	
Major Surgery	50263	CPT Procedure	
Major Surgery	50264	CPT Procedure	
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Major Surgery	50323	CPT Procedure	
Major Surgery	50324	CPT Procedure	
Major Surgery	50325	CPT Procedure	
Major Surgery	50326	CPT Procedure	
Major Surgery	50327	CPT Procedure	
Major Surgery	50328	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50329	CPT Procedure	
Major Surgery	50330	CPT Procedure	
Major Surgery	50331	CPT Procedure	
Major Surgery	50332	CPT Procedure	
Major Surgery	50333	CPT Procedure	
Major Surgery	50334	CPT Procedure	
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Major Surgery	50370	CPT Procedure	
Major Surgery	50382	CPT Procedure	
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Major Surgery	50400	CPT Procedure	
Major Surgery	50401	CPT Procedure	
Major Surgery	50402	CPT Procedure	
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Major Surgery	50424	CPT Procedure	
Major Surgery	50425	CPT Procedure	
Major Surgery	50426	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50427	CPT Procedure	
Major Surgery	50428	CPT Procedure	
Major Surgery	50429	CPT Procedure	
Major Surgery	50430	CPT Procedure	
Major Surgery	50431	CPT Procedure	
Major Surgery	50432	CPT Procedure	
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Major Surgery	50464	CPT Procedure	
Major Surgery	50465	CPT Procedure	
Major Surgery	50466	CPT Procedure	
Major Surgery	50467	CPT Procedure	
Major Surgery	50468	CPT Procedure	
Major Surgery	50469	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50470	CPT Procedure	
Major Surgery	50471	CPT Procedure	
Major Surgery	50472	CPT Procedure	
Major Surgery	50473	CPT Procedure	
Major Surgery	50474	CPT Procedure	
Major Surgery	50475	CPT Procedure	
Major Surgery	50476	CPT Procedure	
Major Surgery	50477	CPT Procedure	
Major Surgery	50478	CPT Procedure	
Major Surgery	50479	CPT Procedure	
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Major Surgery	50500	CPT Procedure	
Major Surgery	50501	CPT Procedure	
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Major Surgery	50510	CPT Procedure	
Major Surgery	50511	CPT Procedure	
Major Surgery	50512	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50513	CPT Procedure	
Major Surgery	50514	CPT Procedure	
Major Surgery	50515	CPT Procedure	
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Major Surgery	50517	CPT Procedure	
Major Surgery	50518	CPT Procedure	
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Major Surgery	50593	CPT Procedure	
Major Surgery	50600	CPT Procedure	
Major Surgery	50601	CPT Procedure	
Major Surgery	50602	CPT Procedure	
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Major Surgery	50609	CPT Procedure	
Major Surgery	50610	CPT Procedure	
Major Surgery	50611	CPT Procedure	
Major Surgery	50612	CPT Procedure	
Major Surgery	50613	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50614	CPT Procedure	
Major Surgery	50615	CPT Procedure	
Major Surgery	50616	CPT Procedure	
Major Surgery	50617	CPT Procedure	
Major Surgery	50618	CPT Procedure	
Major Surgery	50619	CPT Procedure	
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Major Surgery	50701	CPT Procedure	
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Major Surgery	50709	CPT Procedure	
Major Surgery	50710	CPT Procedure	
Major Surgery	50711	CPT Procedure	
Major Surgery	50712	CPT Procedure	
Major Surgery	50713	CPT Procedure	
Major Surgery	50714	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	50715	CPT Procedure	
Major Surgery	50716	CPT Procedure	
Major Surgery	50717	CPT Procedure	
Major Surgery	50718	CPT Procedure	
Major Surgery	50719	CPT Procedure	
Major Surgery	50720	CPT Procedure	
Major Surgery	50721	CPT Procedure	
Major Surgery	50722	CPT Procedure	
Major Surgery	50723	CPT Procedure	
Major Surgery	50724	CPT Procedure	
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Major Surgery	50747	CPT Procedure	
Major Surgery	50748	CPT Procedure	
Major Surgery	50749	CPT Procedure	
Major Surgery	50750	CPT Procedure	
Major Surgery	50751	CPT Procedure	
Major Surgery	50752	CPT Procedure	
Major Surgery	50753	CPT Procedure	
Major Surgery	50754	CPT Procedure	
Major Surgery	50755	CPT Procedure	
Major Surgery	50756	CPT Procedure	
Major Surgery	50757	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	50758	CPT Procedure	
Major Surgery	50759	CPT Procedure	
Major Surgery	50760	CPT Procedure	
Major Surgery	50761	CPT Procedure	
Major Surgery	50762	CPT Procedure	
Major Surgery	50763	CPT Procedure	
Major Surgery	50764	CPT Procedure	
Major Surgery	50765	CPT Procedure	
Major Surgery	50766	CPT Procedure	
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Major Surgery	50768	CPT Procedure	
Major Surgery	50769	CPT Procedure	
Major Surgery	50770	CPT Procedure	
Major Surgery	50771	CPT Procedure	
Major Surgery	50772	CPT Procedure	
Major Surgery	50773	CPT Procedure	
Major Surgery	50774	CPT Procedure	
Major Surgery	50775	CPT Procedure	
Major Surgery	50776	CPT Procedure	
Major Surgery	50777	CPT Procedure	
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Major Surgery	50779	CPT Procedure	
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Major Surgery	50781	CPT Procedure	
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Major Surgery	50783	CPT Procedure	
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Major Surgery	50790	CPT Procedure	
Major Surgery	50791	CPT Procedure	
Major Surgery	50792	CPT Procedure	
Major Surgery	50793	CPT Procedure	
Major Surgery	50794	CPT Procedure	
Major Surgery	50795	CPT Procedure	
Major Surgery	50796	CPT Procedure	
Major Surgery	50797	CPT Procedure	
Major Surgery	50798	CPT Procedure	
Major Surgery	50799	CPT Procedure	
Major Surgery	50800	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50801	CPT Procedure	
Major Surgery	50802	CPT Procedure	
Major Surgery	50803	CPT Procedure	
Major Surgery	50804	CPT Procedure	
Major Surgery	50805	CPT Procedure	
Major Surgery	50806	CPT Procedure	
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Major Surgery	50835	CPT Procedure	
Major Surgery	50836	CPT Procedure	
Major Surgery	50837	CPT Procedure	
Major Surgery	50838	CPT Procedure	
Major Surgery	50839	CPT Procedure	
Major Surgery	50840	CPT Procedure	
Major Surgery	50841	CPT Procedure	
Major Surgery	50842	CPT Procedure	
Major Surgery	50843	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50844	CPT Procedure	
Major Surgery	50845	CPT Procedure	
Major Surgery	50846	CPT Procedure	
Major Surgery	50847	CPT Procedure	
Major Surgery	50848	CPT Procedure	
Major Surgery	50849	CPT Procedure	
Major Surgery	50850	CPT Procedure	
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Major Surgery	50852	CPT Procedure	
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Major Surgery	50856	CPT Procedure	
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Major Surgery	50860	CPT Procedure	
Major Surgery	50861	CPT Procedure	
Major Surgery	50862	CPT Procedure	
Major Surgery	50863	CPT Procedure	
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Major Surgery	50865	CPT Procedure	
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Major Surgery	50867	CPT Procedure	
Major Surgery	50868	CPT Procedure	
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Major Surgery	50871	CPT Procedure	
Major Surgery	50872	CPT Procedure	
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Major Surgery	50875	CPT Procedure	
Major Surgery	50876	CPT Procedure	
Major Surgery	50877	CPT Procedure	
Major Surgery	50878	CPT Procedure	
Major Surgery	50879	CPT Procedure	
Major Surgery	50880	CPT Procedure	
Major Surgery	50881	CPT Procedure	
Major Surgery	50882	CPT Procedure	
Major Surgery	50883	CPT Procedure	
Major Surgery	50884	CPT Procedure	
Major Surgery	50885	CPT Procedure	
Major Surgery	50886	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50887	CPT Procedure	
Major Surgery	50888	CPT Procedure	
Major Surgery	50889	CPT Procedure	
Major Surgery	50890	CPT Procedure	
Major Surgery	50891	CPT Procedure	
Major Surgery	50892	CPT Procedure	
Major Surgery	50893	CPT Procedure	
Major Surgery	50894	CPT Procedure	
Major Surgery	50895	CPT Procedure	
Major Surgery	50896	CPT Procedure	
Major Surgery	50897	CPT Procedure	
Major Surgery	50898	CPT Procedure	
Major Surgery	50899	CPT Procedure	
Major Surgery	50900	CPT Procedure	
Major Surgery	50901	CPT Procedure	
Major Surgery	50902	CPT Procedure	
Major Surgery	50903	CPT Procedure	
Major Surgery	50904	CPT Procedure	
Major Surgery	50905	CPT Procedure	
Major Surgery	50906	CPT Procedure	
Major Surgery	50907	CPT Procedure	
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Major Surgery	50929	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	50930	CPT Procedure	
Major Surgery	50931	CPT Procedure	
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Major Surgery	51024	CPT Procedure	
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Major Surgery	51039	CPT Procedure	
Major Surgery	51040	CPT Procedure	
Major Surgery	51080	CPT Procedure	
Major Surgery	53000	CPT Procedure	
Major Surgery	53001	CPT Procedure	
Major Surgery	53002	CPT Procedure	
Major Surgery	53003	CPT Procedure	
Major Surgery	53004	CPT Procedure	
Major Surgery	53005	CPT Procedure	
Major Surgery	53006	CPT Procedure	
Major Surgery	53007	CPT Procedure	
Major Surgery	53008	CPT Procedure	
Major Surgery	53009	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53010	CPT Procedure	
Major Surgery	53011	CPT Procedure	
Major Surgery	53012	CPT Procedure	
Major Surgery	53013	CPT Procedure	
Major Surgery	53014	CPT Procedure	
Major Surgery	53015	CPT Procedure	
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Major Surgery	53018	CPT Procedure	
Major Surgery	53019	CPT Procedure	
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Major Surgery	53030	CPT Procedure	
Major Surgery	53031	CPT Procedure	
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Major Surgery	53048	CPT Procedure	
Major Surgery	53049	CPT Procedure	
Major Surgery	53050	CPT Procedure	
Major Surgery	53051	CPT Procedure	
Major Surgery	53052	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53053	CPT Procedure	
Major Surgery	53054	CPT Procedure	
Major Surgery	53055	CPT Procedure	
Major Surgery	53056	CPT Procedure	
Major Surgery	53057	CPT Procedure	
Major Surgery	53058	CPT Procedure	
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Major Surgery	53062	CPT Procedure	
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Major Surgery	53067	CPT Procedure	
Major Surgery	53068	CPT Procedure	
Major Surgery	53069	CPT Procedure	
Major Surgery	53070	CPT Procedure	
Major Surgery	53071	CPT Procedure	
Major Surgery	53072	CPT Procedure	
Major Surgery	53073	CPT Procedure	
Major Surgery	53074	CPT Procedure	
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Major Surgery	53210	CPT Procedure	
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Major Surgery	53212	CPT Procedure	
Major Surgery	53213	CPT Procedure	
Major Surgery	53214	CPT Procedure	
Major Surgery	53215	CPT Procedure	
Major Surgery	53216	CPT Procedure	
Major Surgery	53217	CPT Procedure	
Major Surgery	53218	CPT Procedure	
Major Surgery	53219	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53220	CPT Procedure	
Major Surgery	53221	CPT Procedure	
Major Surgery	53222	CPT Procedure	
Major Surgery	53223	CPT Procedure	
Major Surgery	53224	CPT Procedure	
Major Surgery	53225	CPT Procedure	
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Major Surgery	53230	CPT Procedure	
Major Surgery	53231	CPT Procedure	
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Major Surgery	53253	CPT Procedure	
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Major Surgery	53255	CPT Procedure	
Major Surgery	53256	CPT Procedure	
Major Surgery	53257	CPT Procedure	
Major Surgery	53258	CPT Procedure	
Major Surgery	53259	CPT Procedure	
Major Surgery	53260	CPT Procedure	
Major Surgery	53261	CPT Procedure	
Major Surgery	53262	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53263	CPT Procedure	
Major Surgery	53264	CPT Procedure	
Major Surgery	53265	CPT Procedure	
Major Surgery	53266	CPT Procedure	
Major Surgery	53267	CPT Procedure	
Major Surgery	53268	CPT Procedure	
Major Surgery	53269	CPT Procedure	
Major Surgery	53270	CPT Procedure	
Major Surgery	53271	CPT Procedure	
Major Surgery	53272	CPT Procedure	
Major Surgery	53273	CPT Procedure	
Major Surgery	53274	CPT Procedure	
Major Surgery	53275	CPT Procedure	
Major Surgery	53400	CPT Procedure	
Major Surgery	53401	CPT Procedure	
Major Surgery	53402	CPT Procedure	
Major Surgery	53403	CPT Procedure	
Major Surgery	53404	CPT Procedure	
Major Surgery	53405	CPT Procedure	
Major Surgery	53406	CPT Procedure	
Major Surgery	53407	CPT Procedure	
Major Surgery	53408	CPT Procedure	
Major Surgery	53409	CPT Procedure	
Major Surgery	53410	CPT Procedure	
Major Surgery	53411	CPT Procedure	
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Major Surgery	53423	CPT Procedure	
Major Surgery	53424	CPT Procedure	
Major Surgery	53425	CPT Procedure	
Major Surgery	53426	CPT Procedure	
Major Surgery	53427	CPT Procedure	
Major Surgery	53428	CPT Procedure	
Major Surgery	53429	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53430	CPT Procedure	
Major Surgery	53431	CPT Procedure	
Major Surgery	53432	CPT Procedure	
Major Surgery	53433	CPT Procedure	
Major Surgery	53434	CPT Procedure	
Major Surgery	53435	CPT Procedure	
Major Surgery	53436	CPT Procedure	
Major Surgery	53437	CPT Procedure	
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Major Surgery	53449	CPT Procedure	
Major Surgery	53450	CPT Procedure	
Major Surgery	53451	CPT Procedure	
Major Surgery	53452	CPT Procedure	
Major Surgery	53453	CPT Procedure	
Major Surgery	53454	CPT Procedure	
Major Surgery	53455	CPT Procedure	
Major Surgery	53456	CPT Procedure	
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Major Surgery	53458	CPT Procedure	
Major Surgery	53459	CPT Procedure	
Major Surgery	53460	CPT Procedure	
Major Surgery	53461	CPT Procedure	
Major Surgery	53462	CPT Procedure	
Major Surgery	53463	CPT Procedure	
Major Surgery	53464	CPT Procedure	
Major Surgery	53465	CPT Procedure	
Major Surgery	53466	CPT Procedure	
Major Surgery	53467	CPT Procedure	
Major Surgery	53468	CPT Procedure	
Major Surgery	53469	CPT Procedure	
Major Surgery	53470	CPT Procedure	
Major Surgery	53471	CPT Procedure	
Major Surgery	53472	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53473	CPT Procedure	
Major Surgery	53474	CPT Procedure	
Major Surgery	53475	CPT Procedure	
Major Surgery	53476	CPT Procedure	
Major Surgery	53477	CPT Procedure	
Major Surgery	53478	CPT Procedure	
Major Surgery	53479	CPT Procedure	
Major Surgery	53480	CPT Procedure	
Major Surgery	53481	CPT Procedure	
Major Surgery	53482	CPT Procedure	
Major Surgery	53483	CPT Procedure	
Major Surgery	53484	CPT Procedure	
Major Surgery	53485	CPT Procedure	
Major Surgery	53486	CPT Procedure	
Major Surgery	53487	CPT Procedure	
Major Surgery	53488	CPT Procedure	
Major Surgery	53489	CPT Procedure	
Major Surgery	53490	CPT Procedure	
Major Surgery	53491	CPT Procedure	
Major Surgery	53492	CPT Procedure	
Major Surgery	53493	CPT Procedure	
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Major Surgery	53495	CPT Procedure	
Major Surgery	53496	CPT Procedure	
Major Surgery	53497	CPT Procedure	
Major Surgery	53498	CPT Procedure	
Major Surgery	53499	CPT Procedure	
Major Surgery	53500	CPT Procedure	
Major Surgery	53501	CPT Procedure	
Major Surgery	53502	CPT Procedure	
Major Surgery	53503	CPT Procedure	
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Major Surgery	53506	CPT Procedure	
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Major Surgery	53509	CPT Procedure	
Major Surgery	53510	CPT Procedure	
Major Surgery	53511	CPT Procedure	
Major Surgery	53512	CPT Procedure	
Major Surgery	53513	CPT Procedure	
Major Surgery	53514	CPT Procedure	
Major Surgery	53515	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	53516	CPT Procedure	
Major Surgery	53517	CPT Procedure	
Major Surgery	53518	CPT Procedure	
Major Surgery	53519	CPT Procedure	
Major Surgery	53520	CPT Procedure	
Major Surgery	53855	CPT Procedure	
Major Surgery	56620	CPT Procedure	
Major Surgery	56621	CPT Procedure	
Major Surgery	56622	CPT Procedure	
Major Surgery	56623	CPT Procedure	
Major Surgery	56624	CPT Procedure	
Major Surgery	56625	CPT Procedure	
Major Surgery	56626	CPT Procedure	
Major Surgery	56627	CPT Procedure	
Major Surgery	56628	CPT Procedure	
Major Surgery	56629	CPT Procedure	
Major Surgery	56630	CPT Procedure	
Major Surgery	56631	CPT Procedure	
Major Surgery	56632	CPT Procedure	
Major Surgery	56633	CPT Procedure	
Major Surgery	56634	CPT Procedure	
Major Surgery	56635	CPT Procedure	
Major Surgery	56636	CPT Procedure	
Major Surgery	56637	CPT Procedure	
Major Surgery	56638	CPT Procedure	
Major Surgery	56639	CPT Procedure	
Major Surgery	56640	CPT Procedure	
Major Surgery	56641	CPT Procedure	
Major Surgery	56642	CPT Procedure	
Major Surgery	56643	CPT Procedure	
Major Surgery	56644	CPT Procedure	
Major Surgery	56645	CPT Procedure	
Major Surgery	56646	CPT Procedure	
Major Surgery	56647	CPT Procedure	
Major Surgery	56648	CPT Procedure	
Major Surgery	56649	CPT Procedure	
Major Surgery	56650	CPT Procedure	
Major Surgery	56651	CPT Procedure	
Major Surgery	56652	CPT Procedure	
Major Surgery	56653	CPT Procedure	
Major Surgery	56654	CPT Procedure	
Major Surgery	56655	CPT Procedure	
Major Surgery	56656	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	56657	CPT Procedure	
Major Surgery	56658	CPT Procedure	
Major Surgery	56659	CPT Procedure	
Major Surgery	56660	CPT Procedure	
Major Surgery	56661	CPT Procedure	
Major Surgery	56662	CPT Procedure	
Major Surgery	56663	CPT Procedure	
Major Surgery	56664	CPT Procedure	
Major Surgery	56665	CPT Procedure	
Major Surgery	56666	CPT Procedure	
Major Surgery	56667	CPT Procedure	
Major Surgery	56668	CPT Procedure	
Major Surgery	56669	CPT Procedure	
Major Surgery	56670	CPT Procedure	
Major Surgery	56671	CPT Procedure	
Major Surgery	56672	CPT Procedure	
Major Surgery	56673	CPT Procedure	
Major Surgery	56674	CPT Procedure	
Major Surgery	56675	CPT Procedure	
Major Surgery	56676	CPT Procedure	
Major Surgery	56677	CPT Procedure	
Major Surgery	56678	CPT Procedure	
Major Surgery	56679	CPT Procedure	
Major Surgery	56680	CPT Procedure	
Major Surgery	56681	CPT Procedure	
Major Surgery	56682	CPT Procedure	
Major Surgery	56683	CPT Procedure	
Major Surgery	56684	CPT Procedure	
Major Surgery	56685	CPT Procedure	
Major Surgery	56686	CPT Procedure	
Major Surgery	56687	CPT Procedure	
Major Surgery	56688	CPT Procedure	
Major Surgery	56689	CPT Procedure	
Major Surgery	56690	CPT Procedure	
Major Surgery	56691	CPT Procedure	
Major Surgery	56692	CPT Procedure	
Major Surgery	56693	CPT Procedure	
Major Surgery	56694	CPT Procedure	
Major Surgery	56695	CPT Procedure	
Major Surgery	56696	CPT Procedure	
Major Surgery	56697	CPT Procedure	
Major Surgery	56698	CPT Procedure	
Major Surgery	56699	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	56700	CPT Procedure	
Major Surgery	56701	CPT Procedure	
Major Surgery	56702	CPT Procedure	
Major Surgery	56703	CPT Procedure	
Major Surgery	56704	CPT Procedure	
Major Surgery	56705	CPT Procedure	
Major Surgery	56706	CPT Procedure	
Major Surgery	56707	CPT Procedure	
Major Surgery	56708	CPT Procedure	
Major Surgery	56709	CPT Procedure	
Major Surgery	56710	CPT Procedure	
Major Surgery	56711	CPT Procedure	
Major Surgery	56712	CPT Procedure	
Major Surgery	56713	CPT Procedure	
Major Surgery	56714	CPT Procedure	
Major Surgery	56715	CPT Procedure	
Major Surgery	56716	CPT Procedure	
Major Surgery	56717	CPT Procedure	
Major Surgery	56718	CPT Procedure	
Major Surgery	56719	CPT Procedure	
Major Surgery	56720	CPT Procedure	
Major Surgery	56721	CPT Procedure	
Major Surgery	56722	CPT Procedure	
Major Surgery	56723	CPT Procedure	
Major Surgery	56724	CPT Procedure	
Major Surgery	56725	CPT Procedure	
Major Surgery	56726	CPT Procedure	
Major Surgery	56727	CPT Procedure	
Major Surgery	56728	CPT Procedure	
Major Surgery	56729	CPT Procedure	
Major Surgery	56730	CPT Procedure	
Major Surgery	56731	CPT Procedure	
Major Surgery	56732	CPT Procedure	
Major Surgery	56733	CPT Procedure	
Major Surgery	56734	CPT Procedure	
Major Surgery	56735	CPT Procedure	
Major Surgery	56736	CPT Procedure	
Major Surgery	56737	CPT Procedure	
Major Surgery	56738	CPT Procedure	
Major Surgery	56739	CPT Procedure	
Major Surgery	56740	CPT Procedure	
Major Surgery	56800	CPT Procedure	
Major Surgery	56801	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	56802	CPT Procedure	
Major Surgery	56803	CPT Procedure	
Major Surgery	56804	CPT Procedure	
Major Surgery	56805	CPT Procedure	
Major Surgery	56806	CPT Procedure	
Major Surgery	56807	CPT Procedure	
Major Surgery	56808	CPT Procedure	
Major Surgery	56809	CPT Procedure	
Major Surgery	56810	CPT Procedure	
Major Surgery	57000	CPT Procedure	
Major Surgery	57001	CPT Procedure	
Major Surgery	57002	CPT Procedure	
Major Surgery	57003	CPT Procedure	
Major Surgery	57004	CPT Procedure	
Major Surgery	57005	CPT Procedure	
Major Surgery	57006	CPT Procedure	
Major Surgery	57007	CPT Procedure	
Major Surgery	57008	CPT Procedure	
Major Surgery	57009	CPT Procedure	
Major Surgery	57010	CPT Procedure	
Major Surgery	57011	CPT Procedure	
Major Surgery	57012	CPT Procedure	
Major Surgery	57013	CPT Procedure	
Major Surgery	57014	CPT Procedure	
Major Surgery	57015	CPT Procedure	
Major Surgery	57016	CPT Procedure	
Major Surgery	57017	CPT Procedure	
Major Surgery	57018	CPT Procedure	
Major Surgery	57019	CPT Procedure	
Major Surgery	57020	CPT Procedure	
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Major Surgery	57024	CPT Procedure	
Major Surgery	57025	CPT Procedure	
Major Surgery	57026	CPT Procedure	
Major Surgery	57027	CPT Procedure	
Major Surgery	57028	CPT Procedure	
Major Surgery	57029	CPT Procedure	
Major Surgery	57030	CPT Procedure	
Major Surgery	57031	CPT Procedure	
Major Surgery	57032	CPT Procedure	
Major Surgery	57033	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	57034	CPT Procedure	
Major Surgery	57035	CPT Procedure	
Major Surgery	57036	CPT Procedure	
Major Surgery	57037	CPT Procedure	
Major Surgery	57038	CPT Procedure	
Major Surgery	57039	CPT Procedure	
Major Surgery	57040	CPT Procedure	
Major Surgery	57041	CPT Procedure	
Major Surgery	57042	CPT Procedure	
Major Surgery	57043	CPT Procedure	
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Major Surgery	57049	CPT Procedure	
Major Surgery	57050	CPT Procedure	
Major Surgery	57051	CPT Procedure	
Major Surgery	57052	CPT Procedure	
Major Surgery	57053	CPT Procedure	
Major Surgery	57054	CPT Procedure	
Major Surgery	57055	CPT Procedure	
Major Surgery	57056	CPT Procedure	
Major Surgery	57057	CPT Procedure	
Major Surgery	57058	CPT Procedure	
Major Surgery	57059	CPT Procedure	
Major Surgery	57060	CPT Procedure	
Major Surgery	57061	CPT Procedure	
Major Surgery	57062	CPT Procedure	
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Major Surgery	57067	CPT Procedure	
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Major Surgery	57069	CPT Procedure	
Major Surgery	57070	CPT Procedure	
Major Surgery	57071	CPT Procedure	
Major Surgery	57072	CPT Procedure	
Major Surgery	57073	CPT Procedure	
Major Surgery	57074	CPT Procedure	
Major Surgery	57075	CPT Procedure	
Major Surgery	57076	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	57077	CPT Procedure	
Major Surgery	57078	CPT Procedure	
Major Surgery	57079	CPT Procedure	
Major Surgery	57080	CPT Procedure	
Major Surgery	57081	CPT Procedure	
Major Surgery	57082	CPT Procedure	
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Major Surgery	57101	CPT Procedure	
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Major Surgery	57103	CPT Procedure	
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Major Surgery	57107	CPT Procedure	
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Major Surgery	57109	CPT Procedure	
Major Surgery	57110	CPT Procedure	
Major Surgery	57111	CPT Procedure	
Major Surgery	57112	CPT Procedure	
Major Surgery	57113	CPT Procedure	
Major Surgery	57114	CPT Procedure	
Major Surgery	57115	CPT Procedure	
Major Surgery	57116	CPT Procedure	
Major Surgery	57117	CPT Procedure	
Major Surgery	57118	CPT Procedure	
Major Surgery	57119	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	57120	CPT Procedure	
Major Surgery	57121	CPT Procedure	
Major Surgery	57122	CPT Procedure	
Major Surgery	57123	CPT Procedure	
Major Surgery	57124	CPT Procedure	
Major Surgery	57125	CPT Procedure	
Major Surgery	57126	CPT Procedure	
Major Surgery	57127	CPT Procedure	
Major Surgery	57128	CPT Procedure	
Major Surgery	57129	CPT Procedure	
Major Surgery	57130	CPT Procedure	
Major Surgery	57131	CPT Procedure	
Major Surgery	57132	CPT Procedure	
Major Surgery	57133	CPT Procedure	
Major Surgery	57134	CPT Procedure	
Major Surgery	57135	CPT Procedure	
Major Surgery	57136	CPT Procedure	
Major Surgery	57137	CPT Procedure	
Major Surgery	57138	CPT Procedure	
Major Surgery	57139	CPT Procedure	
Major Surgery	57140	CPT Procedure	
Major Surgery	57141	CPT Procedure	
Major Surgery	57142	CPT Procedure	
Major Surgery	57143	CPT Procedure	
Major Surgery	57144	CPT Procedure	
Major Surgery	57145	CPT Procedure	
Major Surgery	57146	CPT Procedure	
Major Surgery	57147	CPT Procedure	
Major Surgery	57148	CPT Procedure	
Major Surgery	57149	CPT Procedure	
Major Surgery	57150	CPT Procedure	
Major Surgery	57151	CPT Procedure	
Major Surgery	57152	CPT Procedure	
Major Surgery	57153	CPT Procedure	
Major Surgery	57154	CPT Procedure	
Major Surgery	57155	CPT Procedure	
Major Surgery	57156	CPT Procedure	
Major Surgery	57157	CPT Procedure	
Major Surgery	57158	CPT Procedure	
Major Surgery	57159	CPT Procedure	
Major Surgery	57160	CPT Procedure	
Major Surgery	57161	CPT Procedure	
Major Surgery	57162	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	57163	CPT Procedure	
Major Surgery	57164	CPT Procedure	
Major Surgery	57165	CPT Procedure	
Major Surgery	57166	CPT Procedure	
Major Surgery	57167	CPT Procedure	
Major Surgery	57168	CPT Procedure	
Major Surgery	57169	CPT Procedure	
Major Surgery	57170	CPT Procedure	
Major Surgery	57171	CPT Procedure	
Major Surgery	57172	CPT Procedure	
Major Surgery	57173	CPT Procedure	
Major Surgery	57174	CPT Procedure	
Major Surgery	57175	CPT Procedure	
Major Surgery	57176	CPT Procedure	
Major Surgery	57177	CPT Procedure	
Major Surgery	57178	CPT Procedure	
Major Surgery	57179	CPT Procedure	
Major Surgery	57180	CPT Procedure	
Major Surgery	57181	CPT Procedure	
Major Surgery	57182	CPT Procedure	
Major Surgery	57183	CPT Procedure	
Major Surgery	57184	CPT Procedure	
Major Surgery	57185	CPT Procedure	
Major Surgery	57186	CPT Procedure	
Major Surgery	57187	CPT Procedure	
Major Surgery	57188	CPT Procedure	
Major Surgery	57189	CPT Procedure	
Major Surgery	57190	CPT Procedure	
Major Surgery	57191	CPT Procedure	
Major Surgery	57192	CPT Procedure	
Major Surgery	57193	CPT Procedure	
Major Surgery	57194	CPT Procedure	
Major Surgery	57195	CPT Procedure	
Major Surgery	57196	CPT Procedure	
Major Surgery	57197	CPT Procedure	
Major Surgery	57198	CPT Procedure	
Major Surgery	57199	CPT Procedure	
Major Surgery	57200	CPT Procedure	
Major Surgery	57201	CPT Procedure	
Major Surgery	57202	CPT Procedure	
Major Surgery	57203	CPT Procedure	
Major Surgery	57204	CPT Procedure	
Major Surgery	57205	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	57206	CPT Procedure	
Major Surgery	57207	CPT Procedure	
Major Surgery	57208	CPT Procedure	
Major Surgery	57209	CPT Procedure	
Major Surgery	57210	CPT Procedure	
Major Surgery	57211	CPT Procedure	
Major Surgery	57212	CPT Procedure	
Major Surgery	57213	CPT Procedure	
Major Surgery	57214	CPT Procedure	
Major Surgery	57215	CPT Procedure	
Major Surgery	57216	CPT Procedure	
Major Surgery	57217	CPT Procedure	
Major Surgery	57218	CPT Procedure	
Major Surgery	57219	CPT Procedure	
Major Surgery	57220	CPT Procedure	
Major Surgery	57221	CPT Procedure	
Major Surgery	57222	CPT Procedure	
Major Surgery	57223	CPT Procedure	
Major Surgery	57224	CPT Procedure	
Major Surgery	57225	CPT Procedure	
Major Surgery	57226	CPT Procedure	
Major Surgery	57227	CPT Procedure	
Major Surgery	57228	CPT Procedure	
Major Surgery	57229	CPT Procedure	
Major Surgery	57230	CPT Procedure	
Major Surgery	57231	CPT Procedure	
Major Surgery	57232	CPT Procedure	
Major Surgery	57233	CPT Procedure	
Major Surgery	57234	CPT Procedure	
Major Surgery	57235	CPT Procedure	
Major Surgery	57236	CPT Procedure	
Major Surgery	57237	CPT Procedure	
Major Surgery	57238	CPT Procedure	
Major Surgery	57239	CPT Procedure	
Major Surgery	57240	CPT Procedure	
Major Surgery	57241	CPT Procedure	
Major Surgery	57242	CPT Procedure	
Major Surgery	57243	CPT Procedure	
Major Surgery	57244	CPT Procedure	
Major Surgery	57245	CPT Procedure	
Major Surgery	57246	CPT Procedure	
Major Surgery	57247	CPT Procedure	
Major Surgery	57248	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	57249	CPT Procedure	
Major Surgery	57250	CPT Procedure	
Major Surgery	57251	CPT Procedure	
Major Surgery	57252	CPT Procedure	
Major Surgery	57253	CPT Procedure	
Major Surgery	57254	CPT Procedure	
Major Surgery	57255	CPT Procedure	
Major Surgery	57256	CPT Procedure	
Major Surgery	57257	CPT Procedure	
Major Surgery	57258	CPT Procedure	
Major Surgery	57259	CPT Procedure	
Major Surgery	57260	CPT Procedure	
Major Surgery	57261	CPT Procedure	
Major Surgery	57262	CPT Procedure	
Major Surgery	57263	CPT Procedure	
Major Surgery	57264	CPT Procedure	
Major Surgery	57265	CPT Procedure	
Major Surgery	57266	CPT Procedure	
Major Surgery	57267	CPT Procedure	
Major Surgery	57268	CPT Procedure	
Major Surgery	57269	CPT Procedure	
Major Surgery	57270	CPT Procedure	
Major Surgery	57271	CPT Procedure	
Major Surgery	57272	CPT Procedure	
Major Surgery	57273	CPT Procedure	
Major Surgery	57274	CPT Procedure	
Major Surgery	57275	CPT Procedure	
Major Surgery	57276	CPT Procedure	
Major Surgery	57277	CPT Procedure	
Major Surgery	57278	CPT Procedure	
Major Surgery	57279	CPT Procedure	
Major Surgery	57280	CPT Procedure	
Major Surgery	57281	CPT Procedure	
Major Surgery	57282	CPT Procedure	
Major Surgery	57283	CPT Procedure	
Major Surgery	57284	CPT Procedure	
Major Surgery	57285	CPT Procedure	
Major Surgery	57286	CPT Procedure	
Major Surgery	57287	CPT Procedure	
Major Surgery	57288	CPT Procedure	
Major Surgery	57289	CPT Procedure	
Major Surgery	57290	CPT Procedure	
Major Surgery	57291	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	57292	CPT Procedure	
Major Surgery	57293	CPT Procedure	
Major Surgery	57294	CPT Procedure	
Major Surgery	57295	CPT Procedure	
Major Surgery	57296	CPT Procedure	
Major Surgery	57297	CPT Procedure	
Major Surgery	57298	CPT Procedure	
Major Surgery	57299	CPT Procedure	
Major Surgery	57300	CPT Procedure	
Major Surgery	57301	CPT Procedure	
Major Surgery	57302	CPT Procedure	
Major Surgery	57303	CPT Procedure	
Major Surgery	57304	CPT Procedure	
Major Surgery	57305	CPT Procedure	
Major Surgery	57306	CPT Procedure	
Major Surgery	57307	CPT Procedure	
Major Surgery	57308	CPT Procedure	
Major Surgery	57309	CPT Procedure	
Major Surgery	57310	CPT Procedure	
Major Surgery	57311	CPT Procedure	
Major Surgery	57312	CPT Procedure	
Major Surgery	57313	CPT Procedure	
Major Surgery	57314	CPT Procedure	
Major Surgery	57315	CPT Procedure	
Major Surgery	57316	CPT Procedure	
Major Surgery	57317	CPT Procedure	
Major Surgery	57318	CPT Procedure	
Major Surgery	57319	CPT Procedure	
Major Surgery	57320	CPT Procedure	
Major Surgery	57321	CPT Procedure	
Major Surgery	57322	CPT Procedure	
Major Surgery	57323	CPT Procedure	
Major Surgery	57324	CPT Procedure	
Major Surgery	57325	CPT Procedure	
Major Surgery	57326	CPT Procedure	
Major Surgery	57327	CPT Procedure	
Major Surgery	57328	CPT Procedure	
Major Surgery	57329	CPT Procedure	
Major Surgery	57330	CPT Procedure	
Major Surgery	57331	CPT Procedure	
Major Surgery	57332	CPT Procedure	
Major Surgery	57333	CPT Procedure	
Major Surgery	57334	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	57335	CPT Procedure	
Major Surgery	57530	CPT Procedure	
Major Surgery	57531	CPT Procedure	
Major Surgery	57532	CPT Procedure	
Major Surgery	57533	CPT Procedure	
Major Surgery	57534	CPT Procedure	
Major Surgery	57535	CPT Procedure	
Major Surgery	57536	CPT Procedure	
Major Surgery	57537	CPT Procedure	
Major Surgery	57538	CPT Procedure	
Major Surgery	57539	CPT Procedure	
Major Surgery	57540	CPT Procedure	
Major Surgery	57541	CPT Procedure	
Major Surgery	57542	CPT Procedure	
Major Surgery	57543	CPT Procedure	
Major Surgery	57544	CPT Procedure	
Major Surgery	57545	CPT Procedure	
Major Surgery	57546	CPT Procedure	
Major Surgery	57547	CPT Procedure	
Major Surgery	57548	CPT Procedure	
Major Surgery	57549	CPT Procedure	
Major Surgery	57550	CPT Procedure	
Major Surgery	57551	CPT Procedure	
Major Surgery	57552	CPT Procedure	
Major Surgery	57553	CPT Procedure	
Major Surgery	57554	CPT Procedure	
Major Surgery	57555	CPT Procedure	
Major Surgery	57556	CPT Procedure	
Major Surgery	57720	CPT Procedure	
Major Surgery	58140	CPT Procedure	
Major Surgery	58141	CPT Procedure	
Major Surgery	58142	CPT Procedure	
Major Surgery	58143	CPT Procedure	
Major Surgery	58144	CPT Procedure	
Major Surgery	58145	CPT Procedure	
Major Surgery	58146	CPT Procedure	
Major Surgery	58150	CPT Procedure	
Major Surgery	58151	CPT Procedure	
Major Surgery	58152	CPT Procedure	
Major Surgery	58153	CPT Procedure	
Major Surgery	58154	CPT Procedure	
Major Surgery	58155	CPT Procedure	
Major Surgery	58156	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	58157	CPT Procedure	
Major Surgery	58158	CPT Procedure	
Major Surgery	58159	CPT Procedure	
Major Surgery	58160	CPT Procedure	
Major Surgery	58161	CPT Procedure	
Major Surgery	58162	CPT Procedure	
Major Surgery	58163	CPT Procedure	
Major Surgery	58164	CPT Procedure	
Major Surgery	58165	CPT Procedure	
Major Surgery	58166	CPT Procedure	
Major Surgery	58167	CPT Procedure	
Major Surgery	58168	CPT Procedure	
Major Surgery	58169	CPT Procedure	
Major Surgery	58170	CPT Procedure	
Major Surgery	58171	CPT Procedure	
Major Surgery	58172	CPT Procedure	
Major Surgery	58173	CPT Procedure	
Major Surgery	58174	CPT Procedure	
Major Surgery	58175	CPT Procedure	
Major Surgery	58176	CPT Procedure	
Major Surgery	58177	CPT Procedure	
Major Surgery	58178	CPT Procedure	
Major Surgery	58179	CPT Procedure	
Major Surgery	58180	CPT Procedure	
Major Surgery	58181	CPT Procedure	
Major Surgery	58182	CPT Procedure	
Major Surgery	58183	CPT Procedure	
Major Surgery	58184	CPT Procedure	
Major Surgery	58185	CPT Procedure	
Major Surgery	58186	CPT Procedure	
Major Surgery	58187	CPT Procedure	
Major Surgery	58188	CPT Procedure	
Major Surgery	58189	CPT Procedure	
Major Surgery	58190	CPT Procedure	
Major Surgery	58191	CPT Procedure	
Major Surgery	58192	CPT Procedure	
Major Surgery	58193	CPT Procedure	
Major Surgery	58194	CPT Procedure	
Major Surgery	58195	CPT Procedure	
Major Surgery	58196	CPT Procedure	
Major Surgery	58197	CPT Procedure	
Major Surgery	58198	CPT Procedure	
Major Surgery	58199	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	58200	CPT Procedure	
Major Surgery	58201	CPT Procedure	
Major Surgery	58202	CPT Procedure	
Major Surgery	58203	CPT Procedure	
Major Surgery	58204	CPT Procedure	
Major Surgery	58205	CPT Procedure	
Major Surgery	58206	CPT Procedure	
Major Surgery	58207	CPT Procedure	
Major Surgery	58208	CPT Procedure	
Major Surgery	58209	CPT Procedure	
Major Surgery	58210	CPT Procedure	
Major Surgery	58211	CPT Procedure	
Major Surgery	58212	CPT Procedure	
Major Surgery	58213	CPT Procedure	
Major Surgery	58214	CPT Procedure	
Major Surgery	58215	CPT Procedure	
Major Surgery	58216	CPT Procedure	
Major Surgery	58217	CPT Procedure	
Major Surgery	58218	CPT Procedure	
Major Surgery	58219	CPT Procedure	
Major Surgery	58220	CPT Procedure	
Major Surgery	58221	CPT Procedure	
Major Surgery	58222	CPT Procedure	
Major Surgery	58223	CPT Procedure	
Major Surgery	58224	CPT Procedure	
Major Surgery	58225	CPT Procedure	
Major Surgery	58226	CPT Procedure	
Major Surgery	58227	CPT Procedure	
Major Surgery	58228	CPT Procedure	
Major Surgery	58229	CPT Procedure	
Major Surgery	58230	CPT Procedure	
Major Surgery	58231	CPT Procedure	
Major Surgery	58232	CPT Procedure	
Major Surgery	58233	CPT Procedure	
Major Surgery	58234	CPT Procedure	
Major Surgery	58235	CPT Procedure	
Major Surgery	58236	CPT Procedure	
Major Surgery	58237	CPT Procedure	
Major Surgery	58238	CPT Procedure	
Major Surgery	58239	CPT Procedure	
Major Surgery	58240	CPT Procedure	
Major Surgery	58241	CPT Procedure	
Major Surgery	58242	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	58243	CPT Procedure	
Major Surgery	58244	CPT Procedure	
Major Surgery	58245	CPT Procedure	
Major Surgery	58246	CPT Procedure	
Major Surgery	58247	CPT Procedure	
Major Surgery	58248	CPT Procedure	
Major Surgery	58249	CPT Procedure	
Major Surgery	58250	CPT Procedure	
Major Surgery	58251	CPT Procedure	
Major Surgery	58252	CPT Procedure	
Major Surgery	58253	CPT Procedure	
Major Surgery	58254	CPT Procedure	
Major Surgery	58255	CPT Procedure	
Major Surgery	58256	CPT Procedure	
Major Surgery	58257	CPT Procedure	
Major Surgery	58258	CPT Procedure	
Major Surgery	58259	CPT Procedure	
Major Surgery	58260	CPT Procedure	
Major Surgery	58261	CPT Procedure	
Major Surgery	58262	CPT Procedure	
Major Surgery	58263	CPT Procedure	
Major Surgery	58264	CPT Procedure	
Major Surgery	58265	CPT Procedure	
Major Surgery	58266	CPT Procedure	
Major Surgery	58267	CPT Procedure	
Major Surgery	58268	CPT Procedure	
Major Surgery	58269	CPT Procedure	
Major Surgery	58270	CPT Procedure	
Major Surgery	58271	CPT Procedure	
Major Surgery	58272	CPT Procedure	
Major Surgery	58273	CPT Procedure	
Major Surgery	58274	CPT Procedure	
Major Surgery	58275	CPT Procedure	
Major Surgery	58276	CPT Procedure	
Major Surgery	58277	CPT Procedure	
Major Surgery	58278	CPT Procedure	
Major Surgery	58279	CPT Procedure	
Major Surgery	58280	CPT Procedure	
Major Surgery	58281	CPT Procedure	
Major Surgery	58282	CPT Procedure	
Major Surgery	58283	CPT Procedure	
Major Surgery	58284	CPT Procedure	
Major Surgery	58285	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	58286	CPT Procedure	
Major Surgery	58287	CPT Procedure	
Major Surgery	58288	CPT Procedure	
Major Surgery	58289	CPT Procedure	
Major Surgery	58290	CPT Procedure	
Major Surgery	58291	CPT Procedure	
Major Surgery	58292	CPT Procedure	
Major Surgery	58293	CPT Procedure	
Major Surgery	58294	CPT Procedure	
Major Surgery	58400	CPT Procedure	
Major Surgery	58401	CPT Procedure	
Major Surgery	58402	CPT Procedure	
Major Surgery	58403	CPT Procedure	
Major Surgery	58404	CPT Procedure	
Major Surgery	58405	CPT Procedure	
Major Surgery	58406	CPT Procedure	
Major Surgery	58407	CPT Procedure	
Major Surgery	58408	CPT Procedure	
Major Surgery	58409	CPT Procedure	
Major Surgery	58410	CPT Procedure	
Major Surgery	58411	CPT Procedure	
Major Surgery	58412	CPT Procedure	
Major Surgery	58413	CPT Procedure	
Major Surgery	58414	CPT Procedure	
Major Surgery	58415	CPT Procedure	
Major Surgery	58416	CPT Procedure	
Major Surgery	58417	CPT Procedure	
Major Surgery	58418	CPT Procedure	
Major Surgery	58419	CPT Procedure	
Major Surgery	58420	CPT Procedure	
Major Surgery	58421	CPT Procedure	
Major Surgery	58422	CPT Procedure	
Major Surgery	58423	CPT Procedure	
Major Surgery	58424	CPT Procedure	
Major Surgery	58425	CPT Procedure	
Major Surgery	58426	CPT Procedure	
Major Surgery	58427	CPT Procedure	
Major Surgery	58428	CPT Procedure	
Major Surgery	58429	CPT Procedure	
Major Surgery	58430	CPT Procedure	
Major Surgery	58431	CPT Procedure	
Major Surgery	58432	CPT Procedure	
Major Surgery	58433	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	58434	CPT Procedure	
Major Surgery	58435	CPT Procedure	
Major Surgery	58436	CPT Procedure	
Major Surgery	58437	CPT Procedure	
Major Surgery	58438	CPT Procedure	
Major Surgery	58439	CPT Procedure	
Major Surgery	58440	CPT Procedure	
Major Surgery	58441	CPT Procedure	
Major Surgery	58442	CPT Procedure	
Major Surgery	58443	CPT Procedure	
Major Surgery	58444	CPT Procedure	
Major Surgery	58445	CPT Procedure	
Major Surgery	58446	CPT Procedure	
Major Surgery	58447	CPT Procedure	
Major Surgery	58448	CPT Procedure	
Major Surgery	58449	CPT Procedure	
Major Surgery	58450	CPT Procedure	
Major Surgery	58451	CPT Procedure	
Major Surgery	58452	CPT Procedure	
Major Surgery	58453	CPT Procedure	
Major Surgery	58454	CPT Procedure	
Major Surgery	58455	CPT Procedure	
Major Surgery	58456	CPT Procedure	
Major Surgery	58457	CPT Procedure	
Major Surgery	58458	CPT Procedure	
Major Surgery	58459	CPT Procedure	
Major Surgery	58460	CPT Procedure	
Major Surgery	58461	CPT Procedure	
Major Surgery	58462	CPT Procedure	
Major Surgery	58463	CPT Procedure	
Major Surgery	58464	CPT Procedure	
Major Surgery	58465	CPT Procedure	
Major Surgery	58466	CPT Procedure	
Major Surgery	58467	CPT Procedure	
Major Surgery	58468	CPT Procedure	
Major Surgery	58469	CPT Procedure	
Major Surgery	58470	CPT Procedure	
Major Surgery	58471	CPT Procedure	
Major Surgery	58472	CPT Procedure	
Major Surgery	58473	CPT Procedure	
Major Surgery	58474	CPT Procedure	
Major Surgery	58475	CPT Procedure	
Major Surgery	58476	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	58477	CPT Procedure	
Major Surgery	58478	CPT Procedure	
Major Surgery	58479	CPT Procedure	
Major Surgery	58480	CPT Procedure	
Major Surgery	58481	CPT Procedure	
Major Surgery	58482	CPT Procedure	
Major Surgery	58483	CPT Procedure	
Major Surgery	58484	CPT Procedure	
Major Surgery	58485	CPT Procedure	
Major Surgery	58486	CPT Procedure	
Major Surgery	58487	CPT Procedure	
Major Surgery	58488	CPT Procedure	
Major Surgery	58489	CPT Procedure	
Major Surgery	58490	CPT Procedure	
Major Surgery	58491	CPT Procedure	
Major Surgery	58492	CPT Procedure	
Major Surgery	58493	CPT Procedure	
Major Surgery	58494	CPT Procedure	
Major Surgery	58495	CPT Procedure	
Major Surgery	58496	CPT Procedure	
Major Surgery	58497	CPT Procedure	
Major Surgery	58498	CPT Procedure	
Major Surgery	58499	CPT Procedure	
Major Surgery	58500	CPT Procedure	
Major Surgery	58501	CPT Procedure	
Major Surgery	58502	CPT Procedure	
Major Surgery	58503	CPT Procedure	
Major Surgery	58504	CPT Procedure	
Major Surgery	58505	CPT Procedure	
Major Surgery	58506	CPT Procedure	
Major Surgery	58507	CPT Procedure	
Major Surgery	58508	CPT Procedure	
Major Surgery	58509	CPT Procedure	
Major Surgery	58510	CPT Procedure	
Major Surgery	58511	CPT Procedure	
Major Surgery	58512	CPT Procedure	
Major Surgery	58513	CPT Procedure	
Major Surgery	58514	CPT Procedure	
Major Surgery	58515	CPT Procedure	
Major Surgery	58516	CPT Procedure	
Major Surgery	58517	CPT Procedure	
Major Surgery	58518	CPT Procedure	
Major Surgery	58519	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	58520	CPT Procedure	
Major Surgery	58521	CPT Procedure	
Major Surgery	58522	CPT Procedure	
Major Surgery	58523	CPT Procedure	
Major Surgery	58524	CPT Procedure	
Major Surgery	58525	CPT Procedure	
Major Surgery	58526	CPT Procedure	
Major Surgery	58527	CPT Procedure	
Major Surgery	58528	CPT Procedure	
Major Surgery	58529	CPT Procedure	
Major Surgery	58530	CPT Procedure	
Major Surgery	58531	CPT Procedure	
Major Surgery	58532	CPT Procedure	
Major Surgery	58533	CPT Procedure	
Major Surgery	58534	CPT Procedure	
Major Surgery	58535	CPT Procedure	
Major Surgery	58536	CPT Procedure	
Major Surgery	58537	CPT Procedure	
Major Surgery	58538	CPT Procedure	
Major Surgery	58539	CPT Procedure	
Major Surgery	58540	CPT Procedure	
Major Surgery	58600	CPT Procedure	
Major Surgery	58601	CPT Procedure	
Major Surgery	58602	CPT Procedure	
Major Surgery	58603	CPT Procedure	
Major Surgery	58604	CPT Procedure	
Major Surgery	58605	CPT Procedure	
Major Surgery	58606	CPT Procedure	
Major Surgery	58607	CPT Procedure	
Major Surgery	58608	CPT Procedure	
Major Surgery	58609	CPT Procedure	
Major Surgery	58610	CPT Procedure	
Major Surgery	58611	CPT Procedure	
Major Surgery	58612	CPT Procedure	
Major Surgery	58613	CPT Procedure	
Major Surgery	58614	CPT Procedure	
Major Surgery	58615	CPT Procedure	
Major Surgery	58700	CPT Procedure	
Major Surgery	58701	CPT Procedure	
Major Surgery	58702	CPT Procedure	
Major Surgery	58703	CPT Procedure	
Major Surgery	58704	CPT Procedure	
Major Surgery	58705	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	58706	CPT Procedure	
Major Surgery	58707	CPT Procedure	
Major Surgery	58708	CPT Procedure	
Major Surgery	58709	CPT Procedure	
Major Surgery	58710	CPT Procedure	
Major Surgery	58711	CPT Procedure	
Major Surgery	58712	CPT Procedure	
Major Surgery	58713	CPT Procedure	
Major Surgery	58714	CPT Procedure	
Major Surgery	58715	CPT Procedure	
Major Surgery	58716	CPT Procedure	
Major Surgery	58717	CPT Procedure	
Major Surgery	58718	CPT Procedure	
Major Surgery	58719	CPT Procedure	
Major Surgery	58720	CPT Procedure	
Major Surgery	58750	CPT Procedure	
Major Surgery	58751	CPT Procedure	
Major Surgery	58752	CPT Procedure	
Major Surgery	58753	CPT Procedure	
Major Surgery	58754	CPT Procedure	
Major Surgery	58755	CPT Procedure	
Major Surgery	58756	CPT Procedure	
Major Surgery	58757	CPT Procedure	
Major Surgery	58758	CPT Procedure	
Major Surgery	58759	CPT Procedure	
Major Surgery	58760	CPT Procedure	
Major Surgery	58761	CPT Procedure	
Major Surgery	58762	CPT Procedure	
Major Surgery	58763	CPT Procedure	
Major Surgery	58764	CPT Procedure	
Major Surgery	58765	CPT Procedure	
Major Surgery	58766	CPT Procedure	
Major Surgery	58767	CPT Procedure	
Major Surgery	58768	CPT Procedure	
Major Surgery	58769	CPT Procedure	
Major Surgery	58770	CPT Procedure	
Major Surgery	58820	CPT Procedure	
Major Surgery	58821	CPT Procedure	
Major Surgery	58822	CPT Procedure	
Major Surgery	58823	CPT Procedure	
Major Surgery	58824	CPT Procedure	
Major Surgery	58825	CPT Procedure	
Major Surgery	58920	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	58921	CPT Procedure	
Major Surgery	58922	CPT Procedure	
Major Surgery	58923	CPT Procedure	
Major Surgery	58924	CPT Procedure	
Major Surgery	58925	CPT Procedure	
Major Surgery	58926	CPT Procedure	
Major Surgery	58927	CPT Procedure	
Major Surgery	58928	CPT Procedure	
Major Surgery	58929	CPT Procedure	
Major Surgery	58930	CPT Procedure	
Major Surgery	58931	CPT Procedure	
Major Surgery	58932	CPT Procedure	
Major Surgery	58933	CPT Procedure	
Major Surgery	58934	CPT Procedure	
Major Surgery	58935	CPT Procedure	
Major Surgery	58936	CPT Procedure	
Major Surgery	58937	CPT Procedure	
Major Surgery	58938	CPT Procedure	
Major Surgery	58939	CPT Procedure	
Major Surgery	58940	CPT Procedure	
Major Surgery	58941	CPT Procedure	
Major Surgery	58942	CPT Procedure	
Major Surgery	58943	CPT Procedure	
Major Surgery	58944	CPT Procedure	
Major Surgery	58945	CPT Procedure	
Major Surgery	58946	CPT Procedure	
Major Surgery	58947	CPT Procedure	
Major Surgery	58948	CPT Procedure	
Major Surgery	58949	CPT Procedure	
Major Surgery	58950	CPT Procedure	
Major Surgery	58951	CPT Procedure	
Major Surgery	58952	CPT Procedure	
Major Surgery	58953	CPT Procedure	
Major Surgery	58954	CPT Procedure	
Major Surgery	58955	CPT Procedure	
Major Surgery	58956	CPT Procedure	
Major Surgery	58957	CPT Procedure	
Major Surgery	58958	CPT Procedure	
Major Surgery	58959	CPT Procedure	
Major Surgery	58960	CPT Procedure	
Major Surgery	58999	CPT Procedure	
Major Surgery	43644	CPT Procedure	
Major Surgery	43645	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	43800	CPT Procedure	
Major Surgery	43801	CPT Procedure	
Major Surgery	43802	CPT Procedure	
Major Surgery	43803	CPT Procedure	
Major Surgery	43804	CPT Procedure	
Major Surgery	43805	CPT Procedure	
Major Surgery	43806	CPT Procedure	
Major Surgery	43807	CPT Procedure	
Major Surgery	43808	CPT Procedure	
Major Surgery	43809	CPT Procedure	
Major Surgery	43810	CPT Procedure	
Major Surgery	43811	CPT Procedure	
Major Surgery	43812	CPT Procedure	
Major Surgery	43813	CPT Procedure	
Major Surgery	43814	CPT Procedure	
Major Surgery	43815	CPT Procedure	
Major Surgery	43816	CPT Procedure	
Major Surgery	43817	CPT Procedure	
Major Surgery	43818	CPT Procedure	
Major Surgery	43819	CPT Procedure	
Major Surgery	43820	CPT Procedure	
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Major Surgery	43828	CPT Procedure	
Major Surgery	43829	CPT Procedure	
Major Surgery	43830	CPT Procedure	
Major Surgery	43831	CPT Procedure	
Major Surgery	43832	CPT Procedure	
Major Surgery	43833	CPT Procedure	
Major Surgery	43834	CPT Procedure	
Major Surgery	43835	CPT Procedure	
Major Surgery	43836	CPT Procedure	
Major Surgery	43837	CPT Procedure	
Major Surgery	43838	CPT Procedure	
Major Surgery	43839	CPT Procedure	
Major Surgery	43840	CPT Procedure	
Major Surgery	43841	CPT Procedure	
Major Surgery	43842	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	43843	CPT Procedure	
Major Surgery	43844	CPT Procedure	
Major Surgery	43845	CPT Procedure	
Major Surgery	43846	CPT Procedure	
Major Surgery	43847	CPT Procedure	
Major Surgery	43848	CPT Procedure	
Major Surgery	43849	CPT Procedure	
Major Surgery	43850	CPT Procedure	
Major Surgery	43851	CPT Procedure	
Major Surgery	43852	CPT Procedure	
Major Surgery	43853	CPT Procedure	
Major Surgery	43854	CPT Procedure	
Major Surgery	43855	CPT Procedure	
Major Surgery	43856	CPT Procedure	
Major Surgery	43857	CPT Procedure	
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Major Surgery	43859	CPT Procedure	
Major Surgery	43860	CPT Procedure	
Major Surgery	43861	CPT Procedure	
Major Surgery	43862	CPT Procedure	
Major Surgery	43863	CPT Procedure	
Major Surgery	43864	CPT Procedure	
Major Surgery	43865	CPT Procedure	
Major Surgery	43866	CPT Procedure	
Major Surgery	43867	CPT Procedure	
Major Surgery	43868	CPT Procedure	
Major Surgery	43869	CPT Procedure	
Major Surgery	43870	CPT Procedure	
Major Surgery	43871	CPT Procedure	
Major Surgery	43872	CPT Procedure	
Major Surgery	43873	CPT Procedure	
Major Surgery	43874	CPT Procedure	
Major Surgery	43875	CPT Procedure	
Major Surgery	43876	CPT Procedure	
Major Surgery	43877	CPT Procedure	
Major Surgery	43878	CPT Procedure	
Major Surgery	43879	CPT Procedure	
Major Surgery	43880	CPT Procedure	
Major Surgery	43881	CPT Procedure	
Major Surgery	49570	CPT Procedure	
Major Surgery	49571	CPT Procedure	
Major Surgery	49572	CPT Procedure	
Major Surgery	49573	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	49574	CPT Procedure	
Major Surgery	49575	CPT Procedure	
Major Surgery	S2083	HCPCS Procedure	
Major Surgery	S2213	HCPCS Procedure	
Major Surgery	61320	CPT Procedure	
Major Surgery	61321	CPT Procedure	
Major Surgery	61546	CPT Procedure	
Major Surgery	61680	CPT Procedure	
Major Surgery	61681	CPT Procedure	
Major Surgery	61682	CPT Procedure	
Major Surgery	61683	CPT Procedure	
Major Surgery	61684	CPT Procedure	
Major Surgery	61685	CPT Procedure	
Major Surgery	61686	CPT Procedure	
Major Surgery	61687	CPT Procedure	
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Major Surgery	61691	CPT Procedure	
Major Surgery	61692	CPT Procedure	
Major Surgery	61697	CPT Procedure	
Major Surgery	61698	CPT Procedure	
Major Surgery	61699	CPT Procedure	
Major Surgery	61700	CPT Procedure	
Major Surgery	61701	CPT Procedure	
Major Surgery	61702	CPT Procedure	
Major Surgery	61703	CPT Procedure	
Major Surgery	61704	CPT Procedure	
Major Surgery	61705	CPT Procedure	
Major Surgery	61706	CPT Procedure	
Major Surgery	61707	CPT Procedure	
Major Surgery	61708	CPT Procedure	
Major Surgery	61709	CPT Procedure	
Major Surgery	61710	CPT Procedure	
Major Surgery	62160	CPT Procedure	
Major Surgery	62161	CPT Procedure	
Major Surgery	62162	CPT Procedure	
Major Surgery	62163	CPT Procedure	
Major Surgery	62164	CPT Procedure	
Major Surgery	62165	CPT Procedure	
Major Surgery	01214	CPT Procedure	
Major Surgery	01215	CPT Procedure	
Major Surgery	01402	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	27130	CPT Procedure	
Major Surgery	27131	CPT Procedure	
Major Surgery	27132	CPT Procedure	
Major Surgery	27133	CPT Procedure	
Major Surgery	27134	CPT Procedure	
Major Surgery	27135	CPT Procedure	
Major Surgery	27136	CPT Procedure	
Major Surgery	27137	CPT Procedure	
Major Surgery	27138	CPT Procedure	
Major Surgery	27447	CPT Procedure	
Major Surgery	27486	CPT Procedure	
Major Surgery	27487	CPT Procedure	
Major Surgery	27075	CPT Procedure	
Major Surgery	27076	CPT Procedure	
Major Surgery	27077	CPT Procedure	
Major Surgery	27078	CPT Procedure	
Major Surgery	27079	CPT Procedure	
Major Surgery	27218	CPT Procedure	
Major Surgery	27226	CPT Procedure	
Major Surgery	27227	CPT Procedure	
Major Surgery	27228	CPT Procedure	
Major Surgery	27253	CPT Procedure	
Major Surgery	27258	CPT Procedure	
Major Surgery	27259	CPT Procedure	
Major Surgery	27299	CPT Procedure	
Major Surgery	29861	CPT Procedure	
Major Surgery	29862	CPT Procedure	
Major Surgery	29863	CPT Procedure	
Major Surgery	007	ICD-9-CM Procedure	
Major Surgery	007*	ICD-9-CM Procedure	
Major Surgery	008	ICD-9-CM Procedure	
Major Surgery	008*	ICD-9-CM Procedure	
Major Surgery	7985	ICD-9-CM Procedure	
Major Surgery	7986	ICD-9-CM Procedure	
Major Surgery	8045	ICD-9-CM Procedure	
Major Surgery	8046	ICD-9-CM Procedure	
Major Surgery	806	ICD-9-CM Procedure	
Major Surgery	806*	ICD-9-CM Procedure	
Major Surgery	8085	ICD-9-CM Procedure	
Major Surgery	8086	ICD-9-CM Procedure	
Major Surgery	8095	ICD-9-CM Procedure	
Major Surgery	8096	ICD-9-CM Procedure	
Major Surgery	8140	ICD-9-CM Procedure	

![Mini-Sentinel logo]

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

Covariate	Code	Code Type	Description
Major Surgery	8142	ICD-9-CM Procedure	
Major Surgery	8143	ICD-9-CM Procedure	
Major Surgery	8151	ICD-9-CM Procedure	
Major Surgery	8152	ICD-9-CM Procedure	
Major Surgery	8153	ICD-9-CM Procedure	
Major Surgery	8154	ICD-9-CM Procedure	
Major Surgery	8155	ICD-9-CM Procedure	
Major Surgery	8416	ICD-9-CM Procedure	
Major Surgery	8418	ICD-9-CM Procedure	
Major Surgery	20930	CPT Procedure	
Major Surgery	20931	CPT Procedure	
Major Surgery	20932	CPT Procedure	
Major Surgery	20933	CPT Procedure	
Major Surgery	20934	CPT Procedure	
Major Surgery	20935	CPT Procedure	
Major Surgery	20936	CPT Procedure	
Major Surgery	20937	CPT Procedure	
Major Surgery	20938	CPT Procedure	
Major Surgery	22010	CPT Procedure	
Major Surgery	22011	CPT Procedure	
Major Surgery	22012	CPT Procedure	
Major Surgery	22013	CPT Procedure	
Major Surgery	22014	CPT Procedure	
Major Surgery	22015	CPT Procedure	
Major Surgery	22100	CPT Procedure	
Major Surgery	22101	CPT Procedure	
Major Surgery	22102	CPT Procedure	
Major Surgery	22103	CPT Procedure	
Major Surgery	22104	CPT Procedure	
Major Surgery	22105	CPT Procedure	
Major Surgery	22106	CPT Procedure	
Major Surgery	22107	CPT Procedure	
Major Surgery	22108	CPT Procedure	
Major Surgery	22109	CPT Procedure	
Major Surgery	22110	CPT Procedure	
Major Surgery	22111	CPT Procedure	
Major Surgery	22112	CPT Procedure	
Major Surgery	22113	CPT Procedure	
Major Surgery	22114	CPT Procedure	
Major Surgery	22115	CPT Procedure	
Major Surgery	22116	CPT Procedure	
Major Surgery	22206	CPT Procedure	
Major Surgery	22207	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	22208	CPT Procedure	
Major Surgery	22209	CPT Procedure	
Major Surgery	22210	CPT Procedure	
Major Surgery	22211	CPT Procedure	
Major Surgery	22212	CPT Procedure	
Major Surgery	22213	CPT Procedure	
Major Surgery	22214	CPT Procedure	
Major Surgery	22215	CPT Procedure	
Major Surgery	22216	CPT Procedure	
Major Surgery	22217	CPT Procedure	
Major Surgery	22218	CPT Procedure	
Major Surgery	22219	CPT Procedure	
Major Surgery	22220	CPT Procedure	
Major Surgery	22221	CPT Procedure	
Major Surgery	22222	CPT Procedure	
Major Surgery	22223	CPT Procedure	
Major Surgery	22224	CPT Procedure	
Major Surgery	22225	CPT Procedure	
Major Surgery	22226	CPT Procedure	
Major Surgery	22318	CPT Procedure	
Major Surgery	22319	CPT Procedure	
Major Surgery	22320	CPT Procedure	
Major Surgery	22321	CPT Procedure	
Major Surgery	22322	CPT Procedure	
Major Surgery	22323	CPT Procedure	
Major Surgery	22324	CPT Procedure	
Major Surgery	22325	CPT Procedure	
Major Surgery	22326	CPT Procedure	
Major Surgery	22327	CPT Procedure	
Major Surgery	22328	CPT Procedure	
Major Surgery	22532	CPT Procedure	
Major Surgery	22533	CPT Procedure	
Major Surgery	22534	CPT Procedure	
Major Surgery	22548	CPT Procedure	
Major Surgery	22549	CPT Procedure	
Major Surgery	22550	CPT Procedure	
Major Surgery	22551	CPT Procedure	
Major Surgery	22552	CPT Procedure	
Major Surgery	22553	CPT Procedure	
Major Surgery	22554	CPT Procedure	
Major Surgery	22555	CPT Procedure	
Major Surgery	22556	CPT Procedure	
Major Surgery	22557	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	22558	CPT Procedure	
Major Surgery	22559	CPT Procedure	
Major Surgery	22560	CPT Procedure	
Major Surgery	22561	CPT Procedure	
Major Surgery	22562	CPT Procedure	
Major Surgery	22563	CPT Procedure	
Major Surgery	22564	CPT Procedure	
Major Surgery	22565	CPT Procedure	
Major Surgery	22566	CPT Procedure	
Major Surgery	22567	CPT Procedure	
Major Surgery	22568	CPT Procedure	
Major Surgery	22569	CPT Procedure	
Major Surgery	22570	CPT Procedure	
Major Surgery	22571	CPT Procedure	
Major Surgery	22572	CPT Procedure	
Major Surgery	22573	CPT Procedure	
Major Surgery	22574	CPT Procedure	
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Major Surgery	22576	CPT Procedure	
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Major Surgery	22578	CPT Procedure	
Major Surgery	22579	CPT Procedure	
Major Surgery	22580	CPT Procedure	
Major Surgery	22581	CPT Procedure	
Major Surgery	22582	CPT Procedure	
Major Surgery	22583	CPT Procedure	
Major Surgery	22584	CPT Procedure	
Major Surgery	22585	CPT Procedure	
Major Surgery	22590	CPT Procedure	
Major Surgery	22591	CPT Procedure	
Major Surgery	22592	CPT Procedure	
Major Surgery	22593	CPT Procedure	
Major Surgery	22594	CPT Procedure	
Major Surgery	22595	CPT Procedure	
Major Surgery	22596	CPT Procedure	
Major Surgery	22597	CPT Procedure	
Major Surgery	22598	CPT Procedure	
Major Surgery	22599	CPT Procedure	
Major Surgery	22600	CPT Procedure	
Major Surgery	22601	CPT Procedure	
Major Surgery	22602	CPT Procedure	
Major Surgery	22603	CPT Procedure	
Major Surgery	22604	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	22605	CPT Procedure	
Major Surgery	22606	CPT Procedure	
Major Surgery	22607	CPT Procedure	
Major Surgery	22608	CPT Procedure	
Major Surgery	22609	CPT Procedure	
Major Surgery	22610	CPT Procedure	
Major Surgery	22611	CPT Procedure	
Major Surgery	22612	CPT Procedure	
Major Surgery	22613	CPT Procedure	
Major Surgery	22614	CPT Procedure	
Major Surgery	22615	CPT Procedure	
Major Surgery	22616	CPT Procedure	
Major Surgery	22617	CPT Procedure	
Major Surgery	22618	CPT Procedure	
Major Surgery	22619	CPT Procedure	
Major Surgery	22620	CPT Procedure	
Major Surgery	22621	CPT Procedure	
Major Surgery	22622	CPT Procedure	
Major Surgery	22623	CPT Procedure	
Major Surgery	22624	CPT Procedure	
Major Surgery	22625	CPT Procedure	
Major Surgery	22626	CPT Procedure	
Major Surgery	22627	CPT Procedure	
Major Surgery	22628	CPT Procedure	
Major Surgery	22629	CPT Procedure	
Major Surgery	22630	CPT Procedure	
Major Surgery	22631	CPT Procedure	
Major Surgery	22632	CPT Procedure	
Major Surgery	22800	CPT Procedure	
Major Surgery	22801	CPT Procedure	
Major Surgery	22802	CPT Procedure	
Major Surgery	22803	CPT Procedure	
Major Surgery	22804	CPT Procedure	
Major Surgery	22805	CPT Procedure	
Major Surgery	22806	CPT Procedure	
Major Surgery	22807	CPT Procedure	
Major Surgery	22808	CPT Procedure	
Major Surgery	22809	CPT Procedure	
Major Surgery	22810	CPT Procedure	
Major Surgery	22811	CPT Procedure	
Major Surgery	22812	CPT Procedure	
Major Surgery	22813	CPT Procedure	
Major Surgery	22814	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	22815	CPT Procedure	
Major Surgery	22816	CPT Procedure	
Major Surgery	22817	CPT Procedure	
Major Surgery	22818	CPT Procedure	
Major Surgery	22819	CPT Procedure	
Major Surgery	22830	CPT Procedure	
Major Surgery	22840	CPT Procedure	
Major Surgery	22841	CPT Procedure	
Major Surgery	22842	CPT Procedure	
Major Surgery	22843	CPT Procedure	
Major Surgery	22844	CPT Procedure	
Major Surgery	22845	CPT Procedure	
Major Surgery	22846	CPT Procedure	
Major Surgery	22847	CPT Procedure	
Major Surgery	22848	CPT Procedure	
Major Surgery	22849	CPT Procedure	
Major Surgery	22850	CPT Procedure	
Major Surgery	22851	CPT Procedure	
Major Surgery	22852	CPT Procedure	
Major Surgery	22853	CPT Procedure	
Major Surgery	22854	CPT Procedure	
Major Surgery	22855	CPT Procedure	
Major Surgery	22856	CPT Procedure	
Major Surgery	22857	CPT Procedure	
Major Surgery	22858	CPT Procedure	
Major Surgery	22859	CPT Procedure	
Major Surgery	22860	CPT Procedure	
Major Surgery	22861	CPT Procedure	
Major Surgery	22862	CPT Procedure	
Major Surgery	22863	CPT Procedure	
Major Surgery	22864	CPT Procedure	
Major Surgery	22865	CPT Procedure	
Major Surgery	63001	CPT Procedure	
Major Surgery	63002	CPT Procedure	
Major Surgery	63003	CPT Procedure	
Major Surgery	63004	CPT Procedure	
Major Surgery	63005	CPT Procedure	
Major Surgery	63006	CPT Procedure	
Major Surgery	63007	CPT Procedure	
Major Surgery	63008	CPT Procedure	
Major Surgery	63009	CPT Procedure	
Major Surgery	63010	CPT Procedure	
Major Surgery	63011	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	63012	CPT Procedure	
Major Surgery	63013	CPT Procedure	
Major Surgery	63014	CPT Procedure	
Major Surgery	63015	CPT Procedure	
Major Surgery	63016	CPT Procedure	
Major Surgery	63017	CPT Procedure	
Major Surgery	63045	CPT Procedure	
Major Surgery	63046	CPT Procedure	
Major Surgery	63047	CPT Procedure	
Major Surgery	63048	CPT Procedure	
Major Surgery	63049	CPT Procedure	
Major Surgery	63050	CPT Procedure	
Major Surgery	63051	CPT Procedure	
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Major Surgery	63056	CPT Procedure	
Major Surgery	63057	CPT Procedure	
Major Surgery	63058	CPT Procedure	
Major Surgery	63059	CPT Procedure	
Major Surgery	63060	CPT Procedure	
Major Surgery	63061	CPT Procedure	
Major Surgery	63062	CPT Procedure	
Major Surgery	63063	CPT Procedure	
Major Surgery	63064	CPT Procedure	
Major Surgery	63065	CPT Procedure	
Major Surgery	63066	CPT Procedure	
Major Surgery	63075	CPT Procedure	
Major Surgery	63076	CPT Procedure	
Major Surgery	63077	CPT Procedure	
Major Surgery	63078	CPT Procedure	
Major Surgery	63079	CPT Procedure	
Major Surgery	63080	CPT Procedure	
Major Surgery	63081	CPT Procedure	
Major Surgery	63082	CPT Procedure	
Major Surgery	63083	CPT Procedure	
Major Surgery	63084	CPT Procedure	
Major Surgery	63085	CPT Procedure	
Major Surgery	63086	CPT Procedure	
Major Surgery	63087	CPT Procedure	
Major Surgery	63088	CPT Procedure	
Major Surgery	63089	CPT Procedure	
Major Surgery	63090	CPT Procedure	
Major Surgery	63091	CPT Procedure	
Major Surgery	63101	CPT Procedure	

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

Covariate	Code	Code Type	Description
Major Surgery	63102	CPT Procedure	
Major Surgery	63103	CPT Procedure	
Major Surgery	63170	CPT Procedure	
Major Surgery	63171	CPT Procedure	
Major Surgery	63172	CPT Procedure	
Major Surgery	63173	CPT Procedure	
Major Surgery	63174	CPT Procedure	
Major Surgery	63175	CPT Procedure	
Major Surgery	63176	CPT Procedure	
Major Surgery	63177	CPT Procedure	
Major Surgery	63178	CPT Procedure	
Major Surgery	63179	CPT Procedure	
Major Surgery	63180	CPT Procedure	
Major Surgery	63181	CPT Procedure	
Major Surgery	63182	CPT Procedure	
Major Surgery	63183	CPT Procedure	
Major Surgery	63184	CPT Procedure	
Major Surgery	63185	CPT Procedure	
Major Surgery	63186	CPT Procedure	
Major Surgery	63187	CPT Procedure	
Major Surgery	63188	CPT Procedure	
Major Surgery	63189	CPT Procedure	
Major Surgery	63190	CPT Procedure	
Major Surgery	63191	CPT Procedure	
Major Surgery	63192	CPT Procedure	
Major Surgery	63193	CPT Procedure	
Major Surgery	63194	CPT Procedure	
Major Surgery	63195	CPT Procedure	
Major Surgery	63196	CPT Procedure	
Major Surgery	63197	CPT Procedure	
Major Surgery	63198	CPT Procedure	
Major Surgery	63199	CPT Procedure	
Major Surgery	63200	CPT Procedure	
Major Surgery	63250	CPT Procedure	
Major Surgery	63251	CPT Procedure	
Major Surgery	63252	CPT Procedure	
Major Surgery	63253	CPT Procedure	
Major Surgery	63254	CPT Procedure	
Major Surgery	63255	CPT Procedure	
Major Surgery	63256	CPT Procedure	
Major Surgery	63257	CPT Procedure	
Major Surgery	63258	CPT Procedure	
Major Surgery	63259	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	63260	CPT Procedure	
Major Surgery	63261	CPT Procedure	
Major Surgery	63262	CPT Procedure	
Major Surgery	63263	CPT Procedure	
Major Surgery	63264	CPT Procedure	
Major Surgery	63265	CPT Procedure	
Major Surgery	63266	CPT Procedure	
Major Surgery	63267	CPT Procedure	
Major Surgery	63268	CPT Procedure	
Major Surgery	63269	CPT Procedure	
Major Surgery	63270	CPT Procedure	
Major Surgery	63271	CPT Procedure	
Major Surgery	63272	CPT Procedure	
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Major Surgery	63291	CPT Procedure	
Major Surgery	63292	CPT Procedure	
Major Surgery	63293	CPT Procedure	
Major Surgery	63294	CPT Procedure	
Major Surgery	63295	CPT Procedure	
Major Surgery	63300	CPT Procedure	
Major Surgery	63301	CPT Procedure	
Major Surgery	63302	CPT Procedure	
Major Surgery	63303	CPT Procedure	
Major Surgery	63304	CPT Procedure	
Major Surgery	63305	CPT Procedure	
Major Surgery	63306	CPT Procedure	

Covariate	Code	Code Type	Description
Major Surgery	63307	CPT Procedure	
Major Surgery	63308	CPT Procedure	
Major Surgery	63650	CPT Procedure	
Major Surgery	63651	CPT Procedure	
Major Surgery	63652	CPT Procedure	
Major Surgery	63653	CPT Procedure	
Major Surgery	63654	CPT Procedure	
Major Surgery	63655	CPT Procedure	
Major Surgery	63656	CPT Procedure	
Major Surgery	63657	CPT Procedure	
Major Surgery	63658	CPT Procedure	
Major Surgery	63659	CPT Procedure	
Major Surgery	63660	CPT Procedure	
Major Surgery	63661	CPT Procedure	
Major Surgery	63662	CPT Procedure	
Major Surgery	63663	CPT Procedure	
Major Surgery	63664	CPT Procedure	
Major Surgery	63665	CPT Procedure	
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Major Surgery	63667	CPT Procedure	
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Major Surgery	63678	CPT Procedure	
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Major Surgery	63680	CPT Procedure	
Major Surgery	63681	CPT Procedure	
Major Surgery	63682	CPT Procedure	
Major Surgery	63683	CPT Procedure	
Major Surgery	63684	CPT Procedure	
Major Surgery	63685	CPT Procedure	
Major Surgery	63686	CPT Procedure	
Major Surgery	63687	CPT Procedure	
Major Surgery	63688	CPT-4	
Major Surgery	034	ICD-9-CM Procedure	
Major Surgery	034*	ICD-9-CM Procedure	

Covariate	Code	Code Type	Description
Major Surgery	035	ICD-9-CM Procedure	
Major Surgery	035*	ICD-9-CM Procedure	
Major Surgery	039	ICD-9-CM Procedure	
Major Surgery	039*	ICD-9-CM Procedure	
Metastatic cancer	196	ICD-9-CM Diagnosis	Secondary and unspecified malignant neoplasm of lymph nodes
Metastatic cancer	196*	ICD-9-CM Diagnosis	Secondary and unspecified malignant neoplasm of lymph nodes
Metastatic cancer	196**	ICD-9-CM Diagnosis	Secondary and unspecified malignant neoplasm of lymph nodes
Metastatic cancer	197	ICD-9-CM Diagnosis	Secondary malignant neoplasm of respiratory and digestive systems
Metastatic cancer	197*	ICD-9-CM Diagnosis	Secondary malignant neoplasm of respiratory and digestive systems
Metastatic cancer	197**	ICD-9-CM Diagnosis	Secondary malignant neoplasm of respiratory and digestive systems
Metastatic cancer	198	ICD-9-CM Diagnosis	Secondary malignant neoplasm of other specified sites
Metastatic cancer	198*	ICD-9-CM Diagnosis	Secondary malignant neoplasm of other specified sites
Metastatic cancer	198**	ICD-9-CM Diagnosis	Secondary malignant neoplasm of other specified sites
Metastatic cancer	199	ICD-9-CM Diagnosis	Malignant neoplasm without specification of site
Metastatic cancer	199*	ICD-9-CM Diagnosis	Malignant neoplasm without specification of site
Metastatic cancer	199**	ICD-9-CM Diagnosis	Malignant neoplasm without specification of site
MI	410	ICD-9-CM Diagnosis	Acute myocardial infarction
MI	410*	ICD-9-CM Diagnosis	Acute myocardial infarction
MI	410**	ICD-9-CM Diagnosis	Acute myocardial infarction
Non-specific cerebrovascular symptoms	7814	ICD-9-CM Diagnosis	Transient paralysis of limb
Non-specific cerebrovascular symptoms	7814*	ICD-9-CM Diagnosis	Transient paralysis of limb
Non-specific cerebrovascular symptoms	7843	ICD-9-CM Diagnosis	Aphasia
Non-specific cerebrovascular symptoms	7843*	ICD-9-CM Diagnosis	Aphasia
Non-specific cerebrovascular symptoms	9970	ICD-9-CM Diagnosis	Nervous system complications
Non-specific cerebrovascular symptoms	9970*	ICD-9-CM Diagnosis	Nervous system complications
Non-specific cerebrovascular symptoms	40201	ICD-9-CM Diagnosis	Malignant hypertensive heart disease with heart failure
Osteoporotic fracture	8050	ICD-9-CM Diagnosis	Closed fracture of cervical vertebra without mention of spinal cord injury
Osteoporotic fracture	8050*	ICD-9-CM Diagnosis	Closed fracture of cervical vertebra without mention of spinal cord injury

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

Covariate	Code	Code Type	Description
Osteoporotic fracture	8052	ICD-9-CM Diagnosis	Closed fracture of dorsal [thoracic] vertebra without mention of spinal cord injury
Osteoporotic fracture	8052*	ICD-9-CM Diagnosis	Closed fracture of dorsal [thoracic] vertebra without mention of spinal cord injury
Osteoporotic fracture	8054	ICD-9-CM Diagnosis	Closed fracture of lumbar vertebra without mention of spinal cord injury
Osteoporotic fracture	8054*	ICD-9-CM Diagnosis	Closed fracture of lumbar vertebra without mention of spinal cord injury
Osteoporotic fracture	8056	ICD-9-CM Diagnosis	Closed fracture of sacrum and coccyx without mention of spinal cord injury
Osteoporotic fracture	8056*	ICD-9-CM Diagnosis	Closed fracture of sacrum and coccyx without mention of spinal cord injury
Osteoporotic fracture	8058	ICD-9-CM Diagnosis	Closed fracture of unspecified vertebral column without mention of spinal cord injury
Osteoporotic fracture	8058*	ICD-9-CM Diagnosis	Closed fracture of unspecified vertebral column without mention of spinal cord injury
Osteoporotic fracture	808	ICD-9-CM Diagnosis	Fracture of pelvis
Osteoporotic fracture	808*	ICD-9-CM Diagnosis	Fracture of pelvis
Osteoporotic fracture	808**	ICD-9-CM Diagnosis	Fracture of pelvis
Osteoporotic fracture	8120	ICD-9-CM Diagnosis	Fracture of upper end of humerus closed
Osteoporotic fracture	8120*	ICD-9-CM Diagnosis	Fracture of upper end of humerus closed
Osteoporotic fracture	8122	ICD-9-CM Diagnosis	Closed fracture of shaft or unspecified part of humerus
Osteoporotic fracture	8122*	ICD-9-CM Diagnosis	Closed fracture of shaft or unspecified part of humerus
Osteoporotic fracture	8134	ICD-9-CM Diagnosis	Fracture of lower end of radius and ulna closed
Osteoporotic fracture	8134*	ICD-9-CM Diagnosis	Fracture of lower end of radius and ulna closed
Osteoporotic fracture	8200	ICD-9-CM Diagnosis	Transcervical fracture closed
Osteoporotic fracture	8200*	ICD-9-CM Diagnosis	Transcervical fracture closed
Osteoporotic fracture	8202	ICD-9-CM Diagnosis	Pertrochanteric fracture of femur closed
Osteoporotic fracture	8202*	ICD-9-CM Diagnosis	Pertrochanteric fracture of femur closed
Osteoporotic fracture	8208	ICD-9-CM Diagnosis	Closed fracture of unspecified part of neck of femur
Osteoporotic fracture	8208*	ICD-9-CM Diagnosis	Closed fracture of unspecified part of neck of femur

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

Covariate	Code	Code Type	Description
Osteoporotic fracture	821	ICD-9-CM Diagnosis	Fracture of other and unspecified parts of femur
Osteoporotic fracture	821*	ICD-9-CM Diagnosis	Fracture of other and unspecified parts of femur
Osteoporotic fracture	821**	ICD-9-CM Diagnosis	Fracture of other and unspecified parts of femur
Other arterial embolism	444	ICD-9-CM Diagnosis	Arterial embolism and thrombosis
Other arterial embolism	444*	ICD-9-CM Diagnosis	Arterial embolism and thrombosis
Other arterial embolism	444**	ICD-9-CM Diagnosis	Arterial embolism and thrombosis
Other arterial embolism	445	ICD-9-CM Diagnosis	Atheroembolism
Other arterial embolism	445*	ICD-9-CM Diagnosis	Atheroembolism
Other arterial embolism	445**	ICD-9-CM Diagnosis	Atheroembolism
Other gastrointestinal ulcer disease	5317	ICD-9-CM Diagnosis	Chronic gastric ulcer without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5317*	ICD-9-CM Diagnosis	Chronic gastric ulcer without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5319	ICD-9-CM Diagnosis	Gastric ulcer unspecified as acute or chronic without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5319*	ICD-9-CM Diagnosis	Gastric ulcer unspecified as acute or chronic without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5327	ICD-9-CM Diagnosis	Chronic duodenal ulcer without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5327*	ICD-9-CM Diagnosis	Chronic duodenal ulcer without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5329	ICD-9-CM Diagnosis	Duodenal ulcer unspecified as acute or chronic without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5329*	ICD-9-CM Diagnosis	Duodenal ulcer unspecified as acute or chronic without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5337	ICD-9-CM Diagnosis	Chronic peptic ulcer of unspecified site without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5337*	ICD-9-CM Diagnosis	Chronic peptic ulcer of unspecified site without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5339	ICD-9-CM Diagnosis	Peptic ulcer of unspecified site unspecified as acute or chronic without mention of hemorrhage or perforation

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

Covariate	Code	Code Type	Description
Other gastrointestinal ulcer disease	5339*	ICD-9-CM Diagnosis	Peptic ulcer of unspecified site unspecified as acute or chronic without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5347	ICD-9-CM Diagnosis	Chronic gastrojejunal ulcer without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5347*	ICD-9-CM Diagnosis	Chronic gastrojejunal ulcer without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5349	ICD-9-CM Diagnosis	Gastrojejunal ulcer unspecified as acute or chronic without mention of hemorrhage or perforation
Other gastrointestinal ulcer disease	5349*	ICD-9-CM Diagnosis	Gastrojejunal ulcer unspecified as acute or chronic without mention of hemorrhage or perforation
Other hospitalized bleed	4230	ICD-9-CM Diagnosis	Hemopericardium
Other hospitalized bleed	4230*	ICD-9-CM Diagnosis	Hemopericardium
Other hospitalized bleed	4552	ICD-9-CM Diagnosis	Internal hemorrhoids with other complication
Other hospitalized bleed	4552*	ICD-9-CM Diagnosis	Internal hemorrhoids with other complication
Other hospitalized bleed	4555	ICD-9-CM Diagnosis	External hemorrhoids with other complication
Other hospitalized bleed	4555*	ICD-9-CM Diagnosis	External hemorrhoids with other complication
Other hospitalized bleed	4558	ICD-9-CM Diagnosis	Unspecified hemorrhoids with other complication
Other hospitalized bleed	4558*	ICD-9-CM Diagnosis	Unspecified hemorrhoids with other complication
Other hospitalized bleed	4560	ICD-9-CM Diagnosis	Esophageal varices with bleeding
Other hospitalized bleed	4560*	ICD-9-CM Diagnosis	Esophageal varices with bleeding
Other hospitalized bleed	4562	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
Other hospitalized bleed	4562*	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
Other hospitalized bleed	4590	ICD-9-CM Diagnosis	Hemorrhage, unspecified
Other hospitalized bleed	4590*	ICD-9-CM Diagnosis	Hemorrhage, unspecified
Other hospitalized bleed	5307	ICD-9-CM Diagnosis	Gastroesophageal laceration-hemorrhage syndrome
Other hospitalized bleed	5307*	ICD-9-CM Diagnosis	Gastroesophageal laceration-hemorrhage syndrome
Other hospitalized bleed	53082	ICD-9-CM Diagnosis	Esophageal hemorrhage
Other hospitalized bleed	5997	ICD-9-CM Diagnosis	Hematuria
Other hospitalized bleed	5997*	ICD-9-CM Diagnosis	Hematuria
Other hospitalized bleed	71911	ICD-9-CM Diagnosis	Hemarthrosis shoulder region

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

Covariate	Code	Code Type	Description
Other hospitalized bleed	7847	ICD-9-CM Diagnosis	Epistaxis
Other hospitalized bleed	7847*	ICD-9-CM Diagnosis	Epistaxis
Other hospitalized bleed	7848	ICD-9-CM Diagnosis	Hemorrhage from throat
Other hospitalized bleed	7848*	ICD-9-CM Diagnosis	Hemorrhage from throat
Other hospitalized bleed	7863	ICD-9-CM Diagnosis	Hemoptysis
Other hospitalized bleed	7863*	ICD-9-CM Diagnosis	Hemoptysis
Other ischemic cerebrovascular events	36234	ICD-9-CM Diagnosis	Transient retinal arterial occlusion
Other ischemic cerebrovascular events	43300	ICD-9-CM Diagnosis	Occlusion and stenosis of basilar artery without mention of cerebral infarction
Other ischemic cerebrovascular events	43310	ICD-9-CM Diagnosis	Occlusion and stenosis of carotid artery without mention of cerebral infarction
Other ischemic cerebrovascular events	43320	ICD-9-CM Diagnosis	Occlusion and stenosis of vertebral artery without mention of cerebral infarction
Other ischemic cerebrovascular events	43330	ICD-9-CM Diagnosis	Occlusion and stenosis of multiple and bilateral precerebral arteries without mention of cerebral infarction
Other ischemic cerebrovascular events	43380	ICD-9-CM Diagnosis	Occlusion and stenosis of other specified precerebral artery without mention of cerebral infarction
Other ischemic cerebrovascular events	43390	ICD-9-CM Diagnosis	Occlusion and stenosis of unspecified precerebral artery without mention of cerebral infarction
Other ischemic cerebrovascular events	43400	ICD-9-CM Diagnosis	Cerebral thrombosis without mention of cerebral infarction
Other ischemic cerebrovascular events	43410	ICD-9-CM Diagnosis	Cerebral embolism without mention of cerebral infarction
Other ischemic cerebrovascular events	43490	ICD-9-CM Diagnosis	Cerebral artery occlusion, unspecified, without mention of cerebral infarction
Other ischemic cerebrovascular events	435	ICD-9-CM Diagnosis	Transient cerebral ischemia
Other ischemic cerebrovascular events	435*	ICD-9-CM Diagnosis	Transient cerebral ischemia
Other ischemic cerebrovascular events	4370	ICD-9-CM Diagnosis	Other and ill-defined cerebrovascular disease
Other ischemic cerebrovascular events	437.0*	ICD-9-CM Diagnosis	Other and ill-defined cerebrovascular disease
Other ischemic cerebrovascular events	4371	ICD-9-CM Diagnosis	Cerebral atherosclerosis
Other ischemic cerebrovascular events	437.1*	ICD-9-CM Diagnosis	Cerebral atherosclerosis
Other ischemic cerebrovascular events	4379	ICD-9-CM Diagnosis	Unspecified cerebrovascular disease
Other ischemic cerebrovascular events	4379*	ICD-9-CM Diagnosis	Unspecified cerebrovascular disease
Other ischemic cerebrovascular events	438	ICD-9-CM Diagnosis	Late effects of cerebrovascular disease
Other ischemic cerebrovascular events	438*	ICD-9-CM Diagnosis	Late effects of cerebrovascular disease
Other ischemic cerebrovascular events	438**	ICD-9-CM Diagnosis	Late effects of cerebrovascular disease
Other ischemic cerebrovascular events	3811	ICD-9-CM Procedure	Endarterectomy, Intracranial Vessels

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

Covariate	Code	Code Type	Description
Other ischemic cerebrovascular events	3812	ICD-9-CM Procedure	Endarterectomy, other vessels of head and neck
Other ischemic cerebrovascular events	3841	ICD-9-CM Procedure	Resection Of Vessel With Replacement, Intracranial Vessels
Other ischemic cerebrovascular events	3842	ICD-9-CM Procedure	Resection of vessel with replacement, other vessels of head and neck
Other ischemic heart disease	411	ICD-9-CM Diagnosis	Other acute and subacute forms of ischemic heart disease
Other ischemic heart disease	411*	ICD-9-CM Diagnosis	Other acute and subacute forms of ischemic heart disease
Other ischemic heart disease	411**	ICD-9-CM Diagnosis	Other acute and subacute forms of ischemic heart disease
Percutaneous coronary intervention (PCI)	V4582	ICD-9-CM Diagnosis	Percutaneous transluminal coronary angioplasty status
Percutaneous coronary intervention (PCI)	0066	ICD-9-CM Procedure	Percutaneous transluminal coronary angioplasty
Percutaneous coronary intervention (PCI)	360	ICD-9-CM Procedure	removal of coronary artery obstruction and insertion of stent
Percutaneous coronary intervention (PCI)	360*	ICD-9-CM Procedure	removal of coronary artery obstruction and insertion of stent
Percutaneous coronary intervention (PCI)	3722	ICD-9-CM Procedure	Left heart cardiac catheterization
Percutaneous coronary intervention (PCI)	3723	ICD-9-CM Procedure	Combined Right And Left Heart Cardiac Catheterization
Percutaneous coronary intervention (PCI)	885	ICD-9-CM Procedure	Angiocardiography Using Contrast Material
Percutaneous coronary intervention (PCI)	885*	ICD-9-CM Procedure	Angiocardiography Using Contrast Material
Percutaneous coronary intervention (PCI)	92973	CPT Procedure	PRQ CORONARY MECH THROMBECT
Percutaneous coronary intervention (PCI)	92974	CPT Procedure	CATH PLACE CARDIO BRACHYTX
Percutaneous coronary intervention (PCI)	92977	CPT Procedure	DISSOLVE CLOT HEART VESSEL
Percutaneous coronary intervention (PCI)	92980	CPT Procedure	INSERT INTRACORONARY STENT
Percutaneous coronary intervention (PCI)	92981	CPT Procedure	INSERT INTRACORONARY STENT
Percutaneous coronary intervention (PCI)	92982	CPT Procedure	CORONARY ARTERY DILATION
Percutaneous coronary intervention (PCI)	92984	CPT Procedure	CORONARY ARTERY DILATION
Percutaneous coronary intervention (PCI)	92987	CPT Procedure	REVISION OF MITRAL VALVE
Percutaneous coronary intervention (PCI)	92995	CPT Procedure	CORONARY ATHERECTOMY
Percutaneous coronary intervention (PCI)	92996	CPT Procedure	CORONARY ATHERECTOMY ADD-ON
Percutaneous coronary intervention (PCI)	G0290	HCPCS Procedure	Transcatheter placement of a drug eluting intracoronary stent(s), percutaneous, with or without other therapeutic intervention, any method; single vessel

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

Covariate	Code	Code Type	Description
Percutaneous coronary intervention (PCI)	G0291	HCPCS Procedure	Transcatheter placement of a drug eluting intracoronary stent(s), percutaneous, with or without other therapeutic intervention, any method; each additional vessel
Peripheral vascular disease	440	ICD-9-CM Diagnosis	Atherosclerosis
Peripheral vascular disease	440*	ICD-9-CM Diagnosis	Atherosclerosis
Peripheral vascular disease	440**	ICD-9-CM Diagnosis	Atherosclerosis
Peripheral vascular disease	4412	ICD-9-CM Diagnosis	Thoracic aneurysm without mention of rupture
Peripheral vascular disease	4412*	ICD-9-CM Diagnosis	Thoracic aneurysm without mention of rupture
Peripheral vascular disease	4414	ICD-9-CM Diagnosis	Abdominal aneurysm without mention of rupture
Peripheral vascular disease	4414*	ICD-9-CM Diagnosis	Abdominal aneurysm without mention of rupture
Peripheral vascular disease	4417	ICD-9-CM Diagnosis	Thoracoabdominal aneurysm, without mention of rupture
Peripheral vascular disease	4417*	ICD-9-CM Diagnosis	Thoracoabdominal aneurysm, without mention of rupture
Peripheral vascular disease	4419	ICD-9-CM Diagnosis	Aortic aneurysm of unspecified site without mention of rupture
Peripheral vascular disease	4419*	ICD-9-CM Diagnosis	Aortic aneurysm of unspecified site without mention of rupture
Peripheral vascular disease	4431	ICD-9-CM Diagnosis	Thromboangiitis obliterans [Buerger's disease]
Peripheral vascular disease	4431*	ICD-9-CM Diagnosis	Thromboangiitis obliterans [Buerger's disease]
Peripheral vascular disease	4432	ICD-9-CM Diagnosis	Other arterial dissection
Peripheral vascular disease	4432*	ICD-9-CM Diagnosis	Other arterial dissection
Peripheral vascular disease	4438	ICD-9-CM Diagnosis	Other specified peripheral vascular diseases
Peripheral vascular disease	4438*	ICD-9-CM Diagnosis	Other specified peripheral vascular diseases
Peripheral vascular disease	4439	ICD-9-CM Diagnosis	Peripheral vascular disease, unspecified
Peripheral vascular disease	4439*	ICD-9-CM Diagnosis	Peripheral vascular disease, unspecified
Peripheral vascular disease	4471	ICD-9-CM Diagnosis	Stricture of artery
Peripheral vascular disease	4471*	ICD-9-CM Diagnosis	Stricture of artery
Peripheral vascular disease	5571	ICD-9-CM Diagnosis	Chronic vascular insufficiency of intestine
Peripheral vascular disease	5571*	ICD-9-CM Diagnosis	Chronic vascular insufficiency of intestine

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

Covariate	Code	Code Type	Description
Peripheral vascular disease	5579	ICD-9-CM Diagnosis	Unspecified vascular insufficiency of intestine
Peripheral vascular disease	5579*	ICD-9-CM Diagnosis	Unspecified vascular insufficiency of intestine
Peripheral vascular disease	V434	ICD-9-CM Diagnosis	Blood vessel replaced by other means
Peripheral vascular disease	V434*	ICD-9-CM Diagnosis	Blood vessel replaced by other means
Peripheral vascular disease	3818	ICD-9-CM Procedure	
Peripheral vascular disease	35454	CPT Procedure	
Peripheral vascular disease	35456	CPT Procedure	
Peripheral vascular disease	35459	CPT Procedure	
Peripheral vascular disease	35470	CPT Procedure	
Peripheral vascular disease	35473	CPT Procedure	
Peripheral vascular disease	35474	CPT Procedure	
Peripheral vascular disease	35482	CPT Procedure	
Peripheral vascular disease	35483	CPT Procedure	
Peripheral vascular disease	35492	CPT Procedure	
Peripheral vascular disease	35493	CPT Procedure	
Peripheral vascular disease	35495	CPT Procedure	
Peripheral vascular disease	37207	CPT Procedure	
Peripheral vascular disease	37208	CPT Procedure	
Peripheral vascular disease	37220	CPT Procedure	
Peripheral vascular disease	37221	CPT Procedure	
Peripheral vascular disease	37222	CPT Procedure	
Peripheral vascular disease	37223	CPT Procedure	
Peripheral vascular disease	37224	CPT Procedure	
Peripheral vascular disease	37225	CPT Procedure	
Peripheral vascular disease	37226	CPT Procedure	
Peripheral vascular disease	37227	CPT Procedure	
Peripheral vascular disease	37228	CPT Procedure	
Peripheral vascular disease	37229	CPT Procedure	
Peripheral vascular disease	37230	CPT Procedure	
Peripheral vascular disease	37231	CPT Procedure	
Peripheral vascular disease	37232	CPT Procedure	
Peripheral vascular disease	37233	CPT Procedure	
Peripheral vascular disease	37234	CPT Procedure	
Peripheral vascular disease	37235	CPT Procedure	
Peripheral vascular disease	3925	ICD-9-CM Procedure	
Peripheral vascular disease	3929	ICD-9-CM Procedure	
Peripheral vascular disease	35351	CPT Procedure	
Peripheral vascular disease	35355	CPT Procedure	
Peripheral vascular disease	35361	CPT Procedure	
Peripheral vascular disease	35363	CPT Procedure	
Peripheral vascular disease	35371	CPT Procedure	

Covariate	Code	Code Type	Description
Peripheral vascular disease	35372	CPT Procedure	
Peripheral vascular disease	35521	CPT Procedure	
Peripheral vascular disease	35533	CPT Procedure	
Peripheral vascular disease	35541	CPT Procedure	
Peripheral vascular disease	35546	CPT Procedure	
Peripheral vascular disease	35548	CPT Procedure	
Peripheral vascular disease	35549	CPT Procedure	
Peripheral vascular disease	35551	CPT Procedure	
Peripheral vascular disease	35556	CPT Procedure	
Peripheral vascular disease	35558	CPT Procedure	
Peripheral vascular disease	35563	CPT Procedure	
Peripheral vascular disease	35565	CPT Procedure	
Peripheral vascular disease	35566	CPT Procedure	
Peripheral vascular disease	35570	CPT Procedure	
Peripheral vascular disease	35571	CPT Procedure	
Peripheral vascular disease	35681	CPT Procedure	
Peripheral vascular disease	35682	CPT Procedure	
Peripheral vascular disease	35683	CPT Procedure	
Peripheral vascular disease	35879	CPT Procedure	
Peripheral vascular disease	8410	ICD-9-CM Procedure	
Peripheral vascular disease	8411	ICD-9-CM Procedure	
Peripheral vascular disease	8412	ICD-9-CM Procedure	
Peripheral vascular disease	8413	ICD-9-CM Procedure	
Peripheral vascular disease	8414	ICD-9-CM Procedure	
Peripheral vascular disease	8415	ICD-9-CM Procedure	
Peripheral vascular disease	8416	ICD-9-CM Procedure	
Peripheral vascular disease	8417	ICD-9-CM Procedure	
Peripheral vascular disease	27295	CPT Procedure	
Peripheral vascular disease	27590	CPT Procedure	
Peripheral vascular disease	27591	CPT Procedure	
Peripheral vascular disease	27592	CPT Procedure	
Peripheral vascular disease	27598	CPT Procedure	
Peripheral vascular disease	27880	CPT Procedure	
Peripheral vascular disease	27881	CPT Procedure	
Peripheral vascular disease	27882	CPT Procedure	
Peripheral vascular disease	27888	CPT Procedure	
Peripheral vascular disease	27889	CPT Procedure	
Peripheral vascular disease	28800	CPT Procedure	
Peripheral vascular disease	28805	CPT Procedure	
Peripheral vascular disease	28810	CPT Procedure	
Peripheral vascular disease	28820	CPT Procedure	
Peripheral vascular disease	28825	CPT Procedure	

Covariate	Code	Code Type	Description
Prior central venous thrombosis	325	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of intracranial venous sinuses
Prior central venous thrombosis	4376	ICD-9-CM Diagnosis	Nonpyogenic thrombosis of intracranial venous sinus
Prior central venous thrombosis	4376*	ICD-9-CM Diagnosis	Nonpyogenic thrombosis of intracranial venous sinus
Prior VTE/phlebitis	45111	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of femoral vein (deep) (superficial)
Prior VTE/phlebitis	45119	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of deep veins of lower extremities, other
Prior VTE/phlebitis	4512	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of lower extremities, unspecified
Prior VTE/phlebitis	4512*	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of lower extremities, unspecified
Prior VTE/phlebitis	4519	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of unspecified site
Prior VTE/phlebitis	4519*	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of unspecified site
Prior VTE/phlebitis	4531	ICD-9-CM Diagnosis	Thrombophlebitis migrans
Prior VTE/phlebitis	4531*	ICD-9-CM Diagnosis	Thrombophlebitis migrans
Prior VTE/phlebitis	4532	ICD-9-CM Diagnosis	Other venous embolism and thrombosis of inferior vena cava
Prior VTE/phlebitis	4532*	ICD-9-CM Diagnosis	Other venous embolism and thrombosis of inferior vena cava
Prior VTE/phlebitis	45340	ICD-9-CM Diagnosis	Acute venous embolism and thrombosis of unspecified deep vessels of lower extremity
Prior VTE/phlebitis	45341	ICD-9-CM Diagnosis	Acute venous embolism and thrombosis of deep vessels of proximal lower extremity
Prior VTE/phlebitis	45342	ICD-9-CM Diagnosis	Acute venous embolism and thrombosis of deep vessels of distal lower extremity
Prior VTE/phlebitis	4539	ICD-9-CM Diagnosis	Other venous embolism and thrombosis of unspecified site
Prior VTE/phlebitis	4539*	ICD-9-CM Diagnosis	Other venous embolism and thrombosis of unspecified site
Prior VTE/phlebitis	V1251	ICD-9-CM Diagnosis	Personal history of venous thrombosis and embolism
Prior VTE/phlebitis	4510	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of superficial vessels of lower extremities
Prior VTE/phlebitis	4510*	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of superficial vessels of lower extremities

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

Covariate	Code	Code Type	Description
Prior VTE/phlebitis	4518	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of other sites
Prior VTE/phlebitis	4518*	ICD-9-CM Diagnosis	Phlebitis and thrombophlebitis of other sites
Prior VTE/phlebitis	4530	ICD-9-CM Diagnosis	Budd-chiari syndrome
Prior VTE/phlebitis	4530*	ICD-9-CM Diagnosis	Budd-chiari syndrome
Prior VTE/phlebitis	4533	ICD-9-CM Diagnosis	Other venous embolism and thrombosis of renal vein
Prior VTE/phlebitis	4533*	ICD-9-CM Diagnosis	Other venous embolism and thrombosis of renal vein
Prior VTE/phlebitis	4535	ICD-9-CM Diagnosis	Chronic venous embolism and thrombosis of deep vessels of lower extremity
Prior VTE/phlebitis	4535*	ICD-9-CM Diagnosis	Chronic venous embolism and thrombosis of deep vessels of lower extremity
Prior VTE/phlebitis	4536	ICD-9-CM Diagnosis	Venous embolism and thrombosis of superficial vessels of lower extremity
Prior VTE/phlebitis	4536*	ICD-9-CM Diagnosis	Venous embolism and thrombosis of superficial vessels of lower extremity
Prior VTE/phlebitis	4537	ICD-9-CM Diagnosis	Chronic venous embolism and thrombosis of other specified vessels
Prior VTE/phlebitis	4537*	ICD-9-CM Diagnosis	Chronic venous embolism and thrombosis of other specified vessels
Prior VTE/phlebitis	4538	ICD-9-CM Diagnosis	Acute venous embolism and thrombosis of other specified veins
Prior VTE/phlebitis	4538*	ICD-9-CM Diagnosis	Acute venous embolism and thrombosis of other specified veins
Prior VTE/phlebitis	449	ICD-9-CM Diagnosis	Septic arterial embolism
Prior VTE/phlebitis	452	ICD-9-CM Diagnosis	Portal vein thrombosis
Prior VTE/phlebitis	3361	ICD-9-CM Diagnosis	Vascular myelopathies
Prior VTE/phlebitis	3361*	ICD-9-CM Diagnosis	Vascular myelopathies
Prior VTE/phlebitis	3623	ICD-9-CM Diagnosis	Retinal vascular occlusion
Prior VTE/phlebitis	3623*	ICD-9-CM Diagnosis	Retinal vascular occlusion
Prior VTE/phlebitis	5734	ICD-9-CM Diagnosis	Hepatic infarction
Prior VTE/phlebitis	5734*	ICD-9-CM Diagnosis	Hepatic infarction
Prior VTE/phlebitis	59381	ICD-9-CM Diagnosis	Vascular disorders of kidney
Smoking and tobacco use	3051	ICD-9-CM Diagnosis	Tobacco use disorder
Smoking and tobacco use	3051*	ICD-9-CM Diagnosis	Tobacco use disorder
Smoking and tobacco use	6490	ICD-9-CM Diagnosis	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium

Covariate	Code	Code Type	Description
Smoking and tobacco use	6490*	ICD-9-CM Diagnosis	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium
Smoking and tobacco use	98984	ICD-9-CM Diagnosis	Toxic effect of tobacco
Smoking and tobacco use	V1582	ICD-9-CM Diagnosis	Personal history of tobacco use
Smoking and tobacco use	83887	CPT Procedure	Nicotine
Smoking and tobacco use	99406	CPT Procedure	Smoking and tobacco use cessation counseling visit; intermediate, greater than 3 minutes up to 10 minutes
Smoking and tobacco use	99407	CPT Procedure	Smoking and tobacco use cessation counseling visit; intensive, greater than 10 minutes
Smoking and tobacco use	1034F	CPT Procedure	Current tobacco smoker (CAD, CAP, COPD, PV) (DM)
Smoking and tobacco use	1035F	CPT Procedure	Current smokeless tobacco user (eg, chew, snuff) (PV)
Smoking and tobacco use	4000F	CPT Procedure	Tobacco use cessation intervention, counseling (COPD, CAP, CAD, Asthma)(DM)(PV)
Smoking and tobacco use	4001F	CPT Procedure	Tobacco use cessation intervention, pharmacologic therapy (COPD, CAD, CAP, PV, Asthma) (DM)(PV)
Smoking and tobacco use	4004F	CPT Procedure	Patient screened for tobacco use and received tobacco cessation intervention (counseling, pharmacotherapy, or both), if identified as a tobacco user (PV, CAD)
Smoking and tobacco use	C9801	HCPCS Procedure	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intermediate, greater than 3 minutes, up to 10 minutes
Smoking and tobacco use	C9802	HCPCS Procedure	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intensive, greater than 10 minutes
Smoking and tobacco use	G0375	HCPCS Procedure	Smoking and tobacco use cessation counseling visit; intermediate, greater than 3 minutes up to 10 minutes
Smoking and tobacco use	G0376	HCPCS Procedure	Smoking and tobacco use cessation counseling visit; intensive, greater than 10 minutes

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

Covariate	Code	Code Type	Description
Smoking and tobacco use	G0436	HCPCS Procedure	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intermediate, greater than 3 minutes, up to 10 minutes
Smoking and tobacco use	G0437	HCPCS Procedure	Smoking and tobacco cessation counseling visit for the asymptomatic patient; intensive, greater than 10 minutes
Smoking and tobacco use	G8093	HCPCS Procedure	Newly diagnosed chronic obstructive pulmonary disease (copd) patient documented to have received smoking cessation intervention, within 3 months of diagnosis
Smoking and tobacco use	G8094	HCPCS Procedure	Newly diagnosed chronic obstructive pulmonary disease (copd) patient not documented to have received smoking cessation intervention, within 3 months of diagnosis
Smoking and tobacco use	G8402	HCPCS Procedure	Tobacco (smoke) use cessation intervention, counseling
Smoking and tobacco use	G8403	HCPCS Procedure	Tobacco (smoke) use cessation intervention not counseled
Smoking and tobacco use	G8453	HCPCS Procedure	Tobacco use cessation intervention, counseling
Smoking and tobacco use	G8454	HCPCS Procedure	Tobacco use cessation intervention not counseled, reason not specified
Smoking and tobacco use	G8455	HCPCS Procedure	Current tobacco smoker
Smoking and tobacco use	G8456	HCPCS Procedure	Current smokeless tobacco user
Smoking and tobacco use	G8688	HCPCS Procedure	Currently a smokeless tobacco user (eg, chew, snuff) and no exposure to secondhand smoke
Smoking and tobacco use	G9016	HCPCS Procedure	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]
Smoking and tobacco use	S4990	HCPCS Procedure	Nicotine patches, legend
Smoking and tobacco use	S4991	HCPCS Procedure	Nicotine patches, non-legend
Smoking and tobacco use	S4995	HCPCS Procedure	Smoking cessation gum
Smoking and tobacco use	S9075	HCPCS Procedure	Smoking cessation treatment
Smoking and tobacco use	S9453	HCPCS Procedure	Smoking cessation classes, non-physician provider, per session
Transient ischemic attack	435	ICD-9-CM Diagnosis	Transient cerebral ischemia

Covariate	Code	Code Type	Description
Transient ischemic attack	435*	ICD-9-CM Diagnosis	Transient cerebral ischemia
Trauma with likely immobilization	800	ICD-9-CM Diagnosis	Fracture of vault of skull
Trauma with likely immobilization	800*	ICD-9-CM Diagnosis	Fracture of vault of skull
Trauma with likely immobilization	800**	ICD-9-CM Diagnosis	Fracture of vault of skull
Trauma with likely immobilization	801	ICD-9-CM Diagnosis	Fracture of base of skull
Trauma with likely immobilization	801*	ICD-9-CM Diagnosis	Fracture of base of skull
Trauma with likely immobilization	801**	ICD-9-CM Diagnosis	Fracture of base of skull
Trauma with likely immobilization	802	ICD-9-CM Diagnosis	Fracture of face bones
Trauma with likely immobilization	802*	ICD-9-CM Diagnosis	Fracture of face bones
Trauma with likely immobilization	802**	ICD-9-CM Diagnosis	Fracture of face bones
Trauma with likely immobilization	803	ICD-9-CM Diagnosis	Other and unqualified skull fractures
Trauma with likely immobilization	803*	ICD-9-CM Diagnosis	Other and unqualified skull fractures
Trauma with likely immobilization	803**	ICD-9-CM Diagnosis	Other and unqualified skull fractures
Trauma with likely immobilization	804	ICD-9-CM Diagnosis	Multiple fractures involving skull or face with other bones
Trauma with likely immobilization	804*	ICD-9-CM Diagnosis	Multiple fractures involving skull or face with other bones
Trauma with likely immobilization	804**	ICD-9-CM Diagnosis	Multiple fractures involving skull or face with other bones
Trauma with likely immobilization	8051	ICD-9-CM Diagnosis	Open fracture of cervical vertebra without mention of spinal cord injury
Trauma with likely immobilization	8051*	ICD-9-CM Diagnosis	Open fracture of cervical vertebra without mention of spinal cord injury
Trauma with likely immobilization	8053	ICD-9-CM Diagnosis	Open fracture of dorsal [thoracic] vertebra without mention of spinal cord injury
Trauma with likely immobilization	8053*	ICD-9-CM Diagnosis	Open fracture of dorsal [thoracic] vertebra without mention of spinal cord injury
Trauma with likely immobilization	8055	ICD-9-CM Diagnosis	Open fracture of lumbar vertebra without mention of spinal cord injury
Trauma with likely immobilization	8055*	ICD-9-CM Diagnosis	Open fracture of lumbar vertebra without mention of spinal cord injury
Trauma with likely immobilization	8057	ICD-9-CM Diagnosis	Open fracture of sacrum and coccyx without mention of spinal cord injury
Trauma with likely immobilization	8057*	ICD-9-CM Diagnosis	Open fracture of sacrum and coccyx without mention of spinal cord injury
Trauma with likely immobilization	8059	ICD-9-CM Diagnosis	Open fracture of unspecified vertebral column without mention of spinal cord injury
Trauma with likely immobilization	8059*	ICD-9-CM Diagnosis	Open fracture of unspecified vertebral column without mention of spinal cord injury

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

Covariate	Code	Code Type	Description
Trauma with likely immobilization	806	ICD-9-CM Diagnosis	Fracture of vertebral column with spinal cord injury
Trauma with likely immobilization	806*	ICD-9-CM Diagnosis	Fracture of vertebral column with spinal cord injury
Trauma with likely immobilization	806**	ICD-9-CM Diagnosis	Fracture of vertebral column with spinal cord injury
Trauma with likely immobilization	807	ICD-9-CM Diagnosis	Fracture of rib(s) sternum larynx and trachea
Trauma with likely immobilization	807*	ICD-9-CM Diagnosis	Fracture of rib(s) sternum larynx and trachea
Trauma with likely immobilization	807**	ICD-9-CM Diagnosis	Fracture of rib(s) sternum larynx and trachea
Trauma with likely immobilization	809	ICD-9-CM Diagnosis	Ill-defined fractures of bones of trunk
Trauma with likely immobilization	809*	ICD-9-CM Diagnosis	Ill-defined fractures of bones of trunk
Trauma with likely immobilization	809**	ICD-9-CM Diagnosis	Ill-defined fractures of bones of trunk
Trauma with likely immobilization	8201	ICD-9-CM Diagnosis	Transcervical fracture open
Trauma with likely immobilization	8201*	ICD-9-CM Diagnosis	Transcervical fracture open
Trauma with likely immobilization	8203	ICD-9-CM Diagnosis	Pertrochanteric fracture of femur open
Trauma with likely immobilization	8203*	ICD-9-CM Diagnosis	Pertrochanteric fracture of femur open
Trauma with likely immobilization	8209	ICD-9-CM Diagnosis	Open fracture of unspecified part of neck of femur
Trauma with likely immobilization	8209*	ICD-9-CM Diagnosis	Open fracture of unspecified part of neck of femur
Trauma with likely immobilization	822	ICD-9-CM Diagnosis	Fracture of patella
Trauma with likely immobilization	822*	ICD-9-CM Diagnosis	Fracture of patella
Trauma with likely immobilization	822**	ICD-9-CM Diagnosis	Fracture of patella
Trauma with likely immobilization	823	ICD-9-CM Diagnosis	Fracture of tibia and fibula
Trauma with likely immobilization	823*	ICD-9-CM Diagnosis	Fracture of tibia and fibula
Trauma with likely immobilization	823**	ICD-9-CM Diagnosis	Fracture of tibia and fibula
Trauma with likely immobilization	824	ICD-9-CM Diagnosis	Fracture of ankle
Trauma with likely immobilization	824*	ICD-9-CM Diagnosis	Fracture of ankle
Trauma with likely immobilization	824**	ICD-9-CM Diagnosis	Fracture of ankle
Trauma with likely immobilization	825	ICD-9-CM Diagnosis	Fracture of one or more tarsal and metatarsal bones
Trauma with likely immobilization	825*	ICD-9-CM Diagnosis	Fracture of one or more tarsal and metatarsal bones
Trauma with likely immobilization	825**	ICD-9-CM Diagnosis	Fracture of one or more tarsal and metatarsal bones
Trauma with likely immobilization	826	ICD-9-CM Diagnosis	Fracture of one or more phalanges of foot
Trauma with likely immobilization	826*	ICD-9-CM Diagnosis	Fracture of one or more phalanges of foot

Covariate	Code	Code Type	Description
Trauma with likely immobilization	826**	ICD-9-CM Diagnosis	Fracture of one or more phalanges of foot
Trauma with likely immobilization	827	ICD-9-CM Diagnosis	Other multiple and ill-defined fractures of lower limb
Trauma with likely immobilization	827*	ICD-9-CM Diagnosis	Other multiple and ill-defined fractures of lower limb
Trauma with likely immobilization	827**	ICD-9-CM Diagnosis	Other multiple and ill-defined fractures of lower limb
Trauma with likely immobilization	828	ICD-9-CM Diagnosis	Multiple fractures involving both lower limbs lower with upper limb and lower limb(s) with rib(s) and sternum
Trauma with likely immobilization	828*	ICD-9-CM Diagnosis	Multiple fractures involving both lower limbs lower with upper limb and lower limb(s) with rib(s) and sternum
Trauma with likely immobilization	828**	ICD-9-CM Diagnosis	Multiple fractures involving both lower limbs lower with upper limb and lower limb(s) with rib(s) and sternum
Trauma with likely immobilization	829	ICD-9-CM Diagnosis	Fracture of unspecified bones
Trauma with likely immobilization	829*	ICD-9-CM Diagnosis	Fracture of unspecified bones
Trauma with likely immobilization	829**	ICD-9-CM Diagnosis	Fracture of unspecified bones
Trauma with likely immobilization	851	ICD-9-CM Diagnosis	Cerebral laceration and contusion
Trauma with likely immobilization	851*	ICD-9-CM Diagnosis	Cerebral laceration and contusion
Trauma with likely immobilization	851**	ICD-9-CM Diagnosis	Cerebral laceration and contusion
Trauma with likely immobilization	8521	ICD-9-CM Diagnosis	Subarachnoid hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8521*	ICD-9-CM Diagnosis	Subarachnoid hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8523	ICD-9-CM Diagnosis	Subdural hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8523*	ICD-9-CM Diagnosis	Subdural hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8525	ICD-9-CM Diagnosis	Extradural hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8525*	ICD-9-CM Diagnosis	Extradural hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8531	ICD-9-CM Diagnosis	Other and unspecified intracranial hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	8531*	ICD-9-CM Diagnosis	Other and unspecified intracranial hemorrhage following injury with open intracranial wound
Trauma with likely immobilization	854	ICD-9-CM Diagnosis	Intracranial injury of other and unspecified nature

Covariate	Code	Code Type	Description
Trauma with likely immobilization	854*	ICD-9-CM Diagnosis	Intracranial injury of other and unspecified nature
Trauma with likely immobilization	854**	ICD-9-CM Diagnosis	Intracranial injury of other and unspecified nature
Trauma with likely immobilization	861	ICD-9-CM Diagnosis	Injury to heart and lung
Trauma with likely immobilization	861*	ICD-9-CM Diagnosis	Injury to heart and lung
Trauma with likely immobilization	861**	ICD-9-CM Diagnosis	Injury to heart and lung
Trauma with likely immobilization	862	ICD-9-CM Diagnosis	Injury to other and unspecified intrathoracic organs
Trauma with likely immobilization	862*	ICD-9-CM Diagnosis	Injury to other and unspecified intrathoracic organs
Trauma with likely immobilization	862**	ICD-9-CM Diagnosis	Injury to other and unspecified intrathoracic organs
Trauma with likely immobilization	863	ICD-9-CM Diagnosis	Injury to gastrointestinal tract
Trauma with likely immobilization	863*	ICD-9-CM Diagnosis	Injury to gastrointestinal tract
Trauma with likely immobilization	863**	ICD-9-CM Diagnosis	Injury to gastrointestinal tract
Trauma with likely immobilization	864	ICD-9-CM Diagnosis	Injury to liver
Trauma with likely immobilization	864*	ICD-9-CM Diagnosis	Injury to liver
Trauma with likely immobilization	864**	ICD-9-CM Diagnosis	Injury to liver
Trauma with likely immobilization	865	ICD-9-CM Diagnosis	Injury to spleen
Trauma with likely immobilization	865*	ICD-9-CM Diagnosis	Injury to spleen
Trauma with likely immobilization	865**	ICD-9-CM Diagnosis	Injury to spleen
Trauma with likely immobilization	866	ICD-9-CM Diagnosis	Injury to kidney
Trauma with likely immobilization	866*	ICD-9-CM Diagnosis	Injury to kidney
Trauma with likely immobilization	866**	ICD-9-CM Diagnosis	Injury to kidney
Trauma with likely immobilization	867	ICD-9-CM Diagnosis	Injury to pelvic organs
Trauma with likely immobilization	867*	ICD-9-CM Diagnosis	Injury to pelvic organs
Trauma with likely immobilization	867**	ICD-9-CM Diagnosis	Injury to pelvic organs
Trauma with likely immobilization	868	ICD-9-CM Diagnosis	Injury to other intra-abdominal organs
Trauma with likely immobilization	868*	ICD-9-CM Diagnosis	Injury to other intra-abdominal organs
Trauma with likely immobilization	868**	ICD-9-CM Diagnosis	Injury to other intra-abdominal organs
Trauma with likely immobilization	869	ICD-9-CM Diagnosis	Internal injury to unspecified or ill-defined organs
Trauma with likely immobilization	869*	ICD-9-CM Diagnosis	Internal injury to unspecified or ill-defined organs
Trauma with likely immobilization	869**	ICD-9-CM Diagnosis	Internal injury to unspecified or ill-defined organs
Trauma with likely immobilization	870	ICD-9-CM Diagnosis	Open wound of ocular adnexa
Trauma with likely immobilization	870*	ICD-9-CM Diagnosis	Open wound of ocular adnexa
Trauma with likely immobilization	870**	ICD-9-CM Diagnosis	Open wound of ocular adnexa
Trauma with likely immobilization	890	ICD-9-CM Diagnosis	Open wound of hip and thigh
Trauma with likely immobilization	890*	ICD-9-CM Diagnosis	Open wound of hip and thigh
Trauma with likely immobilization	890**	ICD-9-CM Diagnosis	Open wound of hip and thigh

Covariate	Code	Code Type	Description
Trauma with likely immobilization	891	ICD-9-CM Diagnosis	Open wound of knee leg (except thigh) and ankle
Trauma with likely immobilization	891*	ICD-9-CM Diagnosis	Open wound of knee leg (except thigh) and ankle
Trauma with likely immobilization	891**	ICD-9-CM Diagnosis	Open wound of knee leg (except thigh) and ankle
Trauma with likely immobilization	892	ICD-9-CM Diagnosis	Open wound of foot except toe(s) alone
Trauma with likely immobilization	892*	ICD-9-CM Diagnosis	Open wound of foot except toe(s) alone
Trauma with likely immobilization	892**	ICD-9-CM Diagnosis	Open wound of foot except toe(s) alone
Trauma with likely immobilization	893	ICD-9-CM Diagnosis	Open wound of toe(s)
Trauma with likely immobilization	893*	ICD-9-CM Diagnosis	Open wound of toe(s)
Trauma with likely immobilization	893**	ICD-9-CM Diagnosis	Open wound of toe(s)
Trauma with likely immobilization	894	ICD-9-CM Diagnosis	Multiple and unspecified open wound of lower limb
Trauma with likely immobilization	894*	ICD-9-CM Diagnosis	Multiple and unspecified open wound of lower limb
Trauma with likely immobilization	894**	ICD-9-CM Diagnosis	Multiple and unspecified open wound of lower limb
Trauma with likely immobilization	895	ICD-9-CM Diagnosis	Traumatic amputation of toe(s) (complete) (partial)
Trauma with likely immobilization	895*	ICD-9-CM Diagnosis	Traumatic amputation of toe(s) (complete) (partial)
Trauma with likely immobilization	895**	ICD-9-CM Diagnosis	Traumatic amputation of toe(s) (complete) (partial)
Trauma with likely immobilization	896	ICD-9-CM Diagnosis	Traumatic amputation of foot (complete) (partial)
Trauma with likely immobilization	896*	ICD-9-CM Diagnosis	Traumatic amputation of foot (complete) (partial)
Trauma with likely immobilization	896**	ICD-9-CM Diagnosis	Traumatic amputation of foot (complete) (partial)
Trauma with likely immobilization	897	ICD-9-CM Diagnosis	Traumatic amputation of leg(s) (complete) (partial)
Trauma with likely immobilization	897*	ICD-9-CM Diagnosis	Traumatic amputation of leg(s) (complete) (partial)
Trauma with likely immobilization	897**	ICD-9-CM Diagnosis	Traumatic amputation of leg(s) (complete) (partial)
Trauma with likely immobilization	925	ICD-9-CM Diagnosis	Crushing injury of face scalp and neck
Trauma with likely immobilization	925*	ICD-9-CM Diagnosis	Crushing injury of face scalp and neck
Trauma with likely immobilization	925**	ICD-9-CM Diagnosis	Crushing injury of face scalp and neck
Trauma with likely immobilization	926	ICD-9-CM Diagnosis	Crushing injury of trunk
Trauma with likely immobilization	926*	ICD-9-CM Diagnosis	Crushing injury of trunk
Trauma with likely immobilization	926**	ICD-9-CM Diagnosis	Crushing injury of trunk
Trauma with likely immobilization	927	ICD-9-CM Diagnosis	Crushing injury of upper limb

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

Covariate	Code	Code Type	Description
Trauma with likely immobilization	927*	ICD-9-CM Diagnosis	Crushing injury of upper limb
Trauma with likely immobilization	927**	ICD-9-CM Diagnosis	Crushing injury of upper limb
Trauma with likely immobilization	978	ICD-9-CM Diagnosis	Crushing injury of lower limb
Trauma with likely immobilization	978*	ICD-9-CM Diagnosis	Crushing injury of lower limb
Trauma with likely immobilization	978**	ICD-9-CM Diagnosis	Crushing injury of lower limb
Trauma with likely immobilization	929	ICD-9-CM Diagnosis	Crushing injury of multiple and unspecified sites
Trauma with likely immobilization	929*	ICD-9-CM Diagnosis	Crushing injury of multiple and unspecified sites
Trauma with likely immobilization	929**	ICD-9-CM Diagnosis	Crushing injury of multiple and unspecified sites
Trauma with likely immobilization	9481	ICD-9-CM Diagnosis	Burn (any degree) involving 10-19 percent of body surface
Trauma with likely immobilization	9481*	ICD-9-CM Diagnosis	Burn (any degree) involving 10-19 percent of body surface
Trauma with likely immobilization	9482	ICD-9-CM Diagnosis	Burn [any degree] involving 20-29 percent of body surface with third degree burn, less than 10 percent or unspecified
Trauma with likely immobilization	9482*	ICD-9-CM Diagnosis	Burn [any degree] involving 20-29 percent of body surface with third degree burn, less than 10 percent or unspecified
Trauma with likely immobilization	9483	ICD-9-CM Diagnosis	Burn (any degree) involving 30-39 percent of body surface
Trauma with likely immobilization	9483*	ICD-9-CM Diagnosis	Burn (any degree) involving 30-39 percent of body surface
Trauma with likely immobilization	9484	ICD-9-CM Diagnosis	Burn [any degree] involving 40-49 percent of body surface with third degree burn, less than 10 percent or unspecified
Trauma with likely immobilization	9484*	ICD-9-CM Diagnosis	Burn [any degree] involving 40-49 percent of body surface with third degree burn, less than 10 percent or unspecified
Trauma with likely immobilization	9485	ICD-9-CM Diagnosis	Burn (any degree) involving 50-59 percent of body surface
Trauma with likely immobilization	9485*	ICD-9-CM Diagnosis	Burn (any degree) involving 50-59 percent of body surface
Trauma with likely immobilization	9486	ICD-9-CM Diagnosis	Burn (any degree) involving 60-69 percent of body surface
Trauma with likely immobilization	9486*	ICD-9-CM Diagnosis	Burn (any degree) involving 60-69 percent of body surface

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

Covariate	Code	Code Type	Description
Trauma with likely immobilization	9487	ICD-9-CM Diagnosis	Burn (any degree) involving 70-79 percent of body surface
Trauma with likely immobilization	9487*	ICD-9-CM Diagnosis	Burn (any degree) involving 70-79 percent of body surface
Trauma with likely immobilization	9488	ICD-9-CM Diagnosis	Burn (any degree) involving 80-89 percent of body surface
Trauma with likely immobilization	9488*	ICD-9-CM Diagnosis	Burn (any degree) involving 80-89 percent of body surface
Trauma with likely immobilization	9489	ICD-9-CM Diagnosis	Burn (any degree) involving 90 percent or more of body surface
Trauma with likely immobilization	9489*	ICD-9-CM Diagnosis	Burn (any degree) involving 90 percent or more of body surface
Trauma with likely immobilization	952	ICD-9-CM Diagnosis	Spinal cord injury without evidence of spinal bone injury
Trauma with likely immobilization	952*	ICD-9-CM Diagnosis	Spinal cord injury without evidence of spinal bone injury
Trauma with likely immobilization	952**	ICD-9-CM Diagnosis	Spinal cord injury without evidence of spinal bone injury
Use of home oxygen	E0424	HCPCS Procedure	Stationary compressed gaseous oxygen system, rental; includes container, contents, regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing
Use of home oxygen	E0425	HCPCS Procedure	Stationary compressed gas system, purchase; includes regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing
Use of home oxygen	E0430	HCPCS Procedure	Portable gaseous oxygen system, purchase; includes regulator, flowmeter, humidifier, cannula or mask, and tubing
Use of home oxygen	E0431	HCPCS Procedure	Portable gaseous oxygen system, rental; includes portable container, regulator, flowmeter, humidifier, cannula or mask, and tubing
Use of home oxygen	E0433	HCPCS Procedure	Portable liquid oxygen system, rental; home liquefier used to fill portable liquid oxygen containers, includes portable containers, regulator, flowmeter, humidifier, cannula or mask and tubing, with or without supply reservoir and contents gauge

Covariate	Code	Code Type	Description
Use of home oxygen	E0434	HCPCS Procedure	Portable liquid oxygen system, rental; includes portable container, supply reservoir, humidifier, flowmeter, refill adaptor, contents gauge, cannula or mask, and tubing
Use of home oxygen	E0435	HCPCS Procedure	Portable liquid oxygen system, purchase; includes portable container, supply reservoir, flowmeter, humidifier, contents gauge, cannula or mask, tubing and refill adaptor
Use of home oxygen	E0439	HCPCS Procedure	Stationary liquid oxygen system, rental; includes container, contents, regulator, flowmeter, humidifier, nebulizer, cannula or mask, & tubing
Use of home oxygen	E0440	HCPCS Procedure	Stationary liquid oxygen system, purchase; includes use of reservoir, contents indicator, regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing
Use of home oxygen	E0441	HCPCS Procedure	Stationary oxygen contents, gaseous, 1 month's supply = 1 unit
Use of home oxygen	E0442	HCPCS Procedure	Stationary oxygen contents, liquid, 1 month's supply = 1 unit
Use of home oxygen	E0443	HCPCS Procedure	Portable oxygen contents, gaseous, 1 month's supply = 1 unit
Use of home oxygen	E0444	HCPCS Procedure	Portable oxygen contents, liquid, 1 month's supply = 1 unit
Use of home oxygen	E1390	HCPCS Procedure	Oxygen concentrator, single delivery port, capable of delivering 85 percent or greater oxygen concentration at the prescribed flow rate
Use of home oxygen	E1391	HCPCS Procedure	Oxygen concentrator, dual delivery port, capable of delivering 85 percent or greater oxygen concentration at the prescribed flow rate, each
Use of home oxygen	E1392	HCPCS Procedure	Portable oxygen concentrator, rental
Use of home oxygen	E1405	HCPCS Procedure	Oxygen and water vapor enriching system with heated delivery
Use of home oxygen	E1406	HCPCS Procedure	Oxygen and water vapor enriching system without heated delivery
VTE risk NOS indicators	3551F	CPT Procedure	Intermediate risk for thromboembolism (AFIB)
VTE risk NOS indicators	3552F	CPT Procedure	High risk for thromboembolism (AFIB)

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

Covariate	Code	Code Type	Description
VTE risk NOS indicators	4044F	CPT Procedure	Documentation that an order was given for venous thromboembolism (VTE) prophylaxis to be given within 24 hours prior to incision time or 24 hours after surgery end time (PERI 2)
Walker use	E0130	HCPCS Procedure	Walker, rigid (pickup), adjustable or fixed height
Walker use	E0135	HCPCS Procedure	Walker, folding (pickup), adjustable or fixed height
Walker use	E0140	HCPCS Procedure	Walker, with trunk support, adjustable or fixed height, any type
Walker use	E0141	HCPCS Procedure	Walker, rigid, wheeled, adjustable or fixed height
Walker use	E0143	HCPCS Procedure	Walker, folding, wheeled, adjustable or fixed height
Walker use	E0144	HCPCS Procedure	Walker, enclosed, four sided framed, rigid or folding, wheeled with posterior seat
Walker use	E0147	HCPCS Procedure	Walker, heavy duty, multiple braking system, variable wheel resistance
Walker use	E0148	HCPCS Procedure	Walker, heavy duty, without wheels, rigid or folding, any type, each
Walker use	E0149	HCPCS Procedure	Walker, heavy duty, wheeled, rigid or folding, any type
Walker use	E0153	HCPCS Procedure	Platform attachment, forearm crutch, each
Walker use	E0154	HCPCS Procedure	Platform attachment, walker, each
Walker use	E0155	HCPCS Procedure	Wheel attachment, rigid pick-up walker, per pair
Walker use	E0156	HCPCS Procedure	Seat attachment, walker
Walker use	E0157	HCPCS Procedure	Crutch attachment, walker, each
Walker use	E0158	HCPCS Procedure	Leg extensions for walker, per set of four (4)
Walker use	E0159	HCPCS Procedure	Brake attachment for wheeled walker, replacement, each
Wheelchair use	E1031	HCPCS Procedure	Rollabout chair, any and all types with castors 5" or greater
Wheelchair use	E1035	HCPCS Procedure	Multi-positional patient transfer system, with integrated seat, operated by care giver, patient weight capacity up to and including 300 lbs

Covariate	Code	Code Type	Description
Wheelchair use	E1038	HCPCS Procedure	Transport chair, adult size, patient weight capacity up to and including 300 pounds
Wheelchair use	E1039	HCPCS Procedure	Transport chair, adult size, heavy duty, patient weight capacity greater than 300 pounds
Wheelchair use	E1050	HCPCS Procedure	Fully-reclining wheelchair, fixed full length arms, swing away detachable elevating leg rests
Wheelchair use	E1060	HCPCS Procedure	Fully-reclining wheelchair, detachable arms, desk or full length, swing away detachable elevating legrests
Wheelchair use	E1070	HCPCS Procedure	Fully-reclining wheelchair, detachable arms (desk or full length) swing away detachable footrest
Wheelchair use	E1083	HCPCS Procedure	Hemi-wheelchair, fixed full length arms, swing away detachable elevating leg rest
Wheelchair use	E1084	HCPCS Procedure	Hemi-wheelchair, detachable arms desk or full length arms, swing away detachable elevating leg rests
Wheelchair use	E1085	HCPCS Procedure	Hemi-wheelchair, fixed full length arms, swing away detachable foot rests
Wheelchair use	E1086	HCPCS Procedure	Hemi-wheelchair detachable arms desk or full length, swing away detachable footrests
Wheelchair use	E1087	HCPCS Procedure	High strength lightweight wheelchair, fixed full length arms, swing away detachable elevating leg rests
Wheelchair use	E1088	HCPCS Procedure	High strength lightweight wheelchair, detachable arms desk or full length, swing away detachable elevating leg rests
Wheelchair use	E1089	HCPCS Procedure	High strength lightweight wheelchair, fixed length arms, swing away detachable footrest
Wheelchair use	E1090	HCPCS Procedure	High strength lightweight wheelchair, detachable arms desk or full length, swing away detachable foot rests
Wheelchair use	E1092	HCPCS Procedure	Wide heavy duty wheel chair, detachable arms (desk or full length), swing away detachable elevating leg rests

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

Covariate	Code	Code Type	Description
Wheelchair use	E1093	HCPCS Procedure	Wide heavy duty wheelchair, detachable arms desk or full length arms, swing away detachable footrests
Wheelchair use	E1100	HCPCS Procedure	Semi-reclining wheelchair, fixed full length arms, swing away detachable elevating leg rests
Wheelchair use	E1110	HCPCS Procedure	Semi-reclining wheelchair, detachable arms (desk or full length) elevating leg rest
Wheelchair use	E1130	HCPCS Procedure	Standard wheelchair, fixed full length arms, fixed or swing away detachable footrests
Wheelchair use	E1140	HCPCS Procedure	Wheelchair, detachable arms, desk or full length, swing away detachable footrests
Wheelchair use	E1150	HCPCS Procedure	Wheelchair, detachable arms, desk or full length swing away detachable elevating legrests
Wheelchair use	E1160	HCPCS Procedure	Wheelchair, fixed full length arms, swing away detachable elevating legrests
Wheelchair use	E1161	HCPCS Procedure	Manual adult size wheelchair, includes tilt in space
Wheelchair use	E1170	HCPCS Procedure	Amputee wheelchair, fixed full length arms, swing away detachable elevating legrests
Wheelchair use	E1171	HCPCS Procedure	Amputee wheelchair, fixed full length arms, without footrests or legrest
Wheelchair use	E1172	HCPCS Procedure	Amputee wheelchair, detachable arms (desk or full length) without footrests or legrest
Wheelchair use	E1180	HCPCS Procedure	Amputee wheelchair, detachable arms (desk or full length) swing away detachable footrests
Wheelchair use	E1190	HCPCS Procedure	Amputee wheelchair, detachable arms (desk or full length) swing away detachable elevating legrests
Wheelchair use	E1195	HCPCS Procedure	Heavy duty wheelchair, fixed full length arms, swing away detachable elevating legrests
Wheelchair use	E1200	HCPCS Procedure	Amputee wheelchair, fixed full length arms, swing away detachable footrest

Covariate	Code	Code Type	Description
Wheelchair use	E1220	HCPCS Procedure	Wheelchair; specially sized or constructed, (indicate brand name, model number, if any) and justification
Wheelchair use	E1221	HCPCS Procedure	Wheelchair with fixed arm, footrests
Wheelchair use	E1222	HCPCS Procedure	Wheelchair with fixed arm, elevating legrests
Wheelchair use	E1223	HCPCS Procedure	Wheelchair with detachable arms, footrests
Wheelchair use	E1224	HCPCS Procedure	Wheelchair with detachable arms, elevating legrests
Wheelchair use	E1129	HCPCS Procedure	Wheelchair, pediatric size, not otherwise specified
Wheelchair use	E1230	HCPCS Procedure	Power operated vehicle (three or four wheel nonhighway) specify brand name and model number
Wheelchair use	E1231	HCPCS Procedure	Wheelchair, pediatric size, tilt-in-space, rigid, adjustable, with seating system
Wheelchair use	E1232	HCPCS Procedure	Wheelchair, pediatric size, tilt-in-space, folding, adjustable, with seating system
Wheelchair use	E1233	HCPCS Procedure	Wheelchair, pediatric size, tilt-in-space, rigid, adjustable, without seating system
Wheelchair use	E1234	HCPCS Procedure	Wheelchair, pediatric size, tilt-in-space, folding, adjustable, without seating system
Wheelchair use	E1235	HCPCS Procedure	Wheelchair, pediatric size, rigid, adjustable, with seating system
Wheelchair use	E1236	HCPCS Procedure	Wheelchair, pediatric size, folding, adjustable, with seating system
Wheelchair use	E1237	HCPCS Procedure	Wheelchair, pediatric size, rigid, adjustable, without seating system
Wheelchair use	E1238	HCPCS Procedure	Wheelchair, pediatric size, folding, adjustable, without seating system
Wheelchair use	E1239	HCPCS Procedure	Power wheelchair, pediatric size, not otherwise specified
Wheelchair use	E1240	HCPCS Procedure	Lightweight wheelchair, detachable arms, (desk or full length) swing away detachable, elevating legrest
Wheelchair use	E1250	HCPCS Procedure	Lightweight wheelchair, fixed full length arms, swing away detachable footrest
Wheelchair use	E1260	HCPCS Procedure	Lightweight wheelchair, detachable arms (desk or full length) swing away detachable footrest

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

Covariate	Code	Code Type	Description
Wheelchair use	E1270	HCPCS Procedure	Lightweight wheelchair, fixed full length arms, swing away detachable elevating legrests
Wheelchair use	E1280	HCPCS Procedure	Heavy duty wheelchair, detachable arms (desk or full length) elevating legrests
Wheelchair use	E1285	HCPCS Procedure	Heavy duty wheelchair, fixed full length arms, swing away detachable footrest
Wheelchair use	E1290	HCPCS Procedure	Heavy duty wheelchair, detachable arms (desk or full length) swing away detachable footrest
Wheelchair use	E1295	HCPCS Procedure	Heavy duty wheelchair, fixed full length arms, elevating legrest
Wheelchair use	E1296	HCPCS Procedure	Special wheelchair seat height from floor
Wheelchair use	E1297	HCPCS Procedure	Special wheelchair seat depth, by upholstery
Wheelchair use	E1298	HCPCS Procedure	Special wheelchair seat depth and/or width, by construction
Wheelchair use	E0950	HCPCS Procedure	Wheelchair accessory, tray, each
Wheelchair use	E0951	HCPCS Procedure	Heel loop/holder, any type, with or without ankle strap, each
Wheelchair use	E0952	HCPCS Procedure	Toe loop/holder, any type, each
Wheelchair use	E0955	HCPCS Procedure	Wheelchair accessory, headrest, cushioned, any type, including fixed mounting hardware, each
Wheelchair use	E0956	HCPCS Procedure	Wheelchair accessory, lateral trunk or hip support, any type, including fixed mounting hardware, each
Wheelchair use	E0957	HCPCS Procedure	Wheelchair accessory, medial thigh support, any type, including fixed mounting hardware, each
Wheelchair use	E0958	HCPCS Procedure	Manual wheelchair accessory, one-arm drive attachment, each
Wheelchair use	E0959	HCPCS Procedure	Manual wheelchair accessory, adapter for amputee, each
Wheelchair use	E0960	HCPCS Procedure	Wheelchair accessory, shoulder harness/straps or chest strap, including any type mounting hardware
Wheelchair use	E0961	HCPCS Procedure	Manual wheelchair accessory, wheel lock brake extension (handle), each
Wheelchair use	E0966	HCPCS Procedure	Manual wheelchair accessory, headrest extension, each

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

Covariate	Code	Code Type	Description
Wheelchair use	E0967	HCPCS Procedure	Manual wheelchair accessory, hand rim with projections, any type, each
Wheelchair use	E0968	HCPCS Procedure	Commode seat, wheelchair
Wheelchair use	E0969	HCPCS Procedure	Narrowing device, wheelchair
Wheelchair use	E0970	HCPCS Procedure	No. 2 footplates, except for elevating leg rest
Wheelchair use	E0971	HCPCS Procedure	Manual wheelchair accessory, anti-tipping device, each
Wheelchair use	E0973	HCPCS Procedure	Wheelchair accessory, adjustable height, detachable armrest, complete assembly, each
Wheelchair use	E0974	HCPCS Procedure	Manual wheelchair accessory, anti-rollback device, each
Wheelchair use	E0978	HCPCS Procedure	Wheelchair accessory, positioning belt/safety belt/pelvic strap, each
Wheelchair use	E0980	HCPCS Procedure	Safety vest, wheelchair
Wheelchair use	E0981	HCPCS Procedure	Wheelchair accessory, seat upholstery, replacement only, each
Wheelchair use	E0982	HCPCS Procedure	Wheelchair accessory, back upholstery, replacement only, each
Wheelchair use	E0983	HCPCS Procedure	Manual wheelchair accessory, power add-on to convert manual wheelchair to motorized wheelchair, joystick control
Wheelchair use	E0984	HCPCS Procedure	Manual wheelchair accessory, power add-on to convert manual wheelchair to motorized wheelchair, tiller control
Wheelchair use	E0985	HCPCS Procedure	Wheelchair accessory, seat lift mechanism
Wheelchair use	E0986	HCPCS Procedure	Manual wheelchair accessory, push activated power assist, each
Wheelchair use	E0988	HCPCS Procedure	Manual wheelchair accessory, lever-activated, wheel drive, pair
Wheelchair use	E0990	HCPCS Procedure	Wheelchair accessory, elevating leg rest, complete assembly, each
Wheelchair use	E0992	HCPCS Procedure	Manual wheelchair accessory, solid seat insert
Wheelchair use	E0994	HCPCS Procedure	Arm rest, each
Wheelchair use	E0995	HCPCS Procedure	Wheelchair accessory, calf rest/pad, each
Wheelchair use	E1002	HCPCS Procedure	Wheelchair accessory, power seating system, tilt only

Covariate	Code	Code Type	Description
Wheelchair use	E1003	HCPCS Procedure	Wheelchair accessory, power seating system, recline only, without shear reduction
Wheelchair use	E1004	HCPCS Procedure	Wheelchair accessory, power seating system, recline only, with mechanical shear reduction
Wheelchair use	E1005	HCPCS Procedure	Wheelchair accessory, power seatng system, recline only, with power shear reduction
Wheelchair use	E1006	HCPCS Procedure	Wheelchair accessory, power seating system, combination tilt and recline, without shear reduction
Wheelchair use	E1007	HCPCS Procedure	Wheelchair accessory, power seating system, combination tilt and recline, with mechanical shear reduction
Wheelchair use	E1008	HCPCS Procedure	Wheelchair accessory, power seating system, combination tilt and recline, with power shear reduction
Wheelchair use	E1009	HCPCS Procedure	Wheelchair accessory, addition to power seating system, mechanically linked leg elevation system, including pushrod and leg rest, each
Wheelchair use	E1010	HCPCS Procedure	Wheelchair accessory, addition to power seating system, power leg elevation system, including leg rest, pair
Wheelchair use	E1011	HCPCS Procedure	Modification to pediatric size wheelchair, width adjustment package (not to be dispensed with initial chair)
Wheelchair use	E1014	HCPCS Procedure	Reclining back, addition to pediatric size wheelchair
Wheelchair use	E1015	HCPCS Procedure	Shock absorber for manual wheelchair, each
Wheelchair use	E1016	HCPCS Procedure	Shock absorber for power wheelchair, each
Wheelchair use	E1017	HCPCS Procedure	Heavy duty shock absorber for heavy duty or extra heavy duty manual wheelchair, each
Wheelchair use	E1018	HCPCS Procedure	Heavy duty shock absorber for heavy duty or extra heavy duty power wheelchair, each
Wheelchair use	E1020	HCPCS Procedure	Residual limb support system for wheelchair, any type

Covariate	Code	Code Type	Description
Wheelchair use	E1028	HCPCS Procedure	Wheelchair accessory, manual swingaway, retractable or removable mounting hardware for joystick, other control interface or positioning accessory
Wheelchair use	E1029	HCPCS Procedure	Wheelchair accessory, ventilator tray, fixed
Wheelchair use	E1030	HCPCS Procedure	Wheelchair accessory, ventilator tray, gimbaled
Wheelchair use	E1225	HCPCS Procedure	Wheelchair accessory, manual semi-reclining back, (recline greater than 15 degrees, but less than 80 degrees), each
Wheelchair use	E1226	HCPCS Procedure	Wheelchair accessory, manual fully reclining back, (recline greater than 80 degrees), each
Wheelchair use	E1227	HCPCS Procedure	Special height arms for wheelchair
Wheelchair use	E1228	HCPCS Procedure	Special back height for wheelchair
Wheelchair use	E2201	HCPCS Procedure	Manual wheelchair accessory, nonstandard seat frame, width greater than or equal to 20 inches and less than 24 inches
Wheelchair use	E2202	HCPCS Procedure	Manual wheelchair accessory, nonstandard seat frame width, 24-27 inches
Wheelchair use	E2203	HCPCS Procedure	Manual wheelchair accessory, nonstandard seat frame depth, 20 to less than 22 inches
Wheelchair use	E2204	HCPCS Procedure	Manual wheelchair accessory, nonstandard seat frame depth, 22 to 25 inches
Wheelchair use	E2205	HCPCS Procedure	Manual wheelchair accessory, handrim without projections (includes ergonomic or contoured), any type, replacement only, each
Wheelchair use	E2206	HCPCS Procedure	Manual wheelchair accessory, wheel lock assembly, complete, each
Wheelchair use	E2207	HCPCS Procedure	Wheelchair accessory, crutch and cane holder, each
Wheelchair use	E2208	HCPCS Procedure	Wheelchair accessory, cylinder tank carrier, each
Wheelchair use	E2209	HCPCS Procedure	Accessory, arm trough, with or without hand support, each

Covariate	Code	Code Type	Description
Wheelchair use	E2210	HCPCS Procedure	Wheelchair accessory, bearings, any type, replacement only, each
Wheelchair use	E2211	HCPCS Procedure	Manual wheelchair accessory, pneumatic propulsion tire, any size, each
Wheelchair use	E2212	HCPCS Procedure	Manual wheelchair accessory, tube for pneumatic propulsion tire, any size, each
Wheelchair use	E2213	HCPCS Procedure	Manual wheelchair accessory, insert for pneumatic propulsion tire (removable), any type, any size, each
Wheelchair use	E2214	HCPCS Procedure	Manual wheelchair accessory, pneumatic caster tire, any size, each
Wheelchair use	E2215	HCPCS Procedure	Manual wheelchair accessory, tube for pneumatic caster tire, any size, each
Wheelchair use	E2216	HCPCS Procedure	Manual wheelchair accessory, foam filled propulsion tire, any size, each
Wheelchair use	E2217	HCPCS Procedure	Manual wheelchair accessory, foam filled caster tire, any size, each
Wheelchair use	E2218	HCPCS Procedure	Manual wheelchair accessory, foam propulsion tire, any size, each
Wheelchair use	E2219	HCPCS Procedure	Manual wheelchair accessory, foam caster tire, any size, each
Wheelchair use	E2220	HCPCS Procedure	Manual wheelchair accessory, solid (rubber/plastic) propulsion tire, any size, each
Wheelchair use	E2221	HCPCS Procedure	Manual wheelchair accessory, solid (rubber/plastic) caster tire (removable), any size, each
Wheelchair use	E2222	HCPCS Procedure	Manual wheelchair accessory, solid (rubber/plastic) caster tire with integrated wheel, any size, each
Wheelchair use	E2223	HCPCS Procedure	Manual wheelchair accessory, valve, any type, replacement only, each
Wheelchair use	E2224	HCPCS Procedure	Manual wheelchair accessory, propulsion wheel excludes tire, any size, each
Wheelchair use	E2225	HCPCS Procedure	Manual wheelchair accessory, caster wheel excludes tire, any size, replacement only, each
Wheelchair use	E2226	HCPCS Procedure	Manual wheelchair accessory, caster fork, any size, replacement only, each

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

Covariate	Code	Code Type	Description
Wheelchair use	E2300	HCPCS Procedure	Power wheelchair accessory, power seat elevation system
Wheelchair use	E2301	HCPCS Procedure	Power wheelchair accessory, power standing system
Wheelchair use	E2310	HCPCS Procedure	Power wheelchair accessory, electronic connection between wheelchair controller and one power seating system motor, including all related electronics, indicator feature, mechanical function selection switch, and fixed mounting hardware
Wheelchair use	E2311	HCPCS Procedure	Power wheelchair accessory, electronic connection between wheelchair controller and two or more power seating system motors, including all related electronics, indicator feature, mechanical function selection switch, and fixed mounting hardware
Wheelchair use	E2312	HCPCS Procedure	Power wheelchair accessory, hand or chin control interface, mini-proportional remote joystick, proportional, including fixed mounting hardware
Wheelchair use	E2313	HCPCS Procedure	Power wheelchair accessory, harness for upgrade to expandable controller, including all fasteners, connectors and mounting hardware, each
Wheelchair use	E2321	HCPCS Procedure	Power wheelchair accessory, hand control interface, remote joystick, nonproportional, including all related electronics, mechanical stop switch, and fixed mounting hardware
Wheelchair use	E2322	HCPCS Procedure	Power wheelchair accessory, hand control interface, multiple mechanical switches, nonproportional, including all related electronics, mechanical stop switch, and fixed mounting hardware
Wheelchair use	E2323	HCPCS Procedure	Power wheelchair accessory, specialty joystick handle for hand control interface, prefabricated
Wheelchair use	E2324	HCPCS Procedure	Power wheelchair accessory, chin cup for chin control interface

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

Covariate	Code	Code Type	Description
Wheelchair use	E2325	HCPCS Procedure	Power wheelchair accessory, sip and puff interface, nonproportional, including all related electronics, mechanical stop switch, and manual swingaway mounting hardware
Wheelchair use	E2326	HCPCS Procedure	Power wheelchair accessory, breath tube kit for sip and puff interface
Wheelchair use	E2327	HCPCS Procedure	Power wheelchair accessory, head control interface, mechanical, proportional, including all related electronics, mechanical direction change switch, and fixed mounting hardware
Wheelchair use	E2328	HCPCS Procedure	Power wheelchair accessory, head control or extremity control interface, electronic, proportional, including all related electronics and fixed mounting hardware
Wheelchair use	E2329	HCPCS Procedure	Power wheelchair accessory, head control interface, contact switch mechanism, nonproportional, including all related electronics, mechanical stop switch, mechanical direction change switch, head array, and fixed mounting hardware
Wheelchair use	E2330	HCPCS Procedure	Power wheelchair accessory, head control interface, proximity switch mechanism, nonproportional, including all related electronics, mechanical stop switch, mechanical direction change switch, head array, and fixed mounting hardware
Wheelchair use	E2331	HCPCS Procedure	Power wheelchair accessory, attendant control, proportional, including all related electronics and fixed mounting hardware
Wheelchair use	E2340	HCPCS Procedure	Power wheelchair accessory, nonstandard seat frame width, 20-23 inches
Wheelchair use	E2341	HCPCS Procedure	Power wheelchair accessory, nonstandard seat frame width, 24-27 inches

Covariate	Code	Code Type	Description
Wheelchair use	E2342	HCPCS Procedure	Power wheelchair accessory, nonstandard seat frame depth, 20 or 21 inches
Wheelchair use	E2343	HCPCS Procedure	Power wheelchair accessory, nonstandard seat frame depth, 22-25 inches
Wheelchair use	E2351	HCPCS Procedure	Power wheelchair accessory, electronic interface to operate speech generating device using power wheelchair control interface
Wheelchair use	E2358	HCPCS Procedure	Power wheelchair accessory, group 34 non-sealed lead acid battery, each
Wheelchair use	E2359	HCPCS Procedure	Power wheelchair accessory, group 34 sealed lead acid battery, each (e. g. gel cell, absorbed glassmat)
Wheelchair use	E2360	HCPCS Procedure	Power wheelchair accessory, 22 nf non-sealed lead acid battery, each
Wheelchair use	E2361	HCPCS Procedure	Power wheelchair accessory, 22nf sealed lead acid battery, each, (e. g. gel cell, absorbed glassmat)
Wheelchair use	E2362	HCPCS Procedure	Power wheelchair accessory, group 24 non-sealed lead acid battery, each
Wheelchair use	E2363	HCPCS Procedure	Power wheelchair accessory, group 24 sealed lead acid battery, each (e. g. gel cell, absorbed glassmat)
Wheelchair use	E2364	HCPCS Procedure	Power wheelchair accessory, u-1 non-sealed lead acid battery, each
Wheelchair use	E2365	HCPCS Procedure	Power wheelchair accessory, u-1 sealed lead acid battery, each (e. g. gel cell, absorbed glassmat)
Wheelchair use	E2366	HCPCS Procedure	Power wheelchair accessory, battery charger, single mode, for use with only one battery type, sealed or non-sealed, each
Wheelchair use	E2367	HCPCS Procedure	Power wheelchair accessory, battery charger, dual mode, for use with either battery type, sealed or non-sealed, each
Wheelchair use	E2368	HCPCS Procedure	Power wheelchair component, drive wheel motor, replacement only
Wheelchair use	E2369	HCPCS Procedure	Power wheelchair component, drive wheel gear box, replacement only

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

Covariate	Code	Code Type	Description
Wheelchair use	E2370	HCPCS Procedure	Power wheelchair component, integrated drive wheel motor and gear box combination, replacement only
Wheelchair use	E2371	HCPCS Procedure	Power wheelchair accessory, group 27 sealed lead acid battery, (e. g. gel cell, absorbed glassmat), each
Wheelchair use	E2372	HCPCS Procedure	Power wheelchair accessory, group 27 non-sealed lead acid battery, each
Wheelchair use	E2373	HCPCS Procedure	Power wheelchair accessory, hand or chin control interface, compact remote joystick, proportional, including fixed mounting hardware
Wheelchair use	E2374	HCPCS Procedure	Power wheelchair accessory, hand or chin control interface, standard remote joystick (not including controller), proportional, including all related electronics and fixed mounting hardware, replacement only
Wheelchair use	E2375	HCPCS Procedure	Power wheelchair accessory, non-expandable controller, including all related electronics and mounting hardware, replacement only
Wheelchair use	E2376	HCPCS Procedure	Power wheelchair accessory, expandable controller, including all related electronics and mounting hardware, replacement only
Wheelchair use	E2377	HCPCS Procedure	Power wheelchair accessory, expandable controller, including all related electronics and mounting hardware, upgrade provided at initial issue
Wheelchair use	E2378	HCPCS Procedure	Power wheelchair component, actuator, replacement only
Wheelchair use	E2381	HCPCS Procedure	Power wheelchair accessory, pneumatic drive wheel tire, any size, replacement only, each
Wheelchair use	E2382	HCPCS Procedure	Power wheelchair accessory, tube for pneumatic drive wheel tire, any size, replacement only, each
Wheelchair use	E2383	HCPCS Procedure	Power wheelchair accessory, insert for pneumatic drive wheel tire (removable), any type, any size, replacement only, each

Covariate	Code	Code Type	Description
Wheelchair use	E2384	HCPCS Procedure	Power wheelchair accessory, pneumatic caster tire, any size, replacement only, each
Wheelchair use	E2385	HCPCS Procedure	Power wheelchair accessory, tube for pneumatic caster tire, any size, replacement only, each
Wheelchair use	E2386	HCPCS Procedure	Power wheelchair accessory, foam filled drive wheel tire, any size, replacement only, each
Wheelchair use	E2387	HCPCS Procedure	Power wheelchair accessory, foam filled caster tire, any size, replacement only, each
Wheelchair use	E2388	HCPCS Procedure	Power wheelchair accessory, foam drive wheel tire, any size, replacement only, each
Wheelchair use	E2389	HCPCS Procedure	Power wheelchair accessory, foam caster tire, any size, replacement only, each
Wheelchair use	E2390	HCPCS Procedure	Power wheelchair accessory, solid (rubber/plastic) drive wheel tire, any size, replacement only, each
Wheelchair use	E2391	HCPCS Procedure	Power wheelchair accessory, solid (rubber/plastic) caster tire (removable), any size, replacement only, each
Wheelchair use	E2392	HCPCS Procedure	Power wheelchair accessory, solid (rubber/plastic) caster tire with integrated wheel, any size, replacement only, each
Wheelchair use	E2393	HCPCS Procedure	Power wheelchair accessory, valve for pneumatic tire tube, any type, replacement only, each
Wheelchair use	E2394	HCPCS Procedure	Power wheelchair accessory, drive wheel excludes tire, any size, replacement only, each
Wheelchair use	E2395	HCPCS Procedure	Power wheelchair accessory, caster wheel excludes tire, any size, replacement only, each
Wheelchair use	E2396	HCPCS Procedure	Power wheelchair accessory, caster fork, any size, replacement only, each
Wheelchair use	E2397	HCPCS Procedure	Power wheelchair accessory, lithium-based battery, each

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

Covariate	Code	Code Type	Description
Wheelchair use	E2399	HCPCS Procedure	Power wheelchair accessory, not otherwise classified interface, including all related electronics and any type mounting hardware
Wheelchair use	E2402	HCPCS Procedure	Negative pressure wound therapy electrical pump, stationary or portable
Wheelchair use	E2601	HCPCS Procedure	General use wheelchair seat cushion, width less than 22 inches, any depth
Wheelchair use	E2602	HCPCS Procedure	General use wheelchair seat cushion, width 22 inches or greater, any depth
Wheelchair use	E2603	HCPCS Procedure	Skin protection wheelchair seat cushion, width less than 22 inches, any depth
Wheelchair use	E2604	HCPCS Procedure	Skin protection wheelchair seat cushion, width 22 inches or greater, any depth
Wheelchair use	E2605	HCPCS Procedure	Positioning wheelchair seat cushion, width less than 22 inches, any depth
Wheelchair use	E2606	HCPCS Procedure	Positioning wheelchair seat cushion, width 22 inches or greater, any depth
Wheelchair use	E2607	HCPCS Procedure	Skin protection and positioning wheelchair seat cushion, width less than 22 inches, any depth
Wheelchair use	E2608	HCPCS Procedure	Skin protection and positioning wheelchair seat cushion, width 22 inches or greater, any depth
Wheelchair use	E2609	HCPCS Procedure	Custom fabricated wheelchair seat cushion, any size
Wheelchair use	E2610	HCPCS Procedure	Wheelchair seat cushion, powered
Wheelchair use	E2611	HCPCS Procedure	General use wheelchair back cushion, width less than 22 inches, any height, including any type mounting hardware
Wheelchair use	E2612	HCPCS Procedure	General use wheelchair back cushion, width 22 inches or greater, any height, including any type mounting hardware
Wheelchair use	E2613	HCPCS Procedure	Positioning wheelchair back cushion, posterior, width less than 22 inches, any height, including any type mounting hardware
Wheelchair use	E2614	HCPCS Procedure	Positioning wheelchair back cushion, posterior, width 22 inches or greater, any height, including any type mounting hardware

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

Covariate	Code	Code Type	Description
Wheelchair use	E2615	HCPCS Procedure	Positioning wheelchair back cushion, posterior-lateral, width less than 22 inches, any height, including any type mounting hardware
Wheelchair use	E2616	HCPCS Procedure	Positioning wheelchair back cushion, posterior-lateral, width 22 inches or greater, any height, including any type mounting hardware
Wheelchair use	E2617	HCPCS Procedure	Custom fabricated wheelchair back cushion, any size, including any type mounting hardware
Wheelchair use	E2618	HCPCS Procedure	Wheelchair accessory, solid seat support base (replaces sling seat), for use with manual wheelchair or lightweight power wheelchair, includes any type mounting hardware
Wheelchair use	E2619	HCPCS Procedure	Replacement cover for wheelchair seat cushion or back cushion, each
Wheelchair use	E2620	HCPCS Procedure	Positioning wheelchair back cushion, planar back with lateral supports, width less than 22 inches, any height, including any type mounting hardware
Wheelchair use	E2621	HCPCS Procedure	Positioning wheelchair back cushion, planar back with lateral supports, width 22 inches or greater, any height, including any type mounting hardware

Appendix E. Specifications for to16_cap_mpl2r_wp005_nsdp_v01, Report 3 of 8

FDA requested use of the Cohort Identification and Descriptive Analysis (CIDA) Tool with Propensity Score Matching (PSM) to investigate ischemic stroke events following new use of dabigatran versus warfarin.

Enrollment Gap:	45 days
Age Groups:	21-44, 45-64, 65-74, 75-84, 85+ years
Query Period:	November 1, 2010 to December 31, 2013
Coverage Requirement:	Medical and Drug Coverage
Enrollment Requirement:	183 days

		Exposure of Interest Dabigatran	**Comparator of Interest** Warfarin
Drug/ Exposure:	Incident w/ respect to:	Apixaban, Dabigatran, Rivaroxaban, and Warfarin	Apixaban, Dabigatran, Rivaroxaban, and Warfarin
	Washout (days)	183	183
	Cohort Definition	01	01
	Episode Gap	7	7
	Exposure Extension Period	7	7
	Minimum Episode Duration	0	0
	Minimum Days Supplied	0	7
	Truncation by Death	No	No
	Episode Truncation by Incident Exposure	Yes	Yes
Inclusion/ Exclusion:	Criterion	Atrial Fibrillation/Flutter	Atrial Fibrillation/Flutter
	Include or Exclude	Include	Include
	Lookback Start	-183	-183
	Lookback End	0	0
	Care Setting/ PDX	Any	Any
Inclusion/ Exclusion:	Criterion	Valvular Disease, Dialysis, Kidney Transplant, DVT/PE, and Joint Replacement	Valvular Disease, Dialysis, Kidney Transplant, DVT/PE, and Joint Replacement
	Include or Exclude	Exclude	Exclude
	Lookback Start	-183	-183
	Lookback End	0	0
	Care Setting/ PDX	**See Appendix B**	**See Appendix B**
Event/ Outcome:	Event/ Outcome	Ischemic Stroke	Ischemic Stroke
	Care Setting/PDX	IPP	IPP
	Incident w/ respect to:	Ischemic Stroke	Ischemic Stroke
	Washout (days)	0	0
Propensity Score Match (PSM) Analysis:	PSM Ratio	1:1	
	PSM Caliper	0.025, 0.050	
	Covariate evaluation window (days)	183	
	Covariate selection method	Exposure association-based selection	

National Drug Codes (NDCs) checked against First Data Bank's "National Drug Data File (NDDF®) Plus"

International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis and procedure codes checked against "Ingenix 2012 ICD-9-CM Data File" provided by OptumInsight

Healthcare Common Procedure Coding System (HCPCS) codes checked against "Optum 2012 HCPCS Level II Data File" provided by OptumInsight

Current Procedural Terminology, Fourth Edition (CPT-4) codes checked against "Optum 2012 Current Procedure Codes & Relative Values Data File" provided by OptumInsight