

## Disclaimer

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

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

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

The following report contains a description of the request, request specifications, and results from the modular program run(s). If you are using a web page screen reader and are unable to access this document, please contact the Sentinel Operations Center for assistance at [info@sentinelssystem.org](mailto:info@sentinelssystem.org).

## Overview for Request: cder\_mpl1r\_wp056

**Request ID:** cder\_mpl1r\_wp056

**Request Description:** The first goal of this request was to obtain counts of new users of apixaban and warfarin among patients in the Sentinel Distributed Database (SDD). The second goal of this request was to examine incidence rates of ischemic stroke, intracranial hemorrhage, and gastrointestinal hemorrhage among new users of apixaban compared to new users of warfarin with non-valvular atrial fibrillation in the SDD.

**Sentinel Modular Program Tool Used:** Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.1.1

**Data Source:** Data from February 1, 2013 to August 31, 2017 from 17 Data Partners (DPs) contributing to the SDD were included in this report. This request was distributed to DPs on February 1, 2018. See Appendix A for a list of dates of available data for each DP.

**Study Design:** This request was designed to identify new users of apixaban and warfarin among patients in the SDD. We then compared new users of apixaban to new users of warfarin in the SDD with respect to rates of ischemic stroke, intracranial hemorrhage, and gastrointestinal hemorrhage. The number of qualifying patients with the exposures of interest was calculated overall and stratified by age, sex, and year.

**Exposures of Interest:** The exposures of interest were apixaban and warfarin, which were defined using National Drug Codes (NDCs). Please see Appendix B for a list of generic and brand drug names used to define exposures in this request.

**Outcomes of Interest:** The outcomes of interest were gastrointestinal hemorrhage, intracranial hemorrhage, and ischemic stroke, which were defined using International Classification of Diseases, Ninth and Tenth Revisions, Clinical Modification (ICD-9-CM and ICD-10-CM) diagnosis codes. All outcomes were ascertained in the inpatient care setting in the primary diagnosis position. Intracranial hemorrhage was additionally defined using a diagnosis code in the inpatient care setting in either a primary or secondary diagnosis position. Please see Appendix C for a list of codes used to define outcomes in this request.

**Cohort Eligibility Criteria:** Three query periods were evaluated in this request: February 1, 2013 to August 31, 2017; February 1, 2013 to September 30, 2015; and October 1, 2015 to August 31, 2017. Individuals included in each cohort were required to be continuously enrolled in health plans with medical and drug coverage for at least 183 days prior to their first qualifying (index) non-valvular atrial fibrillation diagnosis during which gaps in coverage of up to 45 days were allowed. The following age groups were included in the cohort: 21-64, 65-74, 75-84, and 85-99 years. Only the first valid diagnosis during the query period was considered; no cohort re-entry was allowed. Members were also required to be new users of apixaban or warfarin for cohort entry. New use of apixaban or warfarin was defined as no use of any anticoagulant (apixaban, dabigatran, rivaroxaban, edoxaban, or warfarin) in the 183 days prior to index non-valvular atrial fibrillation diagnosis. Members were ineligible if they had evidence of the following conditions/procedures in the 183 days prior to and including date of drug initiation: dialysis (outpatient codes), kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement, or valve repair. Inclusion and exclusion criteria were defined using ICD-9-CM, ICD-10-CM, International Classification of Diseases, Tenth Revision, Procedure Coding System codes (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) codes. See Appendices D and E for a list of codes used to define inclusion and exclusion criteria in this request.

**Follow-Up Time:** Follow-up time was determined by the length of the exposure episodes. Exposure episode lengths were defined using inpatient pharmacy dispensing days' supply to create a sequence of continuous exposure. Exposure episodes were considered continuous if gaps in days' supply were 7 days or less. The end date of each exposure episode was extended by 7 additional days. Follow-up began on the day of the first exposure of interest and continued until the first occurrence of any of the following: 1) disenrollment; 2) the end date of the data provided by each DP (see Appendix A); 3) query end date; 4) cessation of study drug use (defined as when the days' supply was exhausted for longer than seven days without a subsequent dispensing plus an extension of seven days); 5) a dispensing of a different anti-coagulant; or 6) occurrence of the outcome. Exposure episodes were excluded if the event of interest occurred on the same day as the first eligible dispensing.

**Overview for Request: cder\_mpl1r\_wp056, continued**

**Baseline Characteristics:** The following characteristics were assessed in the 183 days prior to and including the index date of non-valvular atrial fibrillation diagnosis: age, year, sex, Charlson/Elixhauser combined comorbidity score<sup>1</sup>, health service utilization, gastrointestinal hemorrhage, intracranial hemorrhage (primary position only), intracranial hemorrhage (primary and secondary position), kidney disease, and ischemic stroke. Gastrointestinal hemorrhage, intracranial hemorrhage, and ischemic stroke were identified by a diagnosis code within any non-ambulatory care setting. Kidney disease was identified by a diagnosis code within any care setting. ICD-9-CM and ICD-10-CM diagnosis codes were used to define kidney disease, gastrointestinal hemorrhage, intracranial hemorrhage, and ischemic stroke. Please refer to Appendix F for a list of codes used to define characteristics in this request.

**Limitations:** Algorithms used to define exposures and inclusion criteria are imperfect; thus, it is possible that there may be misclassification. Therefore, data should be interpreted with this limitation in mind.

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

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

<sup>1</sup>Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. *J Clin Epidemiol.* 2011;64(7):749-759

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

**Amount Supplied** - number of units (pills, tablets, vials) dispensed. Net amount per NDC per dispensing.

**Blackout Period** - number of days at the beginning of a treatment episode that events are to be ignored. If an event occurs during the blackout period, the episode is excluded.

**Care Setting** - type of medical encounter or facility where the exposure, event, or condition code was recorded. Possible care settings include: Inpatient Hospital Stay (IP), Non-Acute Institutional Stay (IS), Emergency Department (ED), Ambulatory Visit (AV), and Other Ambulatory Visit (OA). For laboratory results, possible care settings include: Emergency Department (E), Home (H), Inpatient (I), Outpatient (O), or Unknown or Missing (U). The Care Setting, along with the Principal Diagnosis Indicator (PDX), forms the Care Setting/PDX parameter.

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

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

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

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

**Other Ambulatory Visit (OA)** - includes other non overnight AV encounters such as hospice visits, home health visits, skilled nursing facility visits, other non-hospital visits, as well as telemedicine, telephone and email consultations.

**Charlson/Elixhauser Combined Comorbidity Score** - calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (e.g., in the 183 days prior to index).

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

**Computed Start Marketing Date** - represents the first observed dispensing date among all valid users within a GROUP (scenario) within each Data Partner site.

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

**Eligible Members** - number of members eligible for an incident treatment episode (defined by the drug/exposure and event washout periods) with drug and medical coverage during the query period.

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

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

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

**Event Deduplication** - specifies how events are counted by the Modular Program (MP) algorithm: 0: Counts all occurrences of a health outcome of interest (HOI) during an exposure episode; 1: de-duplicates occurrences of the same HOI code and code type on the same day; 2: de-duplicates occurrences of the same HOI group on the same day (e.g., de-duplicates at the group level).

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

**Exposure Extension Period** - number of days post treatment period in which the outcomes/events are counted for a treatment episode. Extensions are added after any episode gaps have been bridged.

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



**Maximum Episode Duration** - truncates exposure episodes after a requester-specified number of exposed days. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

**Member-Years** - sum of all days of enrollment with medical and drug coverage in the query period preceded by an exposure washout period all divided by 365.25.

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

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

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

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

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

**Switch Evaluation Step Value** - value used to differentiate evaluation step. Each switch pattern can support up to 2 evaluation steps (0 = switch pattern evaluation start; 1 = first evaluation; 2 = second evaluation).

**Switch Gap Inclusion Indicator** - indicator for whether gaps in treatment episodes that are included in a switch episode will be counted as part of the switch episode duration.

**Switch Pattern Cohort Inclusion Date** - indicates which date to use for inclusion into the switch pattern cohort of interest as well as optionally as the index date of the treatment episode initiating the switch pattern. Valid options are the product approval date, product marketing date, other requester defined date, or computed start marketing date.

**Switch Pattern Cohort Inclusion Strategy** - indicates how the switch pattern cohort inclusion date will be used: 01: used only as a switch cohort entry date. First treatment episode dispensing date is used as index for computing time to first switch; 02: used as switch cohort entry date and as initial switch step index date for computing time to first switch.

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

**Washout Period (drug/exposure)** - number of days a user is required to have no evidence of prior exposure (drug dispensing/procedure) and continuous drug and medical coverage prior to an incident treatment episode.

**Washout Period (event/outcome)** - number of days a user is required to have no evidence of a prior event (procedure/diagnosis) and continuous drug and medical coverage prior to an incident treatment episode.

**Years at Risk** - number of days supplied plus any episode gaps and exposure extension periods all divided by 365.25.

All terms listed above may not be used in this report.

**Table 1a. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Gastrointestinal Hemorrhage in the Sentinel Distributed Database (SDD) between February 1, 2013 and September 30, 2015**

| Characteristic  | Apixaban                  |                           | Warfarin                  |                           | Covariate Balance          |                                |
|---|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------|
|   | Number of Patients        | Percent                   | Number of Patients        | Percent                   | Absolute Difference        | Standardized Difference        |
| Number of unique patients                                   | 150,809                   | 100.0%                    | 320,280                   | 100.0%                    | ---                        | ---                            |
| <b>Patient Characteristics</b>                              | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean age (years)  | 75.9                      | 9.1                       | 76.1                      | 9.5                       | -0.20                      | -0.02                          |
| Age (years)   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| 21-64   | 15,569                    | 10.3%                     | 34,506                    | 10.8%                     | -0.50                      | -0.02                          |
| 65-74   | 52,354                    | 34.7%                     | 103,397                   | 32.3%                     | 2.40                       | 0.05                           |
| 75-84   | 55,674                    | 36.9%                     | 122,277                   | 38.2%                     | -1.30                      | -0.03                          |
| 85-99   | 27,212                    | 18.0%                     | 60,100                    | 18.8%                     | -0.80                      | -0.02                          |
| Sex   |                           |                           |                           |                           |                            |                                |
| Female  | 75,555                    | 50.1%                     | 152,461                   | 47.6%                     | 2.50                       | 0.05                           |
| Male  | 75,253                    | 49.9%                     | 167,811                   | 52.4%                     | -2.50                      | -0.05                          |
| Other   | 1                         | 0.0%                      | 8                         | 0.0%                      | 0.00                       | ---                            |
| Year  |                           |                           |                           |                           |                            |                                |
| 2013  | 16,816                    | 11.2%                     | 126,838                   | 39.6%                     | -28.40                     | -0.69                          |
| 2014  | 58,984                    | 39.1%                     | 117,361                   | 36.6%                     | 2.50                       | 0.05                           |
| 2015  | 75,009                    | 49.7%                     | 76,081                    | 23.8%                     | 25.90                      | 0.56                           |
| <b>Recorded History of:</b>                                 | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.8                       | 2.6                       | 3.3                       | 2.9                       | -0.5                       | -0.18                          |
|   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Gastrointestinal hemorrhage, inpatient (primary)            | 571                       | 0.4%                      | 1,985                     | 0.6%                      | -0.20                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary)                | 164                       | 0.1%                      | 469                       | 0.1%                      | 0.00                       | 0.00                           |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 520                       | 0.3%                      | 1,607                     | 0.5%                      | -0.20                      | -0.03                          |
| Kidney disease, any care setting                            | 28,383                    | 18.8%                     | 75,078                    | 23.4%                     | -4.60                      | -0.11                          |
| Ischemic stroke, inpatient (primary)                        | 6,090                     | 4.0%                      | 16,964                    | 5.3%                      | -1.30                      | -0.06                          |
| <b>Health Service Utilization Intensity:</b>                | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean number of ambulatory encounters                        | 12.1                      | 8.3                       | 12.0                      | 8.8                       | 0.10                       | 0.01                           |
| Mean number of emergency room encounters                    | 0.5                       | 0.9                       | 0.5                       | 1.0                       | 0.00                       | 0.00                           |
| Mean number of inpatient hospital encounters                | 0.6                       | 0.8                       | 0.7                       | 0.9                       | -0.10                      | -0.12                          |
| Mean number of non-acute institutional encounters           | 0.1                       | 0.5                       | 0.2                       | 0.6                       | -0.10                      | -0.18                          |
| Mean number of other ambulatory encounters                  | 4.8                       | 7.6                       | 6.6                       | 10.0                      | -1.80                      | -0.20                          |
| Mean number of filled prescriptions                         | 23.3                      | 17.5                      | 22.6                      | 17.3                      | 0.70                       | 0.04                           |
| Mean number of generics                                     | 10.3                      | 5.1                       | 10.2                      | 5.1                       | 0.10                       | 0.02                           |
| Mean number of drug classes                                 | 9.7                       | 4.5                       | 9.6                       | 4.5                       | 0.10                       | 0.02                           |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).



**Table 1b. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Gastrointestinal Hemorrhage in the Sentinel Distributed Database (SDD) between October 1, 2015 and August 31, 2017**

| Characteristic  | Apixaban                  |                           | Warfarin                  |                           | Covariate Balance          |                                |
|---|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------|
|   | Number of Patients        | Percent                   | Number of Patients        | Percent                   | Absolute Difference        | Standardized Difference        |
| Number of unique patients                                   | 82,316                    | 100.0%                    | 57,812                    | 100.0%                    | ---                        | ---                            |
| <b>Patient Characteristics</b>                              | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean age (years)  | 73                        | 10.4                      | 74.6                      | 10.1                      | -1.60                      | -0.16                          |
| Age (years)   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| 21-64   | 18,702                    | 22.7%                     | 9,803                     | 17.0%                     | 5.70                       | 0.14                           |
| 65-74   | 26,139                    | 31.8%                     | 18,318                    | 31.7%                     | 0.10                       | 0.00                           |
| 75-84   | 25,352                    | 30.8%                     | 20,253                    | 35.0%                     | -4.20                      | -0.09                          |
| 85-99   | 12,123                    | 14.7%                     | 9,438                     | 16.3%                     | -1.60                      | -0.04                          |
| Sex   |                           |                           |                           |                           |                            |                                |
| Female  | 37,297                    | 45.3%                     | 25,034                    | 43.3%                     | 2.00                       | 0.04                           |
| Male  | 45,018                    | 54.7%                     | 32,777                    | 56.7%                     | -2.00                      | -0.04                          |
| Other   | 1                         | 0.0%                      | 1                         | 0.0%                      | 0.00                       | ---                            |
| Year  |                           |                           |                           |                           |                            |                                |
| 2015  | 30,701                    | 37.3%                     | 24,484                    | 42.4%                     | -5.10                      | -0.10                          |
| 2016  | 35,106                    | 42.6%                     | 24,281                    | 42.0%                     | 0.60                       | 0.01                           |
| 2017  | 16,509                    | 20.1%                     | 9,047                     | 15.6%                     | 4.50                       | 0.12                           |
| <b>Recorded History of:</b>                                 | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 3.1                       | 2.7                       | 3.5                       | 2.9                       | -0.4                       | -0.14                          |
|   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Gastrointestinal hemorrhage, inpatient (primary)            | 383                       | 0.5%                      | 392                       | 0.7%                      | -0.20                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary)                | 92                        | 0.1%                      | 107                       | 0.2%                      | -0.10                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 286                       | 0.3%                      | 341                       | 0.6%                      | -0.30                      | -0.04                          |
| Kidney disease, any care setting                            | 16,059                    | 19.5%                     | 15,238                    | 26.4%                     | -6.90                      | -0.16                          |
| Ischemic stroke, inpatient (primary)                        | 3,514                     | 4.3%                      | 2,678                     | 4.6%                      | -0.30                      | -0.01                          |
| <b>Health Service Utilization Intensity:</b>                | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean number of ambulatory encounters                        | 11.7                      | 9.1                       | 11.5                      | 9.4                       | 0.20                       | 0.02                           |
| Mean number of emergency room encounters                    | 0.6                       | 1.0                       | 0.6                       | 1.1                       | 0.00                       | 0.00                           |
| Mean number of inpatient hospital encounters                | 0.6                       | 0.8                       | 0.6                       | 0.9                       | 0.00                       | 0.00                           |
| Mean number of non-acute institutional encounters           | 0.2                       | 0.8                       | 0.2                       | 0.8                       | 0.00                       | 0.00                           |
| Mean number of other ambulatory encounters                  | 3.8                       | 6.6                       | 5.9                       | 8.7                       | -2.10                      | -0.27                          |
| Mean number of filled prescriptions                         | 21.3                      | 16.0                      | 19.9                      | 14.8                      | 1.40                       | 0.09                           |
| Mean number of generics                                     | 9.9                       | 5.0                       | 9.7                       | 4.9                       | 0.20                       | 0.04                           |
| Mean number of drug classes                                 | 9.3                       | 4.5                       | 9.2                       | 4.4                       | 0.10                       | 0.02                           |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1c. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Gastrointestinal Hemorrhage in the Sentinel Distributed Database (SDD) between February 1, 2013 and August 31, 2017**

| Characteristic  | Apixaban                  |                           | Warfarin                  |                           | Covariate Balance          |                                |
|---|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------|
|   | Number of Patients        | Percent                   | Number of Patients        | Percent                   | Absolute Difference        | Standardized Difference        |
| Number of unique patients                                   | 231,092                   | 100.0%                    | 373,798                   | 100.0%                    | ---                        | ---                            |
| <b>Patient Characteristics</b>                              | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean age (years)  | 74.9                      | 9.5                       | 75.9                      | 9.6                       | -1.00                      | -0.10                          |
| Age (years)   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| 21-64   | 33,787                    | 14.6%                     | 43,687                    | 11.7%                     | 2.90                       | 0.09                           |
| 65-74   | 77,844                    | 33.7%                     | 120,590                   | 32.3%                     | 1.40                       | 0.03                           |
| 75-84   | 80,354                    | 34.8%                     | 140,839                   | 37.7%                     | -2.90                      | -0.06                          |
| 85-99   | 39,107                    | 16.9%                     | 68,682                    | 18.4%                     | -1.50                      | -0.04                          |
| Sex   |                           |                           |                           |                           |                            |                                |
| Female  | 112,029                   | 48.5%                     | 175,795                   | 47.0%                     | 1.50                       | 0.03                           |
| Male  | 119,061                   | 51.5%                     | 197,994                   | 53.0%                     | -1.50                      | -0.03                          |
| Other   | 2                         | 0.0%                      | 9                         | 0.0%                      | 0.00                       | ---                            |
| Year  |                           |                           |                           |                           |                            |                                |
| 2013  | 16,816                    | 7.3%                      | 126,838                   | 33.9%                     | -26.60                     | -0.70                          |
| 2014  | 58,984                    | 25.5%                     | 117,361                   | 31.4%                     | -5.90                      | -0.13                          |
| 2015  | 105,284                   | 45.6%                     | 98,959                    | 26.5%                     | 19.10                      | 0.41                           |
| 2016  | 33,995                    | 14.7%                     | 22,236                    | 5.9%                      | 8.80                       | 0.29                           |
| 2017  | 16,013                    | 6.9%                      | 8,404                     | 2.2%                      | 4.70                       | 0.23                           |
| <b>Recorded History of:</b>                                 | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.9                       | 2.7                       | 3.3                       | 2.9                       | -0.40                      | -0.14                          |
|   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Gastrointestinal hemorrhage, inpatient (primary)            | 945                       | 0.4%                      | 2,353                     | 0.6%                      | -0.20                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary)                | 255                       | 0.1%                      | 569                       | 0.2%                      | -0.10                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 804                       | 0.3%                      | 1,941                     | 0.5%                      | -0.20                      | -0.03                          |
| Kidney disease, any care setting                            | 44,005                    | 19.0%                     | 89,228                    | 23.9%                     | -4.90                      | -0.12                          |
| Ischemic stroke, inpatient (primary)                        | 9,575                     | 4.1%                      | 19,593                    | 5.2%                      | -1.10                      | -0.05                          |
| <b>Health Service Utilization Intensity:</b>                | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean number of ambulatory encounters                        | 11.9                      | 8.6                       | 12.0                      | 8.9                       | -0.10                      | -0.01                          |
| Mean number of emergency room encounters                    | 0.5                       | 0.9                       | 0.5                       | 1.0                       | 0.00                       | 0.00                           |
| Mean number of inpatient hospital encounters                | 0.6                       | 0.8                       | 0.6                       | 0.9                       | 0.00                       | 0.00                           |
| Mean number of non-acute institutional encounters           | 0.2                       | 0.6                       | 0.2                       | 0.7                       | 0.00                       | 0.00                           |
| Mean number of other ambulatory encounters                  | 4.5                       | 7.3                       | 6.5                       | 9.8                       | -2.00                      | -0.23                          |
| Mean number of filled prescriptions                         | 22.6                      | 17.0                      | 22.2                      | 17.0                      | 0.40                       | 0.02                           |
| Mean number of generics                                     | 10.2                      | 5.1                       | 10.1                      | 5.1                       | 0.10                       | 0.02                           |
| Mean number of drug classes                                 | 9.6                       | 4.5                       | 9.5                       | 4.5                       | 0.10                       | 0.02                           |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1d. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Intracranial Hemorrhage Diagnosed in the Inpatient Primary Position and Inpatient Secondary Position in the Sentinel Distributed Database (SDD) between February 1, 2013 and September 30, 2015**

| Characteristic  | Apixaban           |                    | Warfarin           |                    | Covariate Balance   |                         |
|---|--------------------|--------------------|--------------------|--------------------|---------------------|-------------------------|
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Number of unique patients                                   | 150,810            | 100.0%             | 320,290            | 100.0%             | ---                 | ---                     |
| Patient Characteristics                                     | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean age (years)  | 75.9               | 9.1                | 76.1               | 9.5                | -0.20               | -0.02                   |
| Age (years)   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 21-64   | 15,568             | 10.3%              | 34,506             | 10.8%              | -0.50               | -0.02                   |
| 65-74   | 52,356             | 34.7%              | 103,400            | 32.3%              | 2.40                | 0.05                    |
| 75-84   | 55,675             | 36.9%              | 122,282            | 38.2%              | -1.30               | -0.03                   |
| 85-99   | 27,211             | 18.0%              | 60,102             | 18.8%              | -0.80               | -0.02                   |
| Sex   |                    |                    |                    |                    |                     |                         |
| Female  | 75,557             | 50.1%              | 152,465            | 47.6%              | 2.50                | 0.05                    |
| Male  | 75,252             | 49.9%              | 167,817            | 52.4%              | -2.50               | -0.05                   |
| Other   | 1                  | 0.0%               | 8                  | 0.0%               | 0.00                | ---                     |
| Year  |                    |                    |                    |                    |                     |                         |
| 2013  | 16,817             | 11.2%              | 126,845            | 39.6%              | -28.40              | -0.69                   |
| 2014  | 58,982             | 39.1%              | 117,361            | 36.6%              | 2.50                | 0.05                    |
| 2015  | 75,011             | 49.7%              | 76,084             | 23.8%              | 25.90               | 0.56                    |
| Recorded History of:  | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.8                | 2.6                | 3.3                | 2.9                | -0.5                | -0.18                   |
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Gastrointestinal hemorrhage, inpatient (primary)            | 575                | 0.4%               | 1,999              | 0.6%               | -0.20               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary)                | 163                | 0.1%               | 468                | 0.1%               | 0.00                | 0.00                    |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 517                | 0.3%               | 1,603              | 0.5%               | -0.20               | -0.03                   |
| Kidney disease, any care setting                            | 28,382             | 18.8%              | 75,085             | 23.4%              | -4.60               | -0.11                   |
| Ischemic stroke, inpatient (primary)                        | 6,088              | 4.0%               | 16,963             | 5.3%               | -1.30               | -0.06                   |
| Health Service Utilization Intensity:                       | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean number of ambulatory encounters                        | 12.1               | 8.3                | 12.1               | 8.8                | 0.00                | 0.00                    |
| Mean number of emergency room encounters                    | 0.5                | 0.9                | 0.5                | 1.0                | 0.00                | 0.00                    |
| Mean number of inpatient hospital encounters                | 0.6                | 0.8                | 0.7                | 0.9                | -0.10               | -0.12                   |
| Mean number of non-acute institutional encounters           | 0.1                | 0.5                | 0.2                | 0.6                | -0.10               | -0.18                   |
| Mean number of other ambulatory encounters                  | 4.8                | 7.6                | 6.6                | 10.0               | -1.80               | -0.20                   |
| Mean number of filled prescriptions                         | 23.3               | 17.5               | 22.6               | 17.3               | 0.70                | 0.04                    |
| Mean number of generics                                     | 10.3               | 5.1                | 10.2               | 5.1                | 0.10                | 0.02                    |
| Mean number of drug classes                                 | 9.7                | 4.5                | 9.6                | 4.5                | 0.10                | 0.02                    |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1e. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Intracranial Hemorrhage Diagnosed in the Inpatient Primary Position and Inpatient Secondary Position in the Sentinel Distributed Database (SDD) between October 1, 2015 and August 31, 2017**

| Characteristic  | Apixaban           |                    | Warfarin           |                    | Covariate Balance   |                         |
|---|--------------------|--------------------|--------------------|--------------------|---------------------|-------------------------|
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Number of unique patients                                   | 82,319             | 100.0%             | 57,813             | 100.0%             | ---                 | ---                     |
| Patient Characteristics                                     | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean age (years)  | 73                 | 10.4               | 74.6               | 10.1               | -1.60               | -0.16                   |
| Age (years)   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 21-64   | 18,702             | 22.7%              | 9,803              | 17.0%              | 5.70                | 0.14                    |
| 65-74   | 26,140             | 31.8%              | 18,318             | 31.7%              | 0.10                | 0.00                    |
| 75-84   | 25,353             | 30.8%              | 20,254             | 35.0%              | -4.20               | -0.09                   |
| 85-99   | 12,124             | 14.7%              | 9,438              | 16.3%              | -1.60               | -0.04                   |
| Sex   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Female  | 37,299             | 45.3%              | 25,036             | 43.3%              | 2.00                | 0.04                    |
| Male  | 45,019             | 54.7%              | 32,776             | 56.7%              | -2.00               | -0.04                   |
| Other   | 1                  | 0.0%               | 1                  | 0.0%               | 0.00                | ---                     |
| Year  | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 2015  | 30,702             | 37.3%              | 24,486             | 42.4%              | -5.10               | -0.10                   |
| 2016  | 35,108             | 42.6%              | 24,280             | 42.0%              | 0.60                | 0.01                    |
| 2017  | 16,509             | 20.1%              | 9,047              | 15.6%              | 4.50                | 0.12                    |
| Recorded History of:  | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 3.1                | 2.7                | 3.5                | 2.9                | -0.4                | -0.14                   |
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Gastrointestinal hemorrhage, inpatient (primary)            | 387                | 0.5%               | 394                | 0.7%               | -0.20               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary)                | 91                 | 0.1%               | 107                | 0.2%               | -0.10               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 285                | 0.3%               | 340                | 0.6%               | -0.30               | -0.04                   |
| Kidney disease, any care setting                            | 16,060             | 19.5%              | 15,239             | 26.4%              | -6.90               | -0.16                   |
| Ischemic stroke, inpatient (primary)                        | 3,513              | 4.3%               | 2,677              | 4.6%               | -0.30               | -0.01                   |
| Health Service Utilization Intensity:                       | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean number of ambulatory encounters                        | 11.7               | 9.1                | 11.5               | 9.4                | 0.20                | 0.02                    |
| Mean number of emergency room encounters                    | 0.6                | 1.0                | 0.6                | 1.1                | 0.00                | 0.00                    |
| Mean number of inpatient hospital encounters                | 0.6                | 0.8                | 0.6                | 0.9                | 0.00                | 0.00                    |
| Mean number of non-acute institutional encounters           | 0.2                | 0.8                | 0.2                | 0.8                | 0.00                | 0.00                    |
| Mean number of other ambulatory encounters                  | 3.8                | 6.6                | 5.9                | 8.7                | -2.10               | -0.27                   |
| Mean number of filled prescriptions                         | 21.3               | 16.0               | 19.9               | 14.8               | 1.40                | 0.09                    |
| Mean number of generics                                     | 9.9                | 5.0                | 9.7                | 4.9                | 0.20                | 0.04                    |
| Mean number of drug classes                                 | 9.3                | 4.5                | 9.2                | 4.4                | 0.10                | 0.02                    |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1f. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Intracranial Hemorrhage Diagnosed in the Inpatient Primary Position and Inpatient Secondary Position in the Sentinel Distributed Database (SDD) between February 1, 2013 and August 31, 2017**

| Characteristic  | Apixaban           |                    | Warfarin           |                    | Covariate Balance   |                         |
|---|--------------------|--------------------|--------------------|--------------------|---------------------|-------------------------|
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Number of unique patients                                   | 231,096            | 100.0%             | 373,809            | 100.0%             | ---                 | ---                     |
| Patient Characteristics                                     | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean age (years)  | 74.9               | 9.5                | 75.9               | 9.6                | -1.00               | -0.10                   |
| Age (years)   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 21-64   | 33,786             | 14.6%              | 43,687             | 11.7%              | 2.90                | 0.09                    |
| 65-74   | 77,847             | 33.7%              | 120,593            | 32.3%              | 1.40                | 0.03                    |
| 75-84   | 80,356             | 34.8%              | 140,845            | 37.7%              | -2.90               | -0.06                   |
| 85-99   | 39,107             | 16.9%              | 68,684             | 18.4%              | -1.50               | -0.04                   |
| Sex   |                    |                    |                    |                    |                     |                         |
| Female  | 112,033            | 48.5%              | 175,801            | 47.0%              | 1.50                | 0.03                    |
| Male  | 119,061            | 51.5%              | 197,999            | 53.0%              | -1.50               | -0.03                   |
| Other   | 2                  | 0.0%               | 9                  | 0.0%               | 0.00                | ---                     |
| Year  |                    |                    |                    |                    |                     |                         |
| 2013  | 16,817             | 7.3%               | 126,845            | 33.9%              | -26.60              | -0.70                   |
| 2014  | 58,982             | 25.5%              | 117,361            | 31.4%              | -5.90               | -0.13                   |
| 2015  | 105,287            | 45.6%              | 98,964             | 26.5%              | 19.10               | 0.41                    |
| 2016  | 33,997             | 14.7%              | 22,235             | 5.9%               | 8.80                | 0.29                    |
| 2017  | 16,013             | 6.9%               | 8,404              | 2.2%               | 4.70                | 0.23                    |
| Recorded History of:  | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.9                | 2.7                | 3.3                | 2.9                | -0.40               | -0.14                   |
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Gastrointestinal hemorrhage, inpatient (primary)            | 953                | 0.4%               | 2,369              | 0.6%               | -0.20               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary)                | 253                | 0.1%               | 568                | 0.2%               | -0.10               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 800                | 0.3%               | 1,936              | 0.5%               | -0.20               | -0.03                   |
| Kidney disease, any care setting                            | 44,005             | 19.0%              | 89,236             | 23.9%              | -4.90               | -0.12                   |
| Ischemic stroke, inpatient (primary)                        | 9,572              | 4.1%               | 19,591             | 5.2%               | -1.10               | -0.05                   |
| Health Service Utilization Intensity:                       | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean number of ambulatory encounters                        | 11.9               | 8.6                | 12.0               | 8.9                | -0.10               | -0.01                   |
| Mean number of emergency room encounters                    | 0.5                | 0.9                | 0.5                | 1.0                | 0.00                | 0.00                    |
| Mean number of inpatient hospital encounters                | 0.6                | 0.8                | 0.6                | 0.9                | 0.00                | 0.00                    |
| Mean number of non-acute institutional encounters           | 0.2                | 0.6                | 0.2                | 0.7                | 0.00                | 0.00                    |
| Mean number of other ambulatory encounters                  | 4.5                | 7.3                | 6.5                | 9.8                | -2.00               | -0.23                   |
| Mean number of filled prescriptions                         | 22.6               | 17.0               | 22.2               | 17.0               | 0.40                | 0.02                    |
| Mean number of generics                                     | 10.2               | 5.1                | 10.1               | 5.1                | 0.10                | 0.02                    |
| Mean number of drug classes                                 | 9.6                | 4.5                | 9.5                | 4.5                | 0.10                | 0.02                    |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1g. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Intracranial Hemorrhage Diagnosed in the Inpatient Primary Position in the Sentinel Distributed Database (SDD) between February 1, 2013 and September 30, 2015**

| Characteristic  | Apixaban           |                    | Warfarin           |                    | Covariate Balance   |                         |
|---|--------------------|--------------------|--------------------|--------------------|---------------------|-------------------------|
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Number of unique patients                                   | 150,812            | 100.0%             | 320,293            | 100.0%             | ---                 | ---                     |
| Patient Characteristics                                     | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean age (years)  | 75.9               | 9.1                | 76.1               | 9.5                | -0.20               | -0.02                   |
| Age (years)   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 21-64   | 15,569             | 10.3%              | 34,506             | 10.8%              | -0.50               | -0.02                   |
| 65-74   | 52,356             | 34.7%              | 103,402            | 32.3%              | 2.40                | 0.05                    |
| 75-84   | 55,675             | 36.9%              | 122,282            | 38.2%              | -1.30               | -0.03                   |
| 85-99   | 27,212             | 18.0%              | 60,103             | 18.8%              | -0.80               | -0.02                   |
| Sex   |                    |                    |                    |                    |                     |                         |
| Female  | 75,557             | 50.1%              | 152,465            | 47.6%              | 2.50                | 0.05                    |
| Male  | 75,254             | 49.9%              | 167,820            | 52.4%              | -2.50               | -0.05                   |
| Other   | 1                  | 0.0%               | 8                  | 0.0%               | 0.00                | ---                     |
| Year  |                    |                    |                    |                    |                     |                         |
| 2013  | 16,817             | 11.2%              | 126,845            | 39.6%              | -28.40              | -0.69                   |
| 2014  | 58,984             | 39.1%              | 117,364            | 36.6%              | 2.50                | 0.05                    |
| 2015  | 75,011             | 49.7%              | 76,084             | 23.8%              | 25.90               | 0.56                    |
| Recorded History of:  | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.8                | 2.6                | 3.3                | 2.9                | -0.5                | -0.18                   |
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Gastrointestinal hemorrhage, inpatient (primary)            | 575                | 0.4%               | 1,999              | 0.6%               | -0.20               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary)                | 163                | 0.1%               | 468                | 0.1%               | 0.00                | 0.00                    |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 519                | 0.3%               | 1,606              | 0.5%               | -0.20               | -0.03                   |
| Kidney disease, any care setting                            | 28,383             | 18.8%              | 75,086             | 23.4%              | -4.60               | -0.11                   |
| Ischemic stroke, inpatient (primary)                        | 6,090              | 4.0%               | 16,965             | 5.3%               | -1.30               | -0.06                   |
| Health Service Utilization Intensity:                       | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean number of ambulatory encounters                        | 12.1               | 8.3                | 12.0               | 8.8                | 0.10                | 0.01                    |
| Mean number of emergency room encounters                    | 0.5                | 0.9                | 0.5                | 1.0                | 0.00                | 0.00                    |
| Mean number of inpatient hospital encounters                | 0.6                | 0.8                | 0.7                | 0.9                | -0.10               | -0.12                   |
| Mean number of non-acute institutional encounters           | 0.1                | 0.5                | 0.2                | 0.6                | -0.10               | -0.18                   |
| Mean number of other ambulatory encounters                  | 4.8                | 7.6                | 6.6                | 10.0               | -1.80               | -0.20                   |
| Mean number of filled prescriptions                         | 23.3               | 17.5               | 22.6               | 17.3               | 0.70                | 0.04                    |
| Mean number of generics                                     | 10.3               | 5.1                | 10.2               | 5.1                | 0.10                | 0.02                    |
| Mean number of drug classes                                 | 9.7                | 4.5                | 9.6                | 4.5                | 0.10                | 0.02                    |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1h. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Intracranial Hemorrhage Diagnosed in the Inpatient Primary Position in the Sentinel Distributed Database (SDD) between October 1, 2015 and August 31, 2017**

| Characteristic  | Apixaban           |                    | Warfarin           |                    | Covariate Balance   |                         |
|---|--------------------|--------------------|--------------------|--------------------|---------------------|-------------------------|
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Number of unique patients                                   | 82,320             | 100.0%             | 57,814             | 100.0%             | ---                 | ---                     |
| Patient Characteristics                                     | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean age (years)  | 73                 | 10.4               | 74.6               | 10.1               | -1.60               | -0.16                   |
| Age (years)   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 21-64   | 18,702             | 22.7%              | 9,803              | 17.0%              | 5.70                | 0.14                    |
| 65-74   | 26,140             | 31.8%              | 18,318             | 31.7%              | 0.10                | 0.00                    |
| 75-84   | 25,353             | 30.8%              | 20,255             | 35.0%              | -4.20               | -0.09                   |
| 85-99   | 12,125             | 14.7%              | 9,438              | 16.3%              | -1.60               | -0.04                   |
| Sex   |                    |                    |                    |                    |                     |                         |
| Female  | 37,300             | 45.3%              | 25,036             | 43.3%              | 2.00                | 0.04                    |
| Male  | 45,019             | 54.7%              | 32,777             | 56.7%              | -2.00               | -0.04                   |
| Other   | 1                  | 0.0%               | 1                  | 0.0%               | 0.00                | ---                     |
| Year  |                    |                    |                    |                    |                     |                         |
| 2015  | 30,702             | 37.3%              | 24,486             | 42.4%              | -5.10               | -0.10                   |
| 2016  | 35,109             | 42.6%              | 24,281             | 42.0%              | 0.60                | 0.01                    |
| 2017  | 16,509             | 20.1%              | 9,047              | 15.6%              | 4.50                | 0.12                    |
| Recorded History of:  | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 3.1                | 2.7                | 3.5                | 2.9                | -0.4                | -0.14                   |
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Gastrointestinal hemorrhage, inpatient (primary)            | 387                | 0.5%               | 394                | 0.7%               | -0.20               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary)                | 92                 | 0.1%               | 107                | 0.2%               | -0.10               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 286                | 0.3%               | 341                | 0.6%               | -0.30               | -0.04                   |
| Kidney disease, any care setting                            | 16,060             | 19.5%              | 15,240             | 26.4%              | -6.90               | -0.16                   |
| Ischemic stroke, inpatient (primary)                        | 3,514              | 4.3%               | 2,678              | 4.6%               | -0.30               | -0.01                   |
| Health Service Utilization Intensity:                       | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean number of ambulatory encounters                        | 11.7               | 9.1                | 11.5               | 9.4                | 0.20                | 0.02                    |
| Mean number of emergency room encounters                    | 0.6                | 1.0                | 0.6                | 1.1                | 0.00                | 0.00                    |
| Mean number of inpatient hospital encounters                | 0.6                | 0.8                | 0.6                | 0.9                | 0.00                | 0.00                    |
| Mean number of non-acute institutional encounters           | 0.2                | 0.8                | 0.2                | 0.8                | 0.00                | 0.00                    |
| Mean number of other ambulatory encounters                  | 3.8                | 6.6                | 5.9                | 8.7                | -2.10               | -0.27                   |
| Mean number of filled prescriptions                         | 21.3               | 16.0               | 19.9               | 14.8               | 1.40                | 0.09                    |
| Mean number of generics                                     | 9.9                | 5.0                | 9.7                | 4.9                | 0.20                | 0.04                    |
| Mean number of drug classes                                 | 9.3                | 4.5                | 9.2                | 4.4                | 0.10                | 0.02                    |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1i. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Intracranial Hemorrhage Diagnosed in the Inpatient Primary Position in the Sentinel Distributed Database (SDD) between February 1, 2013 and August 31, 2017**

| Characteristic  | Apixaban                  |                           | Warfarin                  |                           | Covariate Balance          |                                |
|---|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------|
|   | Number of Patients        | Percent                   | Number of Patients        | Percent                   | Absolute Difference        | Standardized Difference        |
| Number of unique patients                                   | 231,099                   | 100.0%                    | 373,813                   | 100.0%                    | ---                        | ---                            |
| <b>Patient Characteristics</b>                              | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean age (years)  | 74.9                      | 9.5                       | 75.9                      | 9.6                       | -1.00                      | -0.10                          |
| Age (years)   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| 21-64   | 33,787                    | 14.6%                     | 43,687                    | 11.7%                     | 2.90                       | 0.09                           |
| 65-74   | 77,847                    | 33.7%                     | 120,595                   | 32.3%                     | 1.40                       | 0.03                           |
| 75-84   | 80,356                    | 34.8%                     | 140,846                   | 37.7%                     | -2.90                      | -0.06                          |
| 85-99   | 39,109                    | 16.9%                     | 68,685                    | 18.4%                     | -1.50                      | -0.04                          |
| Sex   |                           |                           |                           |                           |                            |                                |
| Female  | 112,034                   | 48.5%                     | 175,801                   | 47.0%                     | 1.50                       | 0.03                           |
| Male  | 119,063                   | 51.5%                     | 198,003                   | 53.0%                     | -1.50                      | -0.03                          |
| Other   | 2                         | 0.0%                      | 9                         | 0.0%                      | 0.00                       | ---                            |
| Year  |                           |                           |                           |                           |                            |                                |
| 2013  | 16,817                    | 7.3%                      | 126,845                   | 33.9%                     | -26.60                     | -0.70                          |
| 2014  | 58,984                    | 25.5%                     | 117,364                   | 31.4%                     | -5.90                      | -0.13                          |
| 2015  | 105,287                   | 45.6%                     | 98,964                    | 26.5%                     | 19.10                      | 0.41                           |
| 2016  | 33,998                    | 14.7%                     | 22,236                    | 5.9%                      | 8.80                       | 0.29                           |
| 2017  | 16,013                    | 6.9%                      | 8,404                     | 2.2%                      | 4.70                       | 0.23                           |
| <b>Recorded History of:</b>                                 | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.9                       | 2.7                       | 3.3                       | 2.9                       | -0.40                      | -0.14                          |
|   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Gastrointestinal hemorrhage, inpatient (primary)            | 953                       | 0.4%                      | 2,369                     | 0.6%                      | -0.20                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary)                | 254                       | 0.1%                      | 568                       | 0.2%                      | -0.10                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 803                       | 0.3%                      | 1,940                     | 0.5%                      | -0.20                      | -0.03                          |
| Kidney disease, any care setting                            | 44,006                    | 19.0%                     | 89,238                    | 23.9%                     | -4.90                      | -0.12                          |
| Ischemic stroke, inpatient (primary)                        | 9,575                     | 4.1%                      | 19,594                    | 5.2%                      | -1.10                      | -0.05                          |
| <b>Health Service Utilization Intensity:</b>                | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean number of ambulatory encounters                        | 11.9                      | 8.6                       | 12                        | 8.9                       | -0.10                      | -0.01                          |
| Mean number of emergency room encounters                    | 0.5                       | 0.9                       | 0.5                       | 1.0                       | 0.00                       | 0.00                           |
| Mean number of inpatient hospital encounters                | 0.6                       | 0.8                       | 0.6                       | 0.9                       | 0.00                       | 0.00                           |
| Mean number of non-acute institutional encounters           | 0.2                       | 0.6                       | 0.2                       | 0.7                       | 0.00                       | 0.00                           |
| Mean number of other ambulatory encounters                  | 4.5                       | 7.3                       | 6.5                       | 9.8                       | -2.00                      | -0.23                          |
| Mean number of filled prescriptions                         | 22.6                      | 17.0                      | 22.2                      | 17.0                      | 0.40                       | 0.02                           |
| Mean number of generics                                     | 10.2                      | 5.1                       | 10.1                      | 5.1                       | 0.10                       | 0.02                           |
| Mean number of drug classes                                 | 9.6                       | 4.5                       | 9.5                       | 4.5                       | 0.10                       | 0.02                           |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).



**Table 1j. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Ischemic Stroke in the Sentinel Distributed Database (SDD) between February 1, 2013 and September 30, 2015**

| Characteristic  | Apixaban           |                    | Warfarin           |                    | Covariate Balance   |                         |
|---|--------------------|--------------------|--------------------|--------------------|---------------------|-------------------------|
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Number of unique patients                                   | 150,788            | 100.0%             | 320,248            | 100.0%             | ---                 | ---                     |
| Patient Characteristics                                     | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean age (years)  | 75.9               | 9.1                | 76.1               | 9.5                | -0.20               | -0.02                   |
| Age (years)   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| 21-64   | 15,566             | 10.3%              | 34,504             | 10.8%              | -0.50               | -0.02                   |
| 65-74   | 52,351             | 34.7%              | 103,390            | 32.3%              | 2.40                | 0.05                    |
| 75-84   | 55,665             | 36.9%              | 122,264            | 38.2%              | -1.30               | -0.03                   |
| 85-99   | 27,206             | 18.0%              | 60,090             | 18.8%              | -0.80               | -0.02                   |
| Sex   |                    |                    |                    |                    |                     |                         |
| Female  | 75,541             | 50.1%              | 152,443            | 47.6%              | 2.50                | 0.05                    |
| Male  | 75,246             | 49.9%              | 167,797            | 52.4%              | -2.50               | -0.05                   |
| Other   | 1                  | 0.0%               | 8                  | 0.0%               | 0.00                | ---                     |
| Year  |                    |                    |                    |                    |                     |                         |
| 2013  | 16,816             | 11.2%              | 126,830            | 39.6%              | -28.40              | -0.69                   |
| 2014  | 58,974             | 39.1%              | 117,345            | 36.6%              | 2.50                | 0.05                    |
| 2015  | 74,998             | 49.7%              | 76,073             | 23.8%              | 25.90               | 0.56                    |
| Recorded History of:  | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.8                | 2.6                | 3.3                | 2.9                | -0.5                | -0.18                   |
|   | Number of Patients | Percent            | Number of Patients | Percent            | Absolute Difference | Standardized Difference |
| Gastrointestinal hemorrhage, inpatient (primary)            | 575                | 0.4%               | 1,999              | 0.6%               | -0.20               | -0.03                   |
| Intracranial hemorrhage, inpatient (primary)                | 164                | 0.1%               | 469                | 0.1%               | 0.00                | 0.00                    |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 518                | 0.3%               | 1,606              | 0.5%               | -0.20               | -0.03                   |
| Kidney disease, any care setting                            | 28,375             | 18.8%              | 75,076             | 23.4%              | -4.60               | -0.11                   |
| Ischemic stroke, inpatient (primary)                        | 6,064              | 4.0%               | 16,919             | 5.3%               | -1.30               | -0.06                   |
| Health Service Utilization Intensity:                       | Mean               | Standard Deviation | Mean               | Standard Deviation | Absolute Difference | Standardized Difference |
| Mean number of ambulatory encounters                        | 12.1               | 8.3                | 12.0               | 8.8                | 0.10                | 0.01                    |
| Mean number of emergency room encounters                    | 0.5                | 0.9                | 0.5                | 1.0                | 0.00                | 0.00                    |
| Mean number of inpatient hospital encounters                | 0.6                | 0.8                | 0.7                | 0.9                | -0.10               | -0.12                   |
| Mean number of non-acute institutional encounters           | 0.1                | 0.5                | 0.2                | 0.6                | -0.10               | -0.18                   |
| Mean number of other ambulatory encounters                  | 4.8                | 7.6                | 6.6                | 10.0               | -1.80               | -0.20                   |
| Mean number of filled prescriptions                         | 23.3               | 17.5               | 22.6               | 17.3               | 0.70                | 0.04                    |
| Mean number of generics                                     | 10.3               | 5.1                | 10.2               | 5.1                | 0.10                | 0.02                    |
| Mean number of drug classes                                 | 9.7                | 4.5                | 9.6                | 4.5                | 0.10                | 0.02                    |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 1k. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Ischemic Stroke in the Sentinel Distributed Database (SDD) between October 1, 2015 and August 31, 2017**

| Characteristic  | Apixaban                  |                           | Warfarin                  |                           | Covariate Balance          |                                |
|---|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------|
|   | Number of Patients        | Percent                   | Number of Patients        | Percent                   | Absolute Difference        | Standardized Difference        |
| Number of unique patients                                   | 82,312                    | 100.0%                    | 57,802                    | 100.0%                    | ---                        | ---                            |
| <b>Patient Characteristics</b>                              | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean age (years)  | 73                        | 10.4                      | 74.6                      | 10.1                      | -1.60                      | -0.16                          |
| Age (years)   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| 21-64   | 18,702                    | 22.7%                     | 9,801                     | 17.0%                     | 5.70                       | 0.14                           |
| 65-74   | 26,137                    | 31.8%                     | 18,315                    | 31.7%                     | 0.10                       | 0.00                           |
| 75-84   | 25,349                    | 30.8%                     | 20,251                    | 35.0%                     | -4.20                      | -0.09                          |
| 85-99   | 12,124                    | 14.7%                     | 9,435                     | 16.3%                     | -1.60                      | -0.04                          |
| Sex   |                           |                           |                           |                           |                            |                                |
| Female  | 37,294                    | 45.3%                     | 25,031                    | 43.3%                     | 2.00                       | 0.04                           |
| Male  | 45,017                    | 54.7%                     | 32,770                    | 56.7%                     | -2.00                      | -0.04                          |
| Other   | 1                         | 0.0%                      | 1                         | 0.0%                      | 0.00                       | ---                            |
| Year  |                           |                           |                           |                           |                            |                                |
| 2015  | 30,699                    | 37.3%                     | 24,482                    | 42.4%                     | -5.10                      | -0.10                          |
| 2016  | 35,104                    | 42.6%                     | 24,274                    | 42.0%                     | 0.60                       | 0.01                           |
| 2017  | 16,509                    | 20.1%                     | 9,046                     | 15.6%                     | 4.50                       | 0.12                           |
| <b>Recorded History of:</b>                                 | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 3.1                       | 2.7                       | 3.5                       | 2.9                       | -0.4                       | -0.14                          |
|   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Gastrointestinal hemorrhage, inpatient (primary)            | 387                       | 0.5%                      | 394                       | 0.7%                      | -0.20                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary)                | 91                        | 0.1%                      | 107                       | 0.2%                      | -0.10                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 285                       | 0.3%                      | 339                       | 0.6%                      | -0.30                      | -0.04                          |
| Kidney disease, any care setting                            | 16,059                    | 19.5%                     | 15,234                    | 26.4%                     | -6.90                      | -0.16                          |
| Ischemic stroke, inpatient (primary)                        | 3,506                     | 4.3%                      | 2,666                     | 4.6%                      | -0.30                      | -0.01                          |
| <b>Health Service Utilization Intensity:</b>                | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean number of ambulatory encounters                        | 11.7                      | 9.1                       | 11.5                      | 9.4                       | 0.20                       | 0.02                           |
| Mean number of emergency room encounters                    | 0.6                       | 1.0                       | 0.6                       | 1.1                       | 0.00                       | 0.00                           |
| Mean number of inpatient hospital encounters                | 0.6                       | 0.8                       | 0.6                       | 0.9                       | 0.00                       | 0.00                           |
| Mean number of non-acute institutional encounters           | 0.2                       | 0.8                       | 0.2                       | 0.8                       | 0.00                       | 0.00                           |
| Mean number of other ambulatory encounters                  | 3.8                       | 6.6                       | 5.9                       | 8.7                       | -2.10                      | -0.27                          |
| Mean number of filled prescriptions                         | 21.3                      | 16.0                      | 19.9                      | 14.8                      | 1.40                       | 0.09                           |
| Mean number of generics                                     | 9.9                       | 5.0                       | 9.7                       | 4.9                       | 0.20                       | 0.04                           |
| Mean number of drug classes                                 | 9.3                       | 4.5                       | 9.2                       | 4.4                       | 0.10                       | 0.02                           |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 11. Baseline Characteristics for Apixaban and Warfarin Users at Risk for Ischemic Stroke in the Sentinel Distributed Database (SDD) between February 1, 2013 and August 31, 2017**

| Characteristic  | Apixaban                  |                           | Warfarin                  |                           | Covariate Balance          |                                |
|---|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------|
|   | Number of Patients        | Percent                   | Number of Patients        | Percent                   | Absolute Difference        | Standardized Difference        |
| Number of unique patients                                   | 231,067                   | 100.0%                    | 373,756                   | 100.0%                    | ---                        | ---                            |
| <b>Patient Characteristics</b>                              | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean age (years)  | 74.9                      | 9.5                       | 75.9                      | 9.6                       | -1.00                      | -0.10                          |
| Age (years)   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| 21-64   | 33,784                    | 14.6%                     | 43,683                    | 11.7%                     | 2.90                       | 0.09                           |
| 65-74   | 77,839                    | 33.7%                     | 120,580                   | 32.3%                     | 1.40                       | 0.03                           |
| 75-84   | 80,342                    | 34.8%                     | 140,824                   | 37.7%                     | -2.90                      | -0.06                          |
| 85-99   | 39,102                    | 16.9%                     | 68,669                    | 18.4%                     | -1.50                      | -0.04                          |
| Sex   |                           |                           |                           |                           |                            |                                |
| Female  | 112,012                   | 48.5%                     | 175,774                   | 47.0%                     | 1.50                       | 0.03                           |
| Male  | 119,053                   | 51.5%                     | 197,973                   | 53.0%                     | -1.50                      | -0.03                          |
| Other   | 2                         | 0.0%                      | 9                         | 0.0%                      | 0.00                       | ---                            |
| Year  |                           |                           |                           |                           |                            |                                |
| 2013  | 16,816                    | 7.3%                      | 126,830                   | 33.9%                     | -26.60                     | -0.70                          |
| 2014  | 58,974                    | 25.5%                     | 117,345                   | 31.4%                     | -5.90                      | -0.13                          |
| 2015  | 105,271                   | 45.6%                     | 98,949                    | 26.5%                     | 19.10                      | 0.41                           |
| 2016  | 33,993                    | 14.7%                     | 22,229                    | 5.9%                      | 8.80                       | 0.29                           |
| 2017  | 16,013                    | 6.9%                      | 8,403                     | 2.2%                      | 4.70                       | 0.23                           |
| <b>Recorded History of:</b>                                 | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Charlson/Elixhauser combined comorbidity score <sup>1</sup> | 2.9                       | 2.7                       | 3.3                       | 2.9                       | -0.40                      | -0.14                          |
|   | <b>Number of Patients</b> | <b>Percent</b>            | <b>Number of Patients</b> | <b>Percent</b>            | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Gastrointestinal hemorrhage, inpatient (primary)            | 953                       | 0.4%                      | 2,369                     | 0.6%                      | -0.20                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary)                | 254                       | 0.1%                      | 569                       | 0.2%                      | -0.10                      | -0.03                          |
| Intracranial hemorrhage, inpatient (primary or secondary)   | 801                       | 0.3%                      | 1,938                     | 0.5%                      | -0.20                      | -0.03                          |
| Kidney disease, any care setting                            | 43,997                    | 19.0%                     | 89,222                    | 23.9%                     | -4.90                      | -0.12                          |
| Ischemic stroke, inpatient (primary)                        | 9,541                     | 4.1%                      | 19,536                    | 5.2%                      | -1.10                      | -0.05                          |
| <b>Health Service Utilization Intensity:</b>                | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Mean</b>               | <b>Standard Deviation</b> | <b>Absolute Difference</b> | <b>Standardized Difference</b> |
| Mean number of ambulatory encounters                        | 11.9                      | 8.6                       | 12.0                      | 8.9                       | -0.10                      | -0.01                          |
| Mean number of emergency room encounters                    | 0.5                       | 0.9                       | 0.5                       | 1.0                       | 0.00                       | 0.00                           |
| Mean number of inpatient hospital encounters                | 0.6                       | 0.8                       | 0.6                       | 0.9                       | 0.00                       | 0.00                           |
| Mean number of non-acute institutional encounters           | 0.2                       | 0.6                       | 0.2                       | 0.7                       | 0.00                       | 0.00                           |
| Mean number of other ambulatory encounters                  | 4.5                       | 7.3                       | 6.5                       | 9.8                       | -2.00                      | -0.23                          |
| Mean number of filled prescriptions                         | 22.6                      | 17.0                      | 22.2                      | 17.0                      | 0.40                       | 0.02                           |
| Mean number of generics                                     | 10.2                      | 5.1                       | 10.1                      | 5.1                       | 0.10                       | 0.02                           |
| Mean number of drug classes                                 | 9.6                       | 4.5                       | 9.5                       | 4.5                       | 0.10                       | 0.02                           |

<sup>1</sup>The Combined Comorbidity Raw Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (index date).

**Table 2. Summary of Incident Apixaban and Warfarin Users at Risk for Gastrointestinal Hemorrhage, Intracranial Hemorrhage, and Ischemic Stroke in the Sentinel Distributed Database between February 1, 2013 and August 31, 2017, by Exposure, Outcome, and Monitoring Period**

|  | <b>New Users</b> | <b>Person-Years at Risk</b> | <b>Average Person-Years at Risk</b> | <b>Total Number of Events</b> |
|--|------------------|-----------------------------|-------------------------------------|-------------------------------|
| <b>February 1, 2013 - August 31, 2017</b>                        |                  |                             |                                     |                               |
| <b>Gastrointestinal Hemorrhage (inpatient, primary)</b>          |                  |                             |                                     |                               |
| Apixaban   | 231,092          | 93,497.8                    | 0.40                                | 7,617                         |
| Warfarin   | 373,798          | 184,423.9                   | 0.49                                |                               |
| <b>Intracranial Hemorrhage (inpatient, primary or secondary)</b> |                  |                             |                                     |                               |
| Apixaban   | 231,096          | 93,713.4                    | 0.41                                | 3,069                         |
| Warfarin   | 373,809          | 185,667.4                   | 0.50                                |                               |
| <b>Intracranial Hemorrhage (inpatient, primary)</b>              |                  |                             |                                     |                               |
| Apixaban   | 231,099          | 93,733.9                    | 0.41                                | 2,327                         |
| Warfarin   | 373,813          | 185,818.2                   | 0.50                                |                               |
| <b>Ischemic Stroke (inpatient, primary)</b>                      |                  |                             |                                     |                               |
| Apixaban   | 231,067          | 93,578.3                    | 0.40                                | 3,566                         |
| Warfarin   | 373,756          | 185,155.8                   | 0.50                                |                               |
| <b>February 1, 2013 - September 30, 2015</b>                     |                  |                             |                                     |                               |
| <b>Gastrointestinal Hemorrhage (inpatient, primary)</b>          |                  |                             |                                     |                               |
| Apixaban   | 150,809          | 54,811.0                    | 0.36                                | 6,002                         |
| Warfarin   | 320,280          | 143,741.4                   | 0.45                                |                               |
| <b>Intracranial Hemorrhage (inpatient, primary or secondary)</b> |                  |                             |                                     |                               |
| Apixaban   | 150,810          | 54,926.7                    | 0.36                                | 2,347                         |
| Warfarin   | 320,290          | 144,658.3                   | 0.45                                |                               |
| <b>Intracranial Hemorrhage (inpatient, primary)</b>              |                  |                             |                                     |                               |
| Apixaban   | 150,812          | 54,939.5                    | 0.36                                | 1,768                         |
| Warfarin   | 320,293          | 144,758.4                   | 0.45                                |                               |
| <b>Ischemic Stroke (inpatient, primary)</b>                      |                  |                             |                                     |                               |
| Apixaban   | 150,788          | 54,861.2                    | 0.36                                | 2,807                         |
| Warfarin   | 320,248          | 144,264.8                   | 0.45                                |                               |
| <b>October 1, 2015 - August 31, 2017</b>                         |                  |                             |                                     |                               |
| <b>Gastrointestinal Hemorrhage (inpatient, primary)</b>          |                  |                             |                                     |                               |
| Apixaban   | 82,316           | 22,155.9                    | 0.27                                | 958                           |
| Warfarin   | 57,812           | 16,671.3                    | 0.29                                |                               |
| <b>Intracranial Hemorrhage (inpatient, primary or secondary)</b> |                  |                             |                                     |                               |
| Apixaban   | 82,319           | 22,196.9                    | 0.27                                | 372                           |
| Warfarin   | 57,813           | 16,740.6                    | 0.29                                |                               |
| <b>Intracranial Hemorrhage (inpatient, primary)</b>              |                  |                             |                                     |                               |
| Apixaban   | 82,320           | 22,199.7                    | 0.27                                | 263                           |
| Warfarin   | 57,814           | 16,748.6                    | 0.29                                |                               |
| <b>Ischemic Stroke (inpatient, primary)</b>                      |                  |                             |                                     |                               |
| Apixaban   | 82,312           | 22,168.9                    | 0.27                                | 456                           |
| Warfarin   | 57,802           | 16,725.6                    | 0.29                                |                               |

**Appendix A. Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date (February 1, 2018)**

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| <b>DP ID</b> | <b>DP Start Date*</b> | <b>DP End Date*</b> |
|--------------|-----------------------|---------------------|
| DP01         | 02/01/2013            | 08/31/2017          |
| DP02         | 02/01/2013            | 08/25/2017          |
| DP03         | 02/01/2013            | 07/31/2017          |
| DP04         | 02/01/2013            | 07/31/2017          |
| DP05         | 02/01/2013            | 07/31/2017          |
| DP06         | 02/01/2013            | 07/31/2017          |
| DP07         | 02/01/2013            | 07/31/2017          |
| DP08         | 02/01/2013            | 06/30/2017          |
| DP09         | 02/01/2013            | 06/30/2017          |
| DP10         | 02/01/2013            | 04/30/2017          |
| DP11         | 02/01/2013            | 03/31/2017          |
| DP12         | 02/01/2013            | 01/31/2017          |
| DP13         | 02/01/2013            | 12/31/2016          |
| DP14         | 02/01/2013            | 06/30/2016          |
| DP15         | 02/01/2013            | 05/31/2015          |
| DP16         | 02/01/2013            | 10/31/2014          |
| DP17         | 02/01/2013            | 12/31/2015          |

\*The start and end dates are based on the minimum and maximum dates within each DP. The month with the maximum date must have at least 80% of the number of records in the previous month.

**Appendix B. List of Generic and Brand Drug Names Used to Define Exposures and Incidence Criteria in this Request**

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| <b>Generic Name</b>           | <b>Brand Name</b> |
|-------------------------------|-------------------|
| APIXABAN                      | Eliquis           |
| DABIGATRAN ETEXILATE MESYLATE | Pradaxa           |
| EDOXABAN TOSYLATE             | Savaysa           |
| RIVAROXABAN                   | Xarelto           |
| WARFARIN SODIUM               | Coumadin          |
| WARFARIN SODIUM               | Warfarin          |
| WARFARIN SODIUM               | Jantoven          |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| Code                               | Description  | Code Type |
|------------------------------------|--|-----------|
| <b>Gastrointestinal Hemorrhage</b> |  |           |
| 455.2                              | Internal hemorrhoids with other complication   | ICD-9-CM  |
| 455.5                              | External hemorrhoids with other complication   | ICD-9-CM  |
| 456.0                              | Esophageal varices with bleeding   | ICD-9-CM  |
| 456.20                             | Esophageal varices with bleeding in diseases classified elsewhere                                    | ICD-9-CM  |
| 530.7                              | Gastroesophageal laceration-hemorrhage syndrome  | ICD-9-CM  |
| 530.82                             | Esophageal hemorrhage  | ICD-9-CM  |
| 531.0                              | Acute gastric ulcer with hemorrhage  | ICD-9-CM  |
| 531.00                             | Acute gastric ulcer with hemorrhage, without mention of obstruction                                  | ICD-9-CM  |
| 531.01                             | Acute gastric ulcer with hemorrhage and obstruction  | ICD-9-CM  |
| 531.1                              | Acute gastric ulcer with perforation   | ICD-9-CM  |
| 531.10                             | Acute gastric ulcer with perforation, without mention of obstruction                                 | ICD-9-CM  |
| 531.11                             | Acute gastric ulcer with perforation and obstruction   | ICD-9-CM  |
| 531.2                              | Acute gastric ulcer with hemorrhage and perforation  | ICD-9-CM  |
| 531.20                             | Acute gastric ulcer with hemorrhage and perforation, without mention of obstruction                  | ICD-9-CM  |
| 531.21                             | Acute gastric ulcer with hemorrhage, perforation, and obstruction                                    | ICD-9-CM  |
| 531.3                              | Acute gastric ulcer without mention of hemorrhage or perforation                                     | ICD-9-CM  |
| 531.30                             | Acute gastric ulcer without mention of hemorrhage, perforation, or obstruction                       | ICD-9-CM  |
| 531.31                             | Acute gastric ulcer without mention of hemorrhage or perforation, with obstruction                   | ICD-9-CM  |
| 531.4                              | Chronic or unspecified gastric ulcer with hemorrhage   | ICD-9-CM  |
| 531.40                             | Chronic or unspecified gastric ulcer with hemorrhage, without mention of obstruction                 | ICD-9-CM  |
| 531.41                             | Chronic or unspecified gastric ulcer with hemorrhage and obstruction                                 | ICD-9-CM  |
| 531.5                              | Chronic or unspecified gastric ulcer with perforation  | ICD-9-CM  |
| 531.50                             | Chronic or unspecified gastric ulcer with perforation, without mention of obstruction                | ICD-9-CM  |
| 531.51                             | Chronic or unspecified gastric ulcer with perforation and obstruction                                | ICD-9-CM  |
| 531.6                              | Chronic or unspecified gastric ulcer with hemorrhage and perforation                                 | ICD-9-CM  |
| 531.60                             | Chronic or unspecified gastric ulcer with hemorrhage and perforation, without mention of obstruction | ICD-9-CM  |
| 531.61                             | Chronic or unspecified gastric ulcer with hemorrhage, perforation, and obstruction                   | ICD-9-CM  |
| 532.0                              | Acute duodenal ulcer with hemorrhage   | ICD-9-CM  |
| 532.00                             | Acute duodenal ulcer with hemorrhage, without mention of obstruction                                 | ICD-9-CM  |
| 532.01                             | Acute duodenal ulcer with hemorrhage and obstruction   | ICD-9-CM  |
| 532.1                              | Acute duodenal ulcer with perforation  | ICD-9-CM  |
| 532.10                             | Acute duodenal ulcer with perforation, without mention of obstruction                                | ICD-9-CM  |
| 532.11                             | Acute duodenal ulcer with perforation and obstruction  | ICD-9-CM  |
| 532.2                              | Acute duodenal ulcer with hemorrhage and perforation   | ICD-9-CM  |
| 532.20                             | Acute duodenal ulcer with hemorrhage and perforation, without mention of obstruction                 | ICD-9-CM  |
| 532.21                             | Acute duodenal ulcer with hemorrhage, perforation, and obstruction                                   | ICD-9-CM  |
| 532.3                              | Acute duodenal ulcer without mention of hemorrhage or perforation                                    | ICD-9-CM  |
| 532.30                             | Acute duodenal ulcer without mention of hemorrhage, perforation, or obstruction                      | ICD-9-CM  |
| 532.31                             | Acute duodenal ulcer without mention of hemorrhage or perforation, with obstruction                  | ICD-9-CM  |
| 532.4                              | Chronic or unspecified duodenal ulcer with hemorrhage  | ICD-9-CM  |
| 532.40                             | Duodenal ulcer, chronic or unspecified, with hemorrhage, without mention of obstruction              | ICD-9-CM  |
| 532.41                             | Chronic or unspecified duodenal ulcer with hemorrhage and obstruction                                | ICD-9-CM  |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 532.5       | Chronic or unspecified duodenal ulcer with perforation   | ICD-9-CM         |
| 532.50      | Chronic or unspecified duodenal ulcer with perforation, without mention of obstruction                                 | ICD-9-CM         |
| 532.51      | Chronic or unspecified duodenal ulcer with perforation and obstruction   | ICD-9-CM         |
| 532.6       | Chronic or unspecified duodenal ulcer with hemorrhage and perforation  | ICD-9-CM         |
| 532.60      | Chronic or unspecified duodenal ulcer with hemorrhage and perforation, without mention of obstruction                  | ICD-9-CM         |
| 532.61      | Chronic or unspecified duodenal ulcer with hemorrhage, perforation, and obstruction                                    | ICD-9-CM         |
| 533.0       | Acute peptic ulcer, unspecified site, with hemorrhage  | ICD-9-CM         |
| 533.00      | Acute peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction                                  | ICD-9-CM         |
| 533.01      | Acute peptic ulcer, unspecified site, with hemorrhage and obstruction  | ICD-9-CM         |
| 533.1       | Acute peptic ulcer, unspecified site, with perforation   | ICD-9-CM         |
| 533.10      | Acute peptic ulcer, unspecified site, with perforation, without mention of obstruction                                 | ICD-9-CM         |
| 533.11      | Acute peptic ulcer, unspecified site, with perforation and obstruction   | ICD-9-CM         |
| 533.2       | Acute peptic ulcer, unspecified site, with hemorrhage and perforation  | ICD-9-CM         |
| 533.20      | Acute peptic ulcer, unspecified site, with hemorrhage and perforation, without mention of obstruction                  | ICD-9-CM         |
| 533.21      | Acute peptic ulcer, unspecified site, with hemorrhage, perforation, and obstruction                                    | ICD-9-CM         |
| 533.3       | Acute peptic ulcer, unspecified site, without mention of hemorrhage and perforation                                    | ICD-9-CM         |
| 533.30      | Acute peptic ulcer, unspecified site, without mention of hemorrhage, perforation, or obstruction                       | ICD-9-CM         |
| 533.31      | Acute peptic ulcer, unspecified site, without mention of hemorrhage and perforation, with obstruction                  | ICD-9-CM         |
| 533.4       | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage   | ICD-9-CM         |
| 533.40      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction                 | ICD-9-CM         |
| 533.41      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and obstruction                                 | ICD-9-CM         |
| 533.5       | Chronic or unspecified peptic ulcer, unspecified site, with perforation  | ICD-9-CM         |
| 533.50      | Chronic or unspecified peptic ulcer, unspecified site, with perforation, without mention of obstruction                | ICD-9-CM         |
| 533.51      | Chronic or unspecified peptic ulcer, unspecified site, with perforation and obstruction                                | ICD-9-CM         |
| 533.6       | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and perforation                                 | ICD-9-CM         |
| 533.60      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and perforation, without mention of obstruction | ICD-9-CM         |
| 533.61      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, perforation, and obstruction                   | ICD-9-CM         |
| 534.0       | Acute gastrojejunal ulcer with hemorrhage  | ICD-9-CM         |
| 534.00      | Acute gastrojejunal ulcer with hemorrhage, without mention of obstruction  | ICD-9-CM         |
| 534.01      | Acute gastrojejunal ulcer, with hemorrhage and obstruction   | ICD-9-CM         |
| 534.1       | Acute gastrojejunal ulcer with perforation   | ICD-9-CM         |
| 534.10      | Acute gastrojejunal ulcer with perforation, without mention of obstruction   | ICD-9-CM         |
| 534.11      | Acute gastrojejunal ulcer with perforation and obstruction   | ICD-9-CM         |
| 534.2       | Acute gastrojejunal ulcer with hemorrhage and perforation  | ICD-9-CM         |
| 534.20      | Acute gastrojejunal ulcer with hemorrhage and perforation, without mention of obstruction                              | ICD-9-CM         |
| 534.21      | Acute gastrojejunal ulcer with hemorrhage, perforation, and obstruction  | ICD-9-CM         |
| 534.3       | Acute gastrojejunal ulcer without mention of hemorrhage or perforation   | ICD-9-CM         |
| 534.30      | Acute gastrojejunal ulcer without mention of hemorrhage, perforation, or obstruction                                   | ICD-9-CM         |
| 534.31      | Acute gastrojejunal ulcer without mention of hemorrhage or perforation, with obstruction                               | ICD-9-CM         |
| 534.4       | Chronic or unspecified gastrojejunal ulcer with hemorrhage   | ICD-9-CM         |
| 534.40      | Chronic or unspecified gastrojejunal ulcer with hemorrhage, without mention of obstruction                             | ICD-9-CM         |
| 534.41      | Chronic or unspecified gastrojejunal ulcer, with hemorrhage and obstruction  | ICD-9-CM         |



**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 534.5       | Chronic or unspecified gastrojejunal ulcer with perforation                                    | ICD-9-CM         |
| 534.50      | Chronic or unspecified gastrojejunal ulcer with perforation, without mention of obstruction    | ICD-9-CM         |
| 534.51      | Chronic or unspecified gastrojejunal ulcer with perforation and obstruction                    | ICD-9-CM         |
| 534.6       | Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation                     | ICD-9-CM         |
| 534.60      | Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation, without mention of | ICD-9-CM         |
| 534.61      | Chronic or unspecified gastrojejunal ulcer with hemorrhage, perforation, and obstruction       | ICD-9-CM         |
| 535.01      | Acute gastritis with hemorrhage  | ICD-9-CM         |
| 535.11      | Atrophic gastritis with hemorrhage   | ICD-9-CM         |
| 535.21      | Gastric mucosal hypertrophy with hemorrhage  | ICD-9-CM         |
| 535.31      | Alcoholic gastritis with hemorrhage  | ICD-9-CM         |
| 535.41      | Other specified gastritis with hemorrhage  | ICD-9-CM         |
| 535.51      | Unspecified gastritis and gastroduodenitis with hemorrhage                                     | ICD-9-CM         |
| 535.61      | Duodenitis with hemorrhage   | ICD-9-CM         |
| 537.83      | Angiodysplasia of stomach and duodenum with hemorrhage   | ICD-9-CM         |
| 562.02      | Diverticulosis of small intestine with hemorrhage  | ICD-9-CM         |
| 562.03      | Diverticulitis of small intestine with hemorrhage  | ICD-9-CM         |
| 562.12      | Diverticulosis of colon with hemorrhage  | ICD-9-CM         |
| 562.13      | Diverticulitis of colon with hemorrhage  | ICD-9-CM         |
| 568.81      | Hemoperitoneum (nontraumatic)  | ICD-9-CM         |
| 569.3       | Hemorrhage of rectum and anus  | ICD-9-CM         |
| 569.85      | Angiodysplasia of intestine with hemorrhage  | ICD-9-CM         |
| 578.0       | Hematemesis  | ICD-9-CM         |
| 578.1       | Blood in stool   | ICD-9-CM         |
| 578.9       | Hemorrhage of gastrointestinal tract, unspecified  | ICD-9-CM         |
| I85.01      | Esophageal varices with bleeding   | ICD-10-CM        |
| I85.11      | Secondary esophageal varices with bleeding   | ICD-10-CM        |
| K22.6       | Gastro-esophageal laceration-hemorrhage syndrome   | ICD-10-CM        |
| K22.8       | Other specified diseases of esophagus  | ICD-10-CM        |
| K25.0       | Acute gastric ulcer with hemorrhage  | ICD-10-CM        |
| K25.1       | Acute gastric ulcer with perforation   | ICD-10-CM        |
| K25.2       | Acute gastric ulcer with both hemorrhage and perforation                                       | ICD-10-CM        |
| K25.3       | Acute gastric ulcer without hemorrhage or perforation  | ICD-10-CM        |
| K25.4       | Chronic or unspecified gastric ulcer with hemorrhage   | ICD-10-CM        |
| K25.5       | Chronic or unspecified gastric ulcer with perforation  | ICD-10-CM        |
| K25.6       | Chronic or unspecified gastric ulcer with both hemorrhage and perforation                      | ICD-10-CM        |
| K26.0       | Acute duodenal ulcer with hemorrhage   | ICD-10-CM        |
| K26.1       | Acute duodenal ulcer with perforation  | ICD-10-CM        |
| K26.2       | Acute duodenal ulcer with both hemorrhage and perforation                                      | ICD-10-CM        |
| K26.3       | Acute duodenal ulcer without hemorrhage or perforation   | ICD-10-CM        |
| K26.4       | Chronic or unspecified duodenal ulcer with hemorrhage  | ICD-10-CM        |
| K26.5       | Chronic or unspecified duodenal ulcer with perforation   | ICD-10-CM        |
| K26.6       | Chronic or unspecified duodenal ulcer with both hemorrhage and perforation                     | ICD-10-CM        |
| K27.0       | Acute peptic ulcer, site unspecified, with hemorrhage  | ICD-10-CM        |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| K27.1       | Acute peptic ulcer, site unspecified, with perforation  | ICD-10-CM        |
| K27.2       | Acute peptic ulcer, site unspecified, with both hemorrhage and perforation                    | ICD-10-CM        |
| K27.3       | Acute peptic ulcer, site unspecified, without hemorrhage or perforation                       | ICD-10-CM        |
| K27.4       | Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage                        | ICD-10-CM        |
| K27.5       | Chronic or unspecified peptic ulcer, site unspecified, with perforation                       | ICD-10-CM        |
| K27.6       | Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation   | ICD-10-CM        |
| K28.0       | Acute gastrojejunal ulcer with hemorrhage   | ICD-10-CM        |
| K28.1       | Acute gastrojejunal ulcer with perforation  | ICD-10-CM        |
| K28.2       | Acute gastrojejunal ulcer with both hemorrhage and perforation                                | ICD-10-CM        |
| K28.3       | Acute gastrojejunal ulcer without hemorrhage or perforation                                   | ICD-10-CM        |
| K28.4       | Chronic or unspecified gastrojejunal ulcer with hemorrhage                                    | ICD-10-CM        |
| K28.5       | Chronic or unspecified gastrojejunal ulcer with perforation                                   | ICD-10-CM        |
| K28.6       | Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation               | ICD-10-CM        |
| K29.01      | Acute gastritis with bleeding   | ICD-10-CM        |
| K29.21      | Alcoholic gastritis with bleeding   | ICD-10-CM        |
| K29.31      | Chronic superficial gastritis with bleeding   | ICD-10-CM        |
| K29.41      | Chronic atrophic gastritis with bleeding  | ICD-10-CM        |
| K29.51      | Unspecified chronic gastritis with bleeding   | ICD-10-CM        |
| K29.61      | Other gastritis with bleeding   | ICD-10-CM        |
| K29.71      | Gastritis, unspecified, with bleeding   | ICD-10-CM        |
| K29.81      | Duodenitis with bleeding  | ICD-10-CM        |
| K29.91      | Gastroduodenitis, unspecified, with bleeding  | ICD-10-CM        |
| K31.811     | Angiodysplasia of stomach and duodenum with bleeding  | ICD-10-CM        |
| K55.21      | Angiodysplasia of colon with hemorrhage   | ICD-10-CM        |
| K56.60      | Unspecified intestinal obstruction  | ICD-10-CM        |
| K57.01      | Diverticulitis of small intestine with perforation and abscess with bleeding                  | ICD-10-CM        |
| K57.11      | Diverticulosis of small intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.13      | Diverticulitis of small intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.21      | Diverticulitis of large intestine with perforation and abscess with bleeding                  | ICD-10-CM        |
| K57.31      | Diverticulosis of large intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.33      | Diverticulitis of large intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.41      | Diverticulitis of both small and large intestine with perforation and abscess with bleeding   | ICD-10-CM        |
| K57.51      | Diverticulosis of both small and large intestine without perforation or abscess with bleeding | ICD-10-CM        |
| K57.53      | Diverticulitis of both small and large intestine without perforation or abscess with bleeding | ICD-10-CM        |
| K57.81      | Diverticulitis of intestine, part unspecified, with perforation and abscess with bleeding     | ICD-10-CM        |
| K57.91      | Diverticulosis of intestine, part unspecified, without perforation or abscess with bleeding   | ICD-10-CM        |
| K57.93      | Diverticulitis of intestine, part unspecified, without perforation or abscess with bleeding   | ICD-10-CM        |
| K62.5       | Hemorrhage of anus and rectum   | ICD-10-CM        |
| K66.1       | Hemoperitoneum  | ICD-10-CM        |
| K92.0       | Hematemesis   | ICD-10-CM        |
| K92.1       | Melena  | ICD-10-CM        |
| K92.2       | Gastrointestinal hemorrhage, unspecified  | ICD-10-CM        |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| Code                           | Description  | Code Type |
|--------------------------------|--|-----------|
| <b>Intracranial Hemorrhage</b> |  |           |
| 430                            | Subarachnoid hemorrhage  | ICD-9-CM  |
| 431                            | Intracerebral hemorrhage   | ICD-9-CM  |
| 432                            | Other and unspecified intracranial hemorrhage  | ICD-9-CM  |
| 432.0                          | Nontraumatic extradural hemorrhage   | ICD-9-CM  |
| 432.1                          | Subdural hemorrhage  | ICD-9-CM  |
| 432.9                          | Unspecified intracranial hemorrhage  | ICD-9-CM  |
| 852.0                          | Subarachnoid hemorrhage following injury without mention of open intracranial wound  | ICD-9-CM  |
| 852.00                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM  |
| 852.01                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM  |
| 852.02                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness   | ICD-9-CM  |
| 852.03                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM  |
| 852.04                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level      | ICD-9-CM  |
| 852.05                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level | ICD-9-CM  |
| 852.06                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM  |
| 852.09                         | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM  |
| 852.2                          | Subdural hemorrhage following injury without mention of open intracranial wound  | ICD-9-CM  |
| 852.20                         | Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM  |
| 852.21                         | Subdural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM  |
| 852.22                         | Subdural hemorrhage following injury, without mention of open intracranial wound, brief (less than one hour) loss of consciousness   | ICD-9-CM  |
| 852.23                         | Subdural hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM  |
| 852.24                         | Subdural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level          | ICD-9-CM  |
| 852.25                         | Subdural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level     | ICD-9-CM  |
| 852.26                         | Subdural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM  |
| 852.29                         | Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM  |
| 852.4                          | Extradural hemorrhage following injury without mention of open intracranial wound  | ICD-9-CM  |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 852.40      | Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM         |
| 852.41      | Extradural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM         |
| 852.42      | Extradural hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness   | ICD-9-CM         |
| 852.43      | Extradural hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM         |
| 852.44      | Extradural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level                              | ICD-9-CM         |
| 852.45      | Extradural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level                         | ICD-9-CM         |
| 852.46      | Extradural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM         |
| 852.49      | Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM         |
| 853.0       | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound   | ICD-9-CM         |
| 853.00      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM         |
| 853.01      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM         |
| 853.02      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness   | ICD-9-CM         |
| 853.03      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM         |
| 853.04      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to preexisting conscious level       | ICD-9-CM         |
| 853.05      | Other and unspecified intracranial hemorrhage following injury. Without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level | ICD-9-CM         |
| 853.06      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM         |
| 853.09      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM         |
| 160.00      | Nontraumatic subarachnoid hemorrhage from unspecified carotid siphon and bifurcation   | ICD-10-CM        |
| 160.01      | Nontraumatic subarachnoid hemorrhage from right carotid siphon and bifurcation   | ICD-10-CM        |
| 160.02      | Nontraumatic subarachnoid hemorrhage from left carotid siphon and bifurcation  | ICD-10-CM        |
| 160.10      | Nontraumatic subarachnoid hemorrhage from unspecified middle cerebral artery   | ICD-10-CM        |
| 160.11      | Nontraumatic subarachnoid hemorrhage from right middle cerebral artery   | ICD-10-CM        |
| 160.12      | Nontraumatic subarachnoid hemorrhage from left middle cerebral artery  | ICD-10-CM        |
| 160.2       | Nontraumatic subarachnoid hemorrhage from anterior communicating artery  | ICD-10-CM        |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| I60.30      | Nontraumatic subarachnoid hemorrhage from unspecified posterior communicating artery   | ICD-10-CM        |
| I60.31      | Nontraumatic subarachnoid hemorrhage from right posterior communicating artery   | ICD-10-CM        |
| I60.32      | Nontraumatic subarachnoid hemorrhage from left posterior communicating artery  | ICD-10-CM        |
| I60.4       | Nontraumatic subarachnoid hemorrhage from basilar artery   | ICD-10-CM        |
| I60.50      | Nontraumatic subarachnoid hemorrhage from unspecified vertebral artery   | ICD-10-CM        |
| I60.51      | Nontraumatic subarachnoid hemorrhage from right vertebral artery   | ICD-10-CM        |
| I60.52      | Nontraumatic subarachnoid hemorrhage from left vertebral artery  | ICD-10-CM        |
| I60.6       | Nontraumatic subarachnoid hemorrhage from other intracranial arteries  | ICD-10-CM        |
| I60.7       | Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery  | ICD-10-CM        |
| I60.8       | Other nontraumatic subarachnoid hemorrhage   | ICD-10-CM        |
| I60.9       | Nontraumatic subarachnoid hemorrhage, unspecified  | ICD-10-CM        |
| I61.0       | Nontraumatic intracerebral hemorrhage in hemisphere, subcortical   | ICD-10-CM        |
| I61.1       | Nontraumatic intracerebral hemorrhage in hemisphere, cortical  | ICD-10-CM        |
| I61.2       | Nontraumatic intracerebral hemorrhage in hemisphere, unspecified   | ICD-10-CM        |
| I61.3       | Nontraumatic intracerebral hemorrhage in brain stem  | ICD-10-CM        |
| I61.4       | Nontraumatic intracerebral hemorrhage in cerebellum  | ICD-10-CM        |
| I61.5       | Nontraumatic intracerebral hemorrhage, intraventricular  | ICD-10-CM        |
| I61.6       | Nontraumatic intracerebral hemorrhage, multiple localized  | ICD-10-CM        |
| I61.8       | Other nontraumatic intracerebral hemorrhage  | ICD-10-CM        |
| I61.9       | Nontraumatic intracerebral hemorrhage, unspecified   | ICD-10-CM        |
| I62.00      | Nontraumatic subdural hemorrhage, unspecified  | ICD-10-CM        |
| I62.01      | Nontraumatic acute subdural hemorrhage   | ICD-10-CM        |
| I62.02      | Nontraumatic subacute subdural hemorrhage  | ICD-10-CM        |
| I62.03      | Nontraumatic chronic subdural hemorrhage   | ICD-10-CM        |
| I62.1       | Nontraumatic extradural hemorrhage   | ICD-10-CM        |
| I62.9       | Nontraumatic intracranial hemorrhage, unspecified  | ICD-10-CM        |
| S06.340A    | Traumatic hemorrhage of right cerebrum without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.341A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.342A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 31 minutes to 59 minutes, initial encounter   | ICD-10-CM        |
| S06.343A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 1 hours to 5 hours 59 minutes, initial encounter  | ICD-10-CM        |
| S06.344A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.345A    | Traumatic hemorrhage of right cerebrum with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                           | ICD-10-CM        |
| S06.346A    | Traumatic hemorrhage of right cerebrum with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter | ICD-10-CM        |
| S06.347A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter             | ICD-10-CM        |
| S06.348A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter              | ICD-10-CM        |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| S06.349A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.350A    | Traumatic hemorrhage of left cerebrum without loss of consciousness, initial encounter   | ICD-10-CM        |
| S06.351A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 30 minutes or less, initial encounter  | ICD-10-CM        |
| S06.352A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 31 minutes to 59 minutes, initial encounter  | ICD-10-CM        |
| S06.353A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 1 hours to 5 hours 59 minutes, initial encounter   | ICD-10-CM        |
| S06.354A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 6 hours to 24 hours, initial encounter   | ICD-10-CM        |
| S06.355A    | Traumatic hemorrhage of left cerebrum with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                                    | ICD-10-CM        |
| S06.356A    | Traumatic hemorrhage of left cerebrum with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter          | ICD-10-CM        |
| S06.357A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter                      | ICD-10-CM        |
| S06.358A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter                       | ICD-10-CM        |
| S06.359A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of unspecified duration, initial encounter  | ICD-10-CM        |
| S06.360A    | Traumatic hemorrhage of cerebrum, unspecified, without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.361A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.362A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 31 minutes to 59 minutes, initial encounter   | ICD-10-CM        |
| S06.363A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 1 hours to 5 hours 59 minutes, initial encounter  | ICD-10-CM        |
| S06.364A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.365A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                           | ICD-10-CM        |
| S06.366A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter | ICD-10-CM        |
| S06.367A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter             | ICD-10-CM        |
| S06.368A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter              | ICD-10-CM        |
| S06.369A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.4X0A    | Epidural hemorrhage without loss of consciousness, initial encounter   | ICD-10-CM        |
| S06.4X1A    | Epidural hemorrhage with loss of consciousness of 30 minutes or less, initial encounter  | ICD-10-CM        |
| S06.4X2A    | Epidural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter  | ICD-10-CM        |
| S06.4X3A    | Epidural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter  | ICD-10-CM        |
| S06.4X4A    | Epidural hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter   | ICD-10-CM        |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b>            | <b>Description</b>  | <b>Code Type</b> |
|------------------------|---|------------------|
| S06.4X5A               | Epidural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter   | ICD-10-CM        |
| S06.4X6A               | Epidural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter               | ICD-10-CM        |
| S06.4X7A               | Epidural hemorrhage with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter                           | ICD-10-CM        |
| S06.4X8A               | Epidural hemorrhage with loss of consciousness of any duration with death due to other causes prior to regaining consciousness, initial encounter                           | ICD-10-CM        |
| S06.4X9A               | Epidural hemorrhage with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.5X0A               | Traumatic subdural hemorrhage without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.5X1A               | Traumatic subdural hemorrhage with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.5X2A               | Traumatic subdural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter   | ICD-10-CM        |
| S06.5X3A               | Traumatic subdural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial   | ICD-10-CM        |
| S06.5X4A               | Traumatic subdural hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.5X5A               | Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                               | ICD-10-CM        |
| S06.5X6A               | Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter     | ICD-10-CM        |
| S06.5X7A               | Traumatic subdural hemorrhage with loss of consciousness of any duration with death due to brain injury before regaining consciousness, initial encounter                   | ICD-10-CM        |
| S06.5X8A               | Traumatic subdural hemorrhage with loss of consciousness of any duration with death due to other cause before regaining consciousness, initial encounter                    | ICD-10-CM        |
| S06.5X9A               | Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.6X0A               | Traumatic subarachnoid hemorrhage without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.6X1A               | Traumatic subarachnoid hemorrhage with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.6X2A               | Traumatic subarachnoid hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial   | ICD-10-CM        |
| S06.6X3A               | Traumatic subarachnoid hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter   | ICD-10-CM        |
| S06.6X4A               | Traumatic subarachnoid hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.6X5A               | Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                           | ICD-10-CM        |
| S06.6X6A               | Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter | ICD-10-CM        |
| S06.6X7A               | Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter             | ICD-10-CM        |
| S06.6X8A               | Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter              | ICD-10-CM        |
| S06.6X9A               | Traumatic subarachnoid hemorrhage with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| <b>Ischemic Stroke</b> |   |                  |
| 433.01                 | Occlusion and stenosis of basilar artery with cerebral infarction   | ICD-9-CM         |
| 433.11                 | Occlusion and stenosis of carotid artery with cerebral infarction   | ICD-9-CM         |
| 433.21                 | Occlusion and stenosis of vertebral artery with cerebral infarction   | ICD-9-CM         |
| 433.31                 | Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarction  | ICD-9-CM         |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 433.81      | Occlusion and stenosis of other specified precerebral artery with cerebral infarction            | ICD-9-CM         |
| 433.91      | Occlusion and stenosis of unspecified precerebral artery with cerebral infarction                | ICD-9-CM         |
| 434.01      | Cerebral thrombosis with cerebral infarction   | ICD-9-CM         |
| 434.11      | Cerebral embolism with cerebral infarction   | ICD-9-CM         |
| 434.91      | Unspecified cerebral artery occlusion with cerebral infarction                                   | ICD-9-CM         |
| 436         | Acute, but ill-defined, cerebrovascular disease  | ICD-9-CM         |
| I63.22      | Cerebral infarction due to unspecified occlusion or stenosis of basilar arteries                 | ICD-10-CM        |
| I63.139     | Cerebral infarction due to embolism of unspecified carotid artery                                | ICD-10-CM        |
| I63.239     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid arteries     | ICD-10-CM        |
| I63.019     | Cerebral infarction due to thrombosis of unspecified vertebral artery                            | ICD-10-CM        |
| I63.119     | Cerebral infarction due to embolism of unspecified vertebral artery                              | ICD-10-CM        |
| I63.219     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified vertebral arteries   | ICD-10-CM        |
| I63.59      | Cerebral infarction due to unspecified occlusion or stenosis of other cerebral artery            | ICD-10-CM        |
| I63.20      | Cerebral infarction due to unspecified occlusion or stenosis of unspecified precerebral arteries | ICD-10-CM        |
| I63.30      | Cerebral infarction due to thrombosis of unspecified cerebral artery                             | ICD-10-CM        |
| I63.40      | Cerebral infarction due to embolism of unspecified cerebral artery                               | ICD-10-CM        |
| I63.50      | Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral artery      | ICD-10-CM        |
| I67.89      | Other cerebrovascular disease  | ICD-10-CM        |
| I63.00      | Cerebral infarction due to thrombosis of unspecified precerebral artery                          | ICD-10-CM        |
| I63.011     | Cerebral infarction due to thrombosis of right vertebral artery                                  | ICD-10-CM        |
| I63.012     | Cerebral infarction due to thrombosis of left vertebral artery                                   | ICD-10-CM        |
| I63.013     | Cerebral infarction due to thrombosis of bilateral vertebral arteries                            | ICD-10-CM        |
| I63.02      | Cerebral infarction due to thrombosis of basilar artery  | ICD-10-CM        |
| I63.031     | Cerebral infarction due to thrombosis of right carotid artery                                    | ICD-10-CM        |
| I63.032     | Cerebral infarction due to thrombosis of left carotid artery                                     | ICD-10-CM        |
| I63.033     | Cerebral infarction due to thrombosis of bilateral carotid arteries                              | ICD-10-CM        |
| I63.039     | Cerebral infarction due to thrombosis of unspecified carotid artery                              | ICD-10-CM        |
| I63.09      | Cerebral infarction due to thrombosis of other precerebral artery                                | ICD-10-CM        |
| I63.10      | Cerebral infarction due to embolism of unspecified precerebral artery                            | ICD-10-CM        |
| I63.111     | Cerebral infarction due to embolism of right vertebral artery                                    | ICD-10-CM        |
| I63.112     | Cerebral infarction due to embolism of left vertebral artery                                     | ICD-10-CM        |
| I63.113     | Cerebral infarction due to embolism of bilateral vertebral arteries                              | ICD-10-CM        |
| I63.12      | Cerebral infarction due to embolism of basilar artery  | ICD-10-CM        |
| I63.131     | Cerebral infarction due to embolism of right carotid artery                                      | ICD-10-CM        |
| I63.132     | Cerebral infarction due to embolism of left carotid artery                                       | ICD-10-CM        |
| I63.133     | Cerebral infarction due to embolism of bilateral carotid arteries                                | ICD-10-CM        |
| I63.19      | Cerebral infarction due to embolism of other precerebral artery                                  | ICD-10-CM        |
| I63.211     | Cerebral infarction due to unspecified occlusion or stenosis of right vertebral arteries         | ICD-10-CM        |
| I63.212     | Cerebral infarction due to unspecified occlusion or stenosis of left vertebral arteries          | ICD-10-CM        |
| I63.213     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral vertebral arteries     | ICD-10-CM        |
| I63.231     | Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries           | ICD-10-CM        |
| I63.232     | Cerebral infarction due to unspecified occlusion or stenosis of left carotid arteries            | ICD-10-CM        |
| I63.233     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral carotid arteries       | ICD-10-CM        |



**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| I63.29      | Cerebral infarction due to unspecified occlusion or stenosis of other precerebral arteries           | ICD-10-CM        |
| I63.311     | Cerebral infarction due to thrombosis of right middle cerebral artery                                | ICD-10-CM        |
| I63.312     | Cerebral infarction due to thrombosis of left middle cerebral artery                                 | ICD-10-CM        |
| I63.313     | Cerebral infarction due to thrombosis of bilateral middle cerebral arteries                          | ICD-10-CM        |
| I63.319     | Cerebral infarction due to thrombosis of unspecified middle cerebral artery                          | ICD-10-CM        |
| I63.321     | Cerebral infarction due to thrombosis of right anterior cerebral artery                              | ICD-10-CM        |
| I63.322     | Cerebral infarction due to thrombosis of left anterior cerebral artery                               | ICD-10-CM        |
| I63.323     | Cerebral infarction due to thrombosis of bilateral anterior arteries                                 | ICD-10-CM        |
| I63.329     | Cerebral infarction due to thrombosis of unspecified anterior cerebral artery                        | ICD-10-CM        |
| I63.331     | Cerebral infarction due to thrombosis of right posterior cerebral artery                             | ICD-10-CM        |
| I63.332     | Cerebral infarction due to thrombosis of left posterior cerebral artery                              | ICD-10-CM        |
| I63.333     | Cerebral infarction to thrombosis of bilateral posterior arteries                                    | ICD-10-CM        |
| I63.339     | Cerebral infarction due to thrombosis of unspecified posterior cerebral artery                       | ICD-10-CM        |
| I63.341     | Cerebral infarction due to thrombosis of right cerebellar artery                                     | ICD-10-CM        |
| I63.342     | Cerebral infarction due to thrombosis of left cerebellar artery                                      | ICD-10-CM        |
| I63.343     | Cerebral infarction to thrombosis of bilateral cerebellar arteries                                   | ICD-10-CM        |
| I63.349     | Cerebral infarction due to thrombosis of unspecified cerebellar artery                               | ICD-10-CM        |
| I63.39      | Cerebral infarction due to thrombosis of other cerebral artery                                       | ICD-10-CM        |
| I63.411     | Cerebral infarction due to embolism of right middle cerebral artery                                  | ICD-10-CM        |
| I63.412     | Cerebral infarction due to embolism of left middle cerebral artery                                   | ICD-10-CM        |
| I63.413     | Cerebral infarction due to embolism of bilateral middle cerebral arteries                            | ICD-10-CM        |
| I63.419     | Cerebral infarction due to embolism of unspecified middle cerebral artery                            | ICD-10-CM        |
| I63.421     | Cerebral infarction due to embolism of right anterior cerebral artery                                | ICD-10-CM        |
| I63.422     | Cerebral infarction due to embolism of left anterior cerebral artery                                 | ICD-10-CM        |
| I63.423     | Cerebral infarction due to embolism of bilateral anterior cerebral arteries                          | ICD-10-CM        |
| I63.429     | Cerebral infarction due to embolism of unspecified anterior cerebral artery                          | ICD-10-CM        |
| I63.431     | Cerebral infarction due to embolism of right posterior cerebral artery                               | ICD-10-CM        |
| I63.432     | Cerebral infarction due to embolism of left posterior cerebral artery                                | ICD-10-CM        |
| I63.433     | Cerebral infarction due to embolism of bilateral posterior cerebral arteries                         | ICD-10-CM        |
| I63.439     | Cerebral infarction due to embolism of unspecified posterior cerebral artery                         | ICD-10-CM        |
| I63.441     | Cerebral infarction due to embolism of right cerebellar artery                                       | ICD-10-CM        |
| I63.442     | Cerebral infarction due to embolism of left cerebellar artery  | ICD-10-CM        |
| I63.443     | Cerebral infarction due to embolism of bilateral cerebellar arteries                                 | ICD-10-CM        |
| I63.449     | Cerebral infarction due to embolism of unspecified cerebellar artery                                 | ICD-10-CM        |
| I63.49      | Cerebral infarction due to embolism of other cerebral artery   | ICD-10-CM        |
| I63.511     | Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral artery         | ICD-10-CM        |
| I63.512     | Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery          | ICD-10-CM        |
| I63.513     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral middle arteries            | ICD-10-CM        |
| I63.519     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified middle cerebral artery   | ICD-10-CM        |
| I63.521     | Cerebral infarction due to unspecified occlusion or stenosis of right anterior cerebral artery       | ICD-10-CM        |
| I63.522     | Cerebral infarction due to unspecified occlusion or stenosis of left anterior cerebral artery        | ICD-10-CM        |
| I63.523     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral anterior arteries          | ICD-10-CM        |
| I63.529     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified anterior cerebral artery | ICD-10-CM        |

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Outcomes in this Request**

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| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| I63.531     | Cerebral infarction due to unspecified occlusion or stenosis of right posterior cerebral artery       | ICD-10-CM        |
| I63.532     | Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral artery        | ICD-10-CM        |
| I63.533     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral posterior arteries          | ICD-10-CM        |
| I63.539     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified posterior cerebral artery | ICD-10-CM        |
| I63.541     | Cerebral infarction due to unspecified occlusion or stenosis of right cerebellar artery               | ICD-10-CM        |
| I63.542     | Cerebral infarction due to unspecified occlusion or stenosis of left cerebellar artery                | ICD-10-CM        |
| I63.543     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral cerebellar arteries         | ICD-10-CM        |
| I63.549     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebellar artery         | ICD-10-CM        |
| I63.6       | Cerebral infarction due to cerebral venous thrombosis, nonpyogenic                                    | ICD-10-CM        |
| I63.8       | Other cerebral infarction   | ICD-10-CM        |
| I63.9       | Cerebral infarction, unspecified  | ICD-10-CM        |

**Appendix D. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Inclusion Criteria in this Request**

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| <b>Code</b> | <b>Description</b>              | <b>Code Type</b> |
|-------------|---------------------------------|------------------|
| 427.31      | Atrial fibrillation             | ICD-9-CM         |
| 427.32      | Atrial flutter                  | ICD-9-CM         |
| I48.0       | Paroxysmal atrial fibrillation  | ICD-10-CM        |
| I48.1       | Persistent atrial fibrillation  | ICD-10-CM        |
| I48.2       | Chronic atrial fibrillation     | ICD-10-CM        |
| I48.3       | Typical atrial flutter          | ICD-10-CM        |
| I48.4       | Atypical atrial flutter         | ICD-10-CM        |
| I48.91      | Unspecified atrial fibrillation | ICD-10-CM        |
| I48.92      | Unspecified atrial flutter      | ICD-10-CM        |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| Code                        | Description  | Code Type |
|-----------------------------|--|-----------|
| <b>Deep Vein Thrombosis</b> |  |           |
| 4534                        | Acute venous embolism and thrombosis of deep vessels of lower extremity                    | ICD-9-CM  |
| 45340                       | Acute venous embolism and thrombosis of unspecified deep vessels of lower extremity        | ICD-9-CM  |
| 45341                       | Acute venous embolism and thrombosis of deep vessels of proximal lower extremity           | ICD-9-CM  |
| 45342                       | Acute venous embolism and thrombosis of deep vessels of distal lower extremity             | ICD-9-CM  |
| 4511                        | Phlebitis and thrombophlebitis of deep veins of lower extremities                          | ICD-9-CM  |
| 45111                       | Phlebitis and thrombophlebitis of femoral vein (deep) (superficial)                        | ICD-9-CM  |
| 45119                       | Phlebitis and thrombophlebitis of deep veins of lower extremities, other                   | ICD-9-CM  |
| 4512                        | Phlebitis and thrombophlebitis of lower extremities, unspecified                           | ICD-9-CM  |
| 45181                       | Phlebitis and thrombophlebitis of iliac vein   | ICD-9-CM  |
| 45183                       | Phlebitis and thrombophlebitis of deep veins of upper extremities                          | ICD-9-CM  |
| 45384                       | Phlebitis and thrombophlebitis of upper extremities, unspecified                           | ICD-9-CM  |
| I80.10                      | Phlebitis and thrombophlebitis of unspecified femoral vein                                 | ICD-10-CM |
| I80.11                      | Phlebitis and thrombophlebitis of right femoral vein                                       | ICD-10-CM |
| I80.12                      | Phlebitis and thrombophlebitis of left femoral vein  | ICD-10-CM |
| I80.13                      | Phlebitis and thrombophlebitis of femoral vein, bilateral                                  | ICD-10-CM |
| I80.201                     | Phlebitis and thrombophlebitis of unspecified deep vessels of right lower extremity        | ICD-10-CM |
| I80.202                     | Phlebitis and thrombophlebitis of unspecified deep vessels of left lower extremity         | ICD-10-CM |
| I80.203                     | Phlebitis and thrombophlebitis of unspecified deep vessels of lower extremities, bilateral | ICD-10-CM |
| I80.209                     | Phlebitis and thrombophlebitis of unspecified deep vessels of unspecified lower extremity  | ICD-10-CM |
| I80.211                     | Phlebitis and thrombophlebitis of right iliac vein   | ICD-10-CM |
| I80.212                     | Phlebitis and thrombophlebitis of left iliac vein  | ICD-10-CM |
| I80.213                     | Phlebitis and thrombophlebitis of iliac vein, bilateral                                    | ICD-10-CM |
| I80.219                     | Phlebitis and thrombophlebitis of unspecified iliac vein                                   | ICD-10-CM |
| I80.221                     | Phlebitis and thrombophlebitis of right popliteal vein                                     | ICD-10-CM |
| I80.222                     | Phlebitis and thrombophlebitis of left popliteal vein                                      | ICD-10-CM |
| I80.223                     | Phlebitis and thrombophlebitis of popliteal vein, bilateral                                | ICD-10-CM |
| I80.229                     | Phlebitis and thrombophlebitis of unspecified popliteal vein                               | ICD-10-CM |
| I80.231                     | Phlebitis and thrombophlebitis of right tibial vein  | ICD-10-CM |
| I80.232                     | Phlebitis and thrombophlebitis of left tibial vein   | ICD-10-CM |
| I80.233                     | Phlebitis and thrombophlebitis of tibial vein, bilateral                                   | ICD-10-CM |
| I80.239                     | Phlebitis and thrombophlebitis of unspecified tibial vein                                  | ICD-10-CM |
| I80.291                     | Phlebitis and thrombophlebitis of other deep vessels of right lower extremity              | ICD-10-CM |
| I80.292                     | Phlebitis and thrombophlebitis of other deep vessels of left lower extremity               | ICD-10-CM |
| I80.293                     | Phlebitis and thrombophlebitis of other deep vessels of lower extremity, bilateral         | ICD-10-CM |
| I80.299                     | Phlebitis and thrombophlebitis of other deep vessels of unspecified lower extremity        | ICD-10-CM |
| I80.3                       | Phlebitis and thrombophlebitis of lower extremities, unspecified                           | ICD-10-CM |
| I80.8                       | Phlebitis and thrombophlebitis of other sites  | ICD-10-CM |
| I82.401                     | Acute embolism and thrombosis of unspecified deep veins of right lower extremity           | ICD-10-CM |
| I82.402                     | Acute embolism and thrombosis of unspecified deep veins of left lower extremity            | ICD-10-CM |
| I82.403                     | Acute embolism and thrombosis of unspecified deep veins of lower extremity, bilateral      | ICD-10-CM |
| I82.409                     | Acute embolism and thrombosis of unspecified deep veins of unspecified lower extremity     | ICD-10-CM |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b>     | <b>Description</b>  | <b>Code Type</b> |
|-----------------|---|------------------|
| I82.411         | Acute embolism and thrombosis of right femoral vein   | ICD-10-CM        |
| I82.412         | Acute embolism and thrombosis of left femoral vein  | ICD-10-CM        |
| I82.413         | Acute embolism and thrombosis of femoral vein, bilateral  | ICD-10-CM        |
| I82.419         | Acute embolism and thrombosis of unspecified femoral vein                                       | ICD-10-CM        |
| I82.421         | Acute embolism and thrombosis of right iliac vein   | ICD-10-CM        |
| I82.422         | Acute embolism and thrombosis of left iliac vein  | ICD-10-CM        |
| I82.423         | Acute embolism and thrombosis of iliac vein, bilateral  | ICD-10-CM        |
| I82.429         | Acute embolism and thrombosis of unspecified iliac vein   | ICD-10-CM        |
| I82.431         | Acute embolism and thrombosis of right popliteal vein   | ICD-10-CM        |
| I82.432         | Acute embolism and thrombosis of left popliteal vein  | ICD-10-CM        |
| I82.433         | Acute embolism and thrombosis of popliteal vein, bilateral                                      | ICD-10-CM        |
| I82.439         | Acute embolism and thrombosis of unspecified popliteal vein                                     | ICD-10-CM        |
| I82.441         | Acute embolism and thrombosis of right tibial vein  | ICD-10-CM        |
| I82.442         | Acute embolism and thrombosis of left tibial vein   | ICD-10-CM        |
| I82.443         | Acute embolism and thrombosis of tibial vein, bilateral   | ICD-10-CM        |
| I82.449         | Acute embolism and thrombosis of unspecified tibial vein  | ICD-10-CM        |
| I82.491         | Acute embolism and thrombosis of other specified deep vein of right lower extremity             | ICD-10-CM        |
| I82.492         | Acute embolism and thrombosis of other specified deep vein of left lower extremity              | ICD-10-CM        |
| I82.493         | Acute embolism and thrombosis of other specified deep vein of lower extremity, bilateral        | ICD-10-CM        |
| I82.499         | Acute embolism and thrombosis of other specified deep vein of unspecified lower extremity       | ICD-10-CM        |
| I82.4Y1         | Acute embolism and thrombosis of unspecified deep veins of right proximal lower extremity       | ICD-10-CM        |
| I82.4Y2         | Acute embolism and thrombosis of unspecified deep veins of left proximal lower extremity        | ICD-10-CM        |
| I82.4Y3         | Acute embolism and thrombosis of unspecified deep veins of proximal lower extremity, bilateral  | ICD-10-CM        |
| I82.4Y9         | Acute embolism and thrombosis of unspecified deep veins of unspecified proximal lower extremity | ICD-10-CM        |
| I82.4Z1         | Acute embolism and thrombosis of unspecified deep veins of right distal lower extremity         | ICD-10-CM        |
| I82.4Z2         | Acute embolism and thrombosis of unspecified deep veins of left distal lower extremity          | ICD-10-CM        |
| I82.4Z3         | Acute embolism and thrombosis of unspecified deep veins of distal lower extremity, bilateral    | ICD-10-CM        |
| I82.4Z9         | Acute embolism and thrombosis of unspecified deep veins of unspecified distal lower extremity   | ICD-10-CM        |
| I82.A11         | Acute embolism and thrombosis of right axillary vein  | ICD-10-CM        |
| I82.A12         | Acute embolism and thrombosis of left axillary vein   | ICD-10-CM        |
| I82.A13         | Acute embolism and thrombosis of axillary vein, bilateral                                       | ICD-10-CM        |
| I82.A19         | Acute embolism and thrombosis of unspecified axillary vein                                      | ICD-10-CM        |
| <b>Dialysis</b> |   |                  |
| 792.5           | Cloudy (hemodialysis) (peritoneal) dialysis affluent  | ICD-9-CM         |
| V45.1           | Renal dialysis status   | ICD-9-CM         |
| V45.11          | Renal dialysis status   | ICD-9-CM         |
| V45.12          | Noncompliance with renal dialysis   | ICD-9-CM         |
| V56.0           | Encounter for extracorporeal dialysis   | ICD-9-CM         |
| V56.1           | Fitting and adjustment of extracorporeal dialysis catheter                                      | ICD-9-CM         |
| V56.2           | Fitting and adjustment of peritoneal dialysis catheter  | ICD-9-CM         |
| V56.3           | Encounter for adequacy testing for dialysis   | ICD-9-CM         |
| V56.31          | Encounter for adequacy testing for hemodialysis   | ICD-9-CM         |

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| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| V56.32      | Encounter for adequacy testing for peritoneal dialysis  | ICD-9-CM         |
| V56.8       | Encounter other dialysis  | ICD-9-CM         |
| R88.0       | Cloudy (hemodialysis) (peritoneal) dialysis effluent  | ICD-10-CM        |
| Z49.01      | Encounter for fitting and adjustment of extracorporeal dialysis catheter  | ICD-10-CM        |
| Z49.02      | Encounter for fitting and adjustment of peritoneal dialysis catheter  | ICD-10-CM        |
| Z49.31      | Encounter for adequacy testing for hemodialysis   | ICD-10-CM        |
| Z49.32      | Encounter for adequacy testing for peritoneal dialysis  | ICD-10-CM        |
| Z91.15      | Patient's noncompliance with renal dialysis   | ICD-10-CM        |
| Z99.2       | Dependence on renal dialysis  | ICD-10-CM        |
| 90935       | Hemodialysis procedure with single evaluation by a physician or other qualified health care professional  | CPT-4            |
| 90937       | Hemodialysis procedure requiring repeated evaluation(s) with or without substantial revision of dialysis prescription   | CPT-4            |
| 90939       | Hemodialysis access flow study to determine blood flow in grafts and arteriovenous fistulae by an indicator dilution method, hook-up; transcutaneous measurement and disconnection  | CPT-4            |
| 90940       | Hemodialysis access flow study to determine blood flow in grafts and arteriovenous fistulae by an indicator method  | CPT-4            |
| 90941       | Hemodialysis, For Acute Renal Failure And Or Intoxication,  | CPT-4            |
| 90942       | Hemodialysis, For Acute Renal Failure And Or Intoxication,  | CPT-4            |
| 90943       | Hemodialysis, For Acute Renal Failure And Or Intoxication,  | CPT-4            |
| 90944       | Hemodialysis, For Acute Renal Failure And Or Intoxication,  | CPT-4            |
| 90945       | Dialysis procedure other than hemodialysis (eg, peritoneal dialysis, hemofiltration, or other continuous renal replacement therapies), with single evaluation by a physician or other qualified health care professional  | CPT-4            |
| 90947       | Dialysis procedure other than hemodialysis (eg, peritoneal dialysis, hemofiltration, or other continuous renal replacement therapies) requiring repeated evaluations by a physician or other qualified health care professional, with or without substantial revision of dialysis prescription                                  | CPT-4            |
| 90951       | End-stage renal disease (ESRD) related services monthly, for patients younger than 2 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 4 or more face-to-face visits by a physician or other qualified health care professional per month | CPT-4            |
| 90952       | End-stage renal disease (ESRD) related services monthly, for patients younger than 2 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 2-3 face-to-face visits by a physician or other qualified health care professional per month       | CPT-4            |
| 90953       | End-stage renal disease (ESRD) related services monthly, for patients younger than 2 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 1 face-to-face visit by a physician or other qualified health care professional per month          | CPT-4            |
| 90954       | End-stage renal disease (ESRD) related services monthly, for patients 2-11 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 4 or more face-to-face visits by a physician or other qualified health care professional per month           | CPT-4            |

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| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 90955       | End-stage renal disease (ESRD) related services monthly, for patients 2-11 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 2-3 face-to-face visits by a physician or other qualified health care professional per month        | CPT-4            |
| 90956       | End-stage renal disease (ESRD) related services monthly, for patients 2-11 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 1 face-to-face visit by a physician or other qualified health care professional per month           | CPT-4            |
| 90957       | End-stage renal disease (ESRD) related services monthly, for patients 12-19 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 4 or more face-to-face visits by a physician or other qualified health care professional per month | CPT-4            |
| 90958       | End-stage renal disease (ESRD) related services monthly, for patients 12-19 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 2-3 face-to-face visits by a physician or other qualified health care professional per month       | CPT-4            |
| 90959       | End-stage renal disease (ESRD) related services monthly, for patients 12-19 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents; with 1 face-to-face visit by a physician or other qualified health care professional per month          | CPT-4            |
| 90960       | End-stage renal disease (ESRD) related services monthly, for patients 20 years of age and older; with 4 or more face-to-face visits by a physician or other qualified health care professional per month   | CPT-4            |
| 90961       | End-stage renal disease (ESRD) related services monthly, for patients 20 years of age and older; with 2-3 face-to-face visits by a physician or other qualified health care professional per month   | CPT-4            |
| 90962       | End-stage renal disease (ESRD) related services monthly, for patients 20 years of age and older; with 1 face-to-face visit by a physician or other qualified health care professional per month  | CPT-4            |
| 90963       | End-stage renal disease (ESRD) related services for home dialysis per full month, for patients younger than 2 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents  | CPT-4            |
| 90964       | End-stage renal disease (ESRD) related services for home dialysis per full month, for patients 2-11 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents  | CPT-4            |
| 90965       | End-stage renal disease (ESRD) related services for home dialysis per full month, for patients 12-19 years of age to include monitoring for the adequacy of nutrition, assessment of growth and development, and counseling of parents   | CPT-4            |
| 90966       | End-stage renal disease (ESRD) related services for home dialysis per full month, for patients 20 years of age and older   | CPT-4            |
| 90967       | End-stage renal disease (ESRD) related services for dialysis less than a full month of service, per day; for patients younger than 2 years of age  | CPT-4            |
| 90968       | End-stage renal disease (ESRD) related services for dialysis less than a full month of service, per day; for patients 2-11 years of age  | CPT-4            |
| 90969       | End-stage renal disease (ESRD) related services for dialysis less than a full month of service, per day; for patients 12-19 years of age   | CPT-4            |
| 90970       | End-stage renal disease (ESRD) related services for dialysis less than a full month of service, per day; for patients 20 years of age and older  | CPT-4            |

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| <b>Code</b>              | <b>Description</b>  | <b>Code Type</b> |
|--------------------------|---|------------------|
| 90976                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90977                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90978                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90979                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90982                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90983                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90984                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90985                    | Peritoneal Dialysis For End-stage Renal Disease (esrd),   | CPT-4            |
| 90988                    | Supervision Of Hemodialysis In Hospital Or Other Facility (excluding Home Dialysis), On Monthly Basis               | CPT-4            |
| 90989                    | Dialysis training, patient, including helper where applicable, any mode, completed course                           | CPT-4            |
| 90990                    | Hemodialysis Training And/or Counseling   | CPT-4            |
| 90991                    | Home Hemodialysis Care, Outpatient, For Those Services Either Provided By The Physician Primarily Responsible       | CPT-4            |
| 90992                    | Peritoneal Dialysis Training And/or Counseling  | CPT-4            |
| 90993                    | Dialysis training, patient, including helper where applicable, any mode, course not completed, per training session | CPT-4            |
| 90994                    | Supervision Of Chronic Ambulatory Peritoneal Dialysis (capd), Home Or Out-patient (monthly)                         | CPT-4            |
| 90995                    | End Stage Renal Disease (esrd) Related Services, Per Full Month   | CPT-4            |
| 90996                    | Continuous Arteriovenous Hemofiltration (cavh) (per Day)  | CPT-4            |
| 90997                    | Hemoperfusion (eg, with activated charcoal or resin)  | CPT-4            |
| 90998                    | End Stage Renal Disease (esrd) Related Services (less Than Full Month), Per Day                                     | CPT-4            |
| 90999                    | Unlisted dialysis procedure, inpatient or outpatient  | CPT-4            |
| <b>Joint Replacement</b> |   |                  |
| V436                     | Joint replaced by other means   | ICD-9-CM         |
| V4360                    | Unspecified joint replacement   | ICD-9-CM         |
| V4361                    | Shoulder joint replacement  | ICD-9-CM         |
| V4362                    | Elbow joint replacement   | ICD-9-CM         |
| V4363                    | Wrist joint replacement   | ICD-9-CM         |
| V4364                    | Hip joint replacement   | ICD-9-CM         |
| V4365                    | Knee joint replacement  | ICD-9-CM         |
| V4366                    | Ankle joint replacement   | ICD-9-CM         |
| V4369                    | Other joint replacement   | ICD-9-CM         |
| 815                      | JOINT REPLACEMENT LOWER EXTREMITY   | ICD-9-CM         |
| 8151                     | TOTAL HIP REPLACEMENT   | ICD-9-CM         |
| 8152                     | PARTIAL HIP REPLACEMENT   | ICD-9-CM         |
| 8153                     | REVISION OF HIP REPLACEMENT NOS   | ICD-9-CM         |
| 8154                     | TOTAL KNEE REPLACEMENT  | ICD-9-CM         |
| 8155                     | REVISION OF KNEE REPLACEMENT NOS  | ICD-9-CM         |
| 8156                     | TOTAL ANKLE REPLACEMENT   | ICD-9-CM         |
| 8157                     | REPLACEMENT OF JOINT OF FOOT&TOE  | ICD-9-CM         |
| 8159                     | REV JOINT REPLCMT LOWER EXTREM NEC  | ICD-9-CM         |
| 818                      | ARTHROPLASTY&REPAIR SHOULDER&ELBOW  | ICD-9-CM         |



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| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| 8180        | OTHER TOTAL SHOULDER REPLACEMENT                                      | ICD-9-CM         |
| 8181        | PARTIAL SHOULDER REPLACEMENT  | ICD-9-CM         |
| 8182        | REPAIR RECURRENT DISLOC SHOULDER                                      | ICD-9-CM         |
| 8183        | OTHER REPAIR OF SHOULDER  | ICD-9-CM         |
| 8184        | TOTAL ELBOW REPLACEMENT   | ICD-9-CM         |
| 8185        | OTHER REPAIR OF ELBOW   | ICD-9-CM         |
| 24363       | REPLACE ELBOW JOINT   | CPT-4            |
| 27130       | TOTAL HIP ARTHROPLASTY  | CPT-4            |
| 27132       | TOTAL HIP ARTHROPLASTY  | CPT-4            |
| 27134       | REVISE HIP JOINT REPLACEMENT  | CPT-4            |
| 27137       | REVISE HIP JOINT REPLACEMENT  | CPT-4            |
| 27138       | REVISE HIP JOINT REPLACEMENT  | CPT-4            |
| 27447       | TOTAL KNEE ARTHROPLASTY   | CPT-4            |
| Z96.60      | Presence of unspecified orthopedic joint implant                      | ICD-10-CM        |
| Z96.611     | Presence of right artificial shoulder joint                           | ICD-10-CM        |
| Z96.612     | Presence of left artificial shoulder joint                            | ICD-10-CM        |
| Z96.619     | Presence of unspecified artificial shoulder joint                     | ICD-10-CM        |
| Z96.621     | Presence of right artificial elbow joint                              | ICD-10-CM        |
| Z96.622     | Presence of left artificial elbow joint                               | ICD-10-CM        |
| Z96.629     | Presence of unspecified artificial elbow joint                        | ICD-10-CM        |
| Z96.631     | Presence of right artificial wrist joint                              | ICD-10-CM        |
| Z96.632     | Presence of left artificial wrist joint                               | ICD-10-CM        |
| Z96.639     | Presence of unspecified artificial wrist joint                        | ICD-10-CM        |
| Z96.641     | Presence of right artificial hip joint                                | ICD-10-CM        |
| Z96.642     | Presence of left artificial hip joint                                 | ICD-10-CM        |
| Z96.643     | Presence of artificial hip joint, bilateral                           | ICD-10-CM        |
| Z96.649     | Presence of unspecified artificial hip joint                          | ICD-10-CM        |
| Z96.651     | Presence of right artificial knee joint                               | ICD-10-CM        |
| Z96.652     | Presence of left artificial knee joint                                | ICD-10-CM        |
| Z96.653     | Presence of artificial knee joint, bilateral                          | ICD-10-CM        |
| Z96.659     | Presence of unspecified artificial knee joint                         | ICD-10-CM        |
| Z96.661     | Presence of right artificial ankle joint                              | ICD-10-CM        |
| Z96.662     | Presence of left artificial ankle joint                               | ICD-10-CM        |
| Z96.669     | Presence of unspecified artificial ankle joint                        | ICD-10-CM        |
| Z96.691     | Finger-joint replacement of right hand                                | ICD-10-CM        |
| Z96.692     | Finger-joint replacement of left hand                                 | ICD-10-CM        |
| Z96.693     | Finger-joint replacement, bilateral                                   | ICD-10-CM        |
| Z96.698     | Presence of other orthopedic joint implants                           | ICD-10-CM        |
| Z96.7       | Presence of other bone and tendon implants                            | ICD-10-CM        |
| ORQE0ZZ     | Repair Right Sternoclavicular Joint, Open Approach                    | ICD-10-PCS       |
| ORQE3ZZ     | Repair Right Sternoclavicular Joint, Percutaneous Approach            | ICD-10-PCS       |
| ORQE4ZZ     | Repair Right Sternoclavicular Joint, Percutaneous Endoscopic Approach | ICD-10-PCS       |

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| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| ORQEXZZ     | Repair Right Sternoclavicular Joint, External Approach   | ICD-10-PCS       |
| ORQF0ZZ     | Repair Left Sternoclavicular Joint, Open Approach  | ICD-10-PCS       |
| ORQF3ZZ     | Repair Left Sternoclavicular Joint, Percutaneous Approach  | ICD-10-PCS       |
| ORQF4ZZ     | Repair Left Sternoclavicular Joint, Percutaneous Endoscopic Approach                             | ICD-10-PCS       |
| ORQFXZZ     | Repair Left Sternoclavicular Joint, External Approach  | ICD-10-PCS       |
| ORQG0ZZ     | Repair Right Acromioclavicular Joint, Open Approach  | ICD-10-PCS       |
| ORQG3ZZ     | Repair Right Acromioclavicular Joint, Percutaneous Approach                                      | ICD-10-PCS       |
| ORQG4ZZ     | Repair Right Acromioclavicular Joint, Percutaneous Endoscopic Approach                           | ICD-10-PCS       |
| ORQGXZZ     | Repair Right Acromioclavicular Joint, External Approach  | ICD-10-PCS       |
| ORQH0ZZ     | Repair Left Acromioclavicular Joint, Open Approach   | ICD-10-PCS       |
| ORQH3ZZ     | Repair Left Acromioclavicular Joint, Percutaneous Approach                                       | ICD-10-PCS       |
| ORQH4ZZ     | Repair Left Acromioclavicular Joint, Percutaneous Endoscopic Approach                            | ICD-10-PCS       |
| ORQHZZ      | Repair Left Acromioclavicular Joint, External Approach   | ICD-10-PCS       |
| ORQJ0ZZ     | Repair Right Shoulder Joint, Open Approach   | ICD-10-PCS       |
| ORQJ3ZZ     | Repair Right Shoulder Joint, Percutaneous Approach   | ICD-10-PCS       |
| ORQJ4ZZ     | Repair Right Shoulder Joint, Percutaneous Endoscopic Approach                                    | ICD-10-PCS       |
| ORQJXZZ     | Repair Right Shoulder Joint, External Approach   | ICD-10-PCS       |
| ORQK0ZZ     | Repair Left Shoulder Joint, Open Approach  | ICD-10-PCS       |
| ORQK3ZZ     | Repair Left Shoulder Joint, Percutaneous Approach  | ICD-10-PCS       |
| ORQK4ZZ     | Repair Left Shoulder Joint, Percutaneous Endoscopic Approach                                     | ICD-10-PCS       |
| ORQKXZZ     | Repair Left Shoulder Joint, External Approach  | ICD-10-PCS       |
| ORQL0ZZ     | Repair Right Elbow Joint, Open Approach  | ICD-10-PCS       |
| ORQL3ZZ     | Repair Right Elbow Joint, Percutaneous Approach  | ICD-10-PCS       |
| ORQL4ZZ     | Repair Right Elbow Joint, Percutaneous Endoscopic Approach                                       | ICD-10-PCS       |
| ORQLXZZ     | Repair Right Elbow Joint, External Approach  | ICD-10-PCS       |
| ORQM0ZZ     | Repair Left Elbow Joint, Open Approach   | ICD-10-PCS       |
| ORQM3ZZ     | Repair Left Elbow Joint, Percutaneous Approach   | ICD-10-PCS       |
| ORQM4ZZ     | Repair Left Elbow Joint, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| ORQMXXZ     | Repair Left Elbow Joint, External Approach   | ICD-10-PCS       |
| ORRE07Z     | Replacement of Right Sternoclavicular Joint with Autologous Tissue Substitute, Open Approach     | ICD-10-PCS       |
| ORRE0JZ     | Replacement of Right Sternoclavicular Joint with Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| ORRE0KZ     | Replacement of Right Sternoclavicular Joint with Nonautologous Tissue Substitute, Open Approach  | ICD-10-PCS       |
| ORRF07Z     | Replacement of Left Sternoclavicular Joint with Autologous Tissue Substitute, Open Approach      | ICD-10-PCS       |
| ORRF0JZ     | Replacement of Left Sternoclavicular Joint with Synthetic Substitute, Open Approach              | ICD-10-PCS       |
| ORRF0KZ     | Replacement of Left Sternoclavicular Joint with Nonautologous Tissue Substitute, Open Approach   | ICD-10-PCS       |
| ORRG07Z     | Replacement of Right Acromioclavicular Joint with Autologous Tissue Substitute, Open Approach    | ICD-10-PCS       |
| ORRG0JZ     | Replacement of Right Acromioclavicular Joint with Synthetic Substitute, Open Approach            | ICD-10-PCS       |
| ORRG0KZ     | Replacement of Right Acromioclavicular Joint with Nonautologous Tissue Substitute, Open Approach | ICD-10-PCS       |
| ORRH07Z     | Replacement of Left Acromioclavicular Joint with Autologous Tissue Substitute, Open Approach     | ICD-10-PCS       |
| ORRH0JZ     | Replacement of Left Acromioclavicular Joint with Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| ORRH0KZ     | Replacement of Left Acromioclavicular Joint with Nonautologous Tissue Substitute, Open Approach  | ICD-10-PCS       |
| ORRJ07Z     | Replacement of Right Shoulder Joint with Autologous Tissue Substitute, Open Approach             | ICD-10-PCS       |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| ORRJ0J6     | Replacement of Right Shoulder Joint with Synthetic Substitute, Humeral Surface, Open Approach                  | ICD-10-PCS       |
| ORRJ0J7     | Replacement of Right Shoulder Joint with Synthetic Substitute, Glenoid Surface, Open Approach                  | ICD-10-PCS       |
| ORRJ0JZ     | Replacement of Right Shoulder Joint with Synthetic Substitute, Open Approach                                   | ICD-10-PCS       |
| ORRJ0KZ     | Replacement of Right Shoulder Joint with Nonautologous Tissue Substitute, Open Approach                        | ICD-10-PCS       |
| ORRK07Z     | Replacement of Left Shoulder Joint with Autologous Tissue Substitute, Open Approach                            | ICD-10-PCS       |
| ORRK0J6     | Replacement of Left Shoulder Joint with Synthetic Substitute, Humeral Surface, Open Approach                   | ICD-10-PCS       |
| ORRK0J7     | Replacement of Left Shoulder Joint with Synthetic Substitute, Glenoid Surface, Open Approach                   | ICD-10-PCS       |
| ORRK0JZ     | Replacement of Left Shoulder Joint with Synthetic Substitute, Open Approach                                    | ICD-10-PCS       |
| ORRK0KZ     | Replacement of Left Shoulder Joint with Nonautologous Tissue Substitute, Open Approach                         | ICD-10-PCS       |
| ORRL07Z     | Replacement of Right Elbow Joint with Autologous Tissue Substitute, Open Approach                              | ICD-10-PCS       |
| ORRL0JZ     | Replacement of Right Elbow Joint with Synthetic Substitute, Open Approach                                      | ICD-10-PCS       |
| ORRL0KZ     | Replacement of Right Elbow Joint with Nonautologous Tissue Substitute, Open Approach                           | ICD-10-PCS       |
| ORRM07Z     | Replacement of Left Elbow Joint with Autologous Tissue Substitute, Open Approach                               | ICD-10-PCS       |
| ORRM0JZ     | Replacement of Left Elbow Joint with Synthetic Substitute, Open Approach                                       | ICD-10-PCS       |
| ORRM0KZ     | Replacement of Left Elbow Joint with Nonautologous Tissue Substitute, Open Approach                            | ICD-10-PCS       |
| ORSE04Z     | Reposition Right Sternoclavicular Joint with Internal Fixation Device, Open Approach                           | ICD-10-PCS       |
| ORSE0ZZ     | Reposition Right Sternoclavicular Joint, Open Approach   | ICD-10-PCS       |
| ORSF04Z     | Reposition Left Sternoclavicular Joint with Internal Fixation Device, Open Approach                            | ICD-10-PCS       |
| ORSF0ZZ     | Reposition Left Sternoclavicular Joint, Open Approach  | ICD-10-PCS       |
| ORSG04Z     | Reposition Right Acromioclavicular Joint with Internal Fixation Device, Open Approach                          | ICD-10-PCS       |
| ORSG0ZZ     | Reposition Right Acromioclavicular Joint, Open Approach  | ICD-10-PCS       |
| ORSH04Z     | Reposition Left Acromioclavicular Joint with Internal Fixation Device, Open Approach                           | ICD-10-PCS       |
| ORSH0ZZ     | Reposition Left Acromioclavicular Joint, Open Approach   | ICD-10-PCS       |
| ORSJ04Z     | Reposition Right Shoulder Joint with Internal Fixation Device, Open Approach                                   | ICD-10-PCS       |
| ORSJ0ZZ     | Reposition Right Shoulder Joint, Open Approach   | ICD-10-PCS       |
| ORSK04Z     | Reposition Left Shoulder Joint with Internal Fixation Device, Open Approach                                    | ICD-10-PCS       |
| ORSK0ZZ     | Reposition Left Shoulder Joint, Open Approach  | ICD-10-PCS       |
| ORUE07Z     | Supplement Right Sternoclavicular Joint with Autologous Tissue Substitute, Open Approach                       | ICD-10-PCS       |
| ORUE0JZ     | Supplement Right Sternoclavicular Joint with Synthetic Substitute, Open Approach                               | ICD-10-PCS       |
| ORUE0KZ     | Supplement Right Sternoclavicular Joint with Nonautologous Tissue Substitute, Open Approach                    | ICD-10-PCS       |
| ORUE37Z     | Supplement Right Sternoclavicular Joint with Autologous Tissue Substitute, Percutaneous Approach               | ICD-10-PCS       |
| ORUE3JZ     | Supplement Right Sternoclavicular Joint with Synthetic Substitute, Percutaneous Approach                       | ICD-10-PCS       |
| ORUE3KZ     | Supplement Right Sternoclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Approach            | ICD-10-PCS       |
| ORUE47Z     | Supplement Right Sternoclavicular Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach    | ICD-10-PCS       |
| ORUE4JZ     | Supplement Right Sternoclavicular Joint with Synthetic Substitute, Percutaneous Endoscopic Approach            | ICD-10-PCS       |
| ORUE4KZ     | Supplement Right Sternoclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach | ICD-10-PCS       |
| ORUF07Z     | Supplement Left Sternoclavicular Joint with Autologous Tissue Substitute, Open Approach                        | ICD-10-PCS       |
| ORUF0JZ     | Supplement Left Sternoclavicular Joint with Synthetic Substitute, Open Approach                                | ICD-10-PCS       |
| ORUF0KZ     | Supplement Left Sternoclavicular Joint with Nonautologous Tissue Substitute, Open Approach                     | ICD-10-PCS       |
| ORUF37Z     | Supplement Left Sternoclavicular Joint with Autologous Tissue Substitute, Percutaneous Approach                | ICD-10-PCS       |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| ORUF3JZ     | Supplement Left Sternoclavicular Joint with Synthetic Substitute, Percutaneous Approach                         | ICD-10-PCS       |
| ORUF3KZ     | Supplement Left Sternoclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Approach              | ICD-10-PCS       |
| ORUF47Z     | Supplement Left Sternoclavicular Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach      | ICD-10-PCS       |
| ORUF4JZ     | Supplement Left Sternoclavicular Joint with Synthetic Substitute, Percutaneous Endoscopic Approach              | ICD-10-PCS       |
| ORUF4KZ     | Supplement Left Sternoclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| ORUG07Z     | Supplement Right Acromioclavicular Joint with Autologous Tissue Substitute, Open Approach                       | ICD-10-PCS       |
| ORUG0JZ     | Supplement Right Acromioclavicular Joint with Synthetic Substitute, Open Approach                               | ICD-10-PCS       |
| ORUG0KZ     | Supplement Right Acromioclavicular Joint with Nonautologous Tissue Substitute, Open Approach                    | ICD-10-PCS       |
| ORUG37Z     | Supplement Right Acromioclavicular Joint with Autologous Tissue Substitute, Percutaneous Approach               | ICD-10-PCS       |
| ORUG3JZ     | Supplement Right Acromioclavicular Joint with Synthetic Substitute, Percutaneous Approach                       | ICD-10-PCS       |
| ORUG3KZ     | Supplement Right Acromioclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Approach            | ICD-10-PCS       |
| ORUG47Z     | Supplement Right Acromioclavicular Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach    | ICD-10-PCS       |
| ORUG4JZ     | Supplement Right Acromioclavicular Joint with Synthetic Substitute, Percutaneous Endoscopic Approach            | ICD-10-PCS       |
| ORUG4KZ     | Supplement Right Acromioclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach | ICD-10-PCS       |
| ORUH07Z     | Supplement Left Acromioclavicular Joint with Autologous Tissue Substitute, Open Approach                        | ICD-10-PCS       |
| ORUH0JZ     | Supplement Left Acromioclavicular Joint with Synthetic Substitute, Open Approach                                | ICD-10-PCS       |
| ORUH0KZ     | Supplement Left Acromioclavicular Joint with Nonautologous Tissue Substitute, Open Approach                     | ICD-10-PCS       |
| ORUH37Z     | Supplement Left Acromioclavicular Joint with Autologous Tissue Substitute, Percutaneous Approach                | ICD-10-PCS       |
| ORUH3JZ     | Supplement Left Acromioclavicular Joint with Synthetic Substitute, Percutaneous Approach                        | ICD-10-PCS       |
| ORUH3KZ     | Supplement Left Acromioclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Approach             | ICD-10-PCS       |
| ORUH47Z     | Supplement Left Acromioclavicular Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach     | ICD-10-PCS       |
| ORUH4JZ     | Supplement Left Acromioclavicular Joint with Synthetic Substitute, Percutaneous Endoscopic Approach             | ICD-10-PCS       |
| ORUH4KZ     | Supplement Left Acromioclavicular Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| ORUJ07Z     | Supplement Right Shoulder Joint with Autologous Tissue Substitute, Open Approach                                | ICD-10-PCS       |
| ORUJ0JZ     | Supplement Right Shoulder Joint with Synthetic Substitute, Open Approach  | ICD-10-PCS       |
| ORUJ0KZ     | Supplement Right Shoulder Joint with Nonautologous Tissue Substitute, Open Approach                             | ICD-10-PCS       |
| ORUJ37Z     | Supplement Right Shoulder Joint with Autologous Tissue Substitute, Percutaneous Approach                        | ICD-10-PCS       |
| ORUJ3JZ     | Supplement Right Shoulder Joint with Synthetic Substitute, Percutaneous Approach                                | ICD-10-PCS       |
| ORUJ3KZ     | Supplement Right Shoulder Joint with Nonautologous Tissue Substitute, Percutaneous Approach                     | ICD-10-PCS       |
| ORUJ47Z     | Supplement Right Shoulder Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach             | ICD-10-PCS       |
| ORUJ4JZ     | Supplement Right Shoulder Joint with Synthetic Substitute, Percutaneous Endoscopic Approach                     | ICD-10-PCS       |
| ORUJ4KZ     | Supplement Right Shoulder Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach          | ICD-10-PCS       |
| ORUK07Z     | Supplement Left Shoulder Joint with Autologous Tissue Substitute, Open Approach                                 | ICD-10-PCS       |
| ORUK0JZ     | Supplement Left Shoulder Joint with Synthetic Substitute, Open Approach   | ICD-10-PCS       |
| ORUK0KZ     | Supplement Left Shoulder Joint with Nonautologous Tissue Substitute, Open Approach                              | ICD-10-PCS       |
| ORUK37Z     | Supplement Left Shoulder Joint with Autologous Tissue Substitute, Percutaneous Approach                         | ICD-10-PCS       |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| ORUK3JZ     | Supplement Left Shoulder Joint with Synthetic Substitute, Percutaneous Approach                             | ICD-10-PCS       |
| ORUK3KZ     | Supplement Left Shoulder Joint with Nonautologous Tissue Substitute, Percutaneous Approach                  | ICD-10-PCS       |
| ORUK47Z     | Supplement Left Shoulder Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach          | ICD-10-PCS       |
| ORUK4JZ     | Supplement Left Shoulder Joint with Synthetic Substitute, Percutaneous Endoscopic Approach                  | ICD-10-PCS       |
| ORUK4KZ     | Supplement Left Shoulder Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach       | ICD-10-PCS       |
| ORUL07Z     | Supplement Right Elbow Joint with Autologous Tissue Substitute, Open Approach                               | ICD-10-PCS       |
| ORUL0JZ     | Supplement Right Elbow Joint with Synthetic Substitute, Open Approach                                       | ICD-10-PCS       |
| ORUL0KZ     | Supplement Right Elbow Joint with Nonautologous Tissue Substitute, Open Approach                            | ICD-10-PCS       |
| ORUL37Z     | Supplement Right Elbow Joint with Autologous Tissue Substitute, Percutaneous Approach                       | ICD-10-PCS       |
| ORUL3JZ     | Supplement Right Elbow Joint with Synthetic Substitute, Percutaneous Approach                               | ICD-10-PCS       |
| ORUL3KZ     | Supplement Right Elbow Joint with Nonautologous Tissue Substitute, Percutaneous Approach                    | ICD-10-PCS       |
| ORUL47Z     | Supplement Right Elbow Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach            | ICD-10-PCS       |
| ORUL4JZ     | Supplement Right Elbow Joint with Synthetic Substitute, Percutaneous Endoscopic Approach                    | ICD-10-PCS       |
| ORUL4KZ     | Supplement Right Elbow Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach         | ICD-10-PCS       |
| ORUM07Z     | Supplement Left Elbow Joint with Autologous Tissue Substitute, Open Approach                                | ICD-10-PCS       |
| ORUM0JZ     | Supplement Left Elbow Joint with Synthetic Substitute, Open Approach  | ICD-10-PCS       |
| ORUM0KZ     | Supplement Left Elbow Joint with Nonautologous Tissue Substitute, Open Approach                             | ICD-10-PCS       |
| ORUM37Z     | Supplement Left Elbow Joint with Autologous Tissue Substitute, Percutaneous Approach                        | ICD-10-PCS       |
| ORUM3JZ     | Supplement Left Elbow Joint with Synthetic Substitute, Percutaneous Approach                                | ICD-10-PCS       |
| ORUM3KZ     | Supplement Left Elbow Joint with Nonautologous Tissue Substitute, Percutaneous Approach                     | ICD-10-PCS       |
| ORUM47Z     | Supplement Left Elbow Joint with Autologous Tissue Substitute, Percutaneous Endoscopic Approach             | ICD-10-PCS       |
| ORUM4JZ     | Supplement Left Elbow Joint with Synthetic Substitute, Percutaneous Endoscopic Approach                     | ICD-10-PCS       |
| ORUM4KZ     | Supplement Left Elbow Joint with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach          | ICD-10-PCS       |
| OSR9019     | Replacement of Right Hip Joint with Metal Synthetic Substitute, Cemented, Open Approach                     | ICD-10-PCS       |
| OSR901A     | Replacement of Right Hip Joint with Metal Synthetic Substitute, Uncemented, Open Approach                   | ICD-10-PCS       |
| OSR901Z     | Replacement of Right Hip Joint with Metal Synthetic Substitute, Open Approach                               | ICD-10-PCS       |
| OSR9029     | Replacement of Right Hip Joint with Metal on Polyethylene Synthetic Substitute, Cemented, Open              | ICD-10-PCS       |
| OSR902A     | Replacement of Right Hip Joint with Metal on Polyethylene Synthetic Substitute, Uncemented, Open            | ICD-10-PCS       |
| OSR902Z     | Replacement of Right Hip Joint with Metal on Polyethylene Synthetic Substitute, Open Approach               | ICD-10-PCS       |
| OSR9039     | Replacement of Right Hip Joint with Ceramic Synthetic Substitute, Cemented, Open Approach                   | ICD-10-PCS       |
| OSR903A     | Replacement of Right Hip Joint with Ceramic Synthetic Substitute, Uncemented, Open Approach                 | ICD-10-PCS       |
| OSR903Z     | Replacement of Right Hip Joint with Ceramic Synthetic Substitute, Open Approach                             | ICD-10-PCS       |
| OSR9049     | Replacement of Right Hip Joint with Ceramic on Polyethylene Synthetic Substitute, Cemented, Open            | ICD-10-PCS       |
| OSR904A     | Replacement of Right Hip Joint with Ceramic on Polyethylene Synthetic Substitute, Uncemented, Open Approach | ICD-10-PCS       |
| OSR904Z     | Replacement of Right Hip Joint with Ceramic on Polyethylene Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| OSR907Z     | Replacement of Right Hip Joint with Autologous Tissue Substitute, Open Approach                             | ICD-10-PCS       |
| OSR90J9     | Replacement of Right Hip Joint with Synthetic Substitute, Cemented, Open Approach                           | ICD-10-PCS       |
| OSR90JA     | Replacement of Right Hip Joint with Synthetic Substitute, Uncemented, Open Approach                         | ICD-10-PCS       |
| OSR90JZ     | Replacement of Right Hip Joint with Synthetic Substitute, Open Approach                                     | ICD-10-PCS       |
| OSR90KZ     | Replacement of Right Hip Joint with Nonautologous Tissue Substitute, Open Approach                          | ICD-10-PCS       |



**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| OSRA009     | Replacement of Right Hip Joint, Acetabular Surface with Polyethylene Synthetic Substitute, Cemented, Open Approach   | ICD-10-PCS       |
| OSRA00A     | Replacement of Right Hip Joint, Acetabular Surface with Polyethylene Synthetic Substitute, Uncemented, Open Approach | ICD-10-PCS       |
| OSRA00Z     | Replacement of Right Hip Joint, Acetabular Surface with Polyethylene Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| OSRA019     | Replacement of Right Hip Joint, Acetabular Surface with Metal Synthetic Substitute, Cemented, Open Approach          | ICD-10-PCS       |
| OSRA01A     | Replacement of Right Hip Joint, Acetabular Surface with Metal Synthetic Substitute, Uncemented, Open Approach        | ICD-10-PCS       |
| OSRA01Z     | Replacement of Right Hip Joint, Acetabular Surface with Metal Synthetic Substitute, Open Approach                    | ICD-10-PCS       |
| OSRA039     | Replacement of Right Hip Joint, Acetabular Surface with Ceramic Synthetic Substitute, Cemented, Open Approach        | ICD-10-PCS       |
| OSRA03A     | Replacement of Right Hip Joint, Acetabular Surface with Ceramic Synthetic Substitute, Uncemented, Open Approach      | ICD-10-PCS       |
| OSRA03Z     | Replacement of Right Hip Joint, Acetabular Surface with Ceramic Synthetic Substitute, Open Approach                  | ICD-10-PCS       |
| OSRA07Z     | Replacement of Right Hip Joint, Acetabular Surface with Autologous Tissue Substitute, Open Approach                  | ICD-10-PCS       |
| OSRA0J9     | Replacement of Right Hip Joint, Acetabular Surface with Synthetic Substitute, Cemented, Open Approach                | ICD-10-PCS       |
| OSRA0JA     | Replacement of Right Hip Joint, Acetabular Surface with Synthetic Substitute, Uncemented, Open Approach              | ICD-10-PCS       |
| OSRA0JZ     | Replacement of Right Hip Joint, Acetabular Surface with Synthetic Substitute, Open Approach                          | ICD-10-PCS       |
| OSRA0KZ     | Replacement of Right Hip Joint, Acetabular Surface with Nonautologous Tissue Substitute, Open Approach               | ICD-10-PCS       |
| OSRB019     | Replacement of Left Hip Joint with Metal Synthetic Substitute, Cemented, Open Approach                               | ICD-10-PCS       |
| OSRB01A     | Replacement of Left Hip Joint with Metal Synthetic Substitute, Uncemented, Open Approach                             | ICD-10-PCS       |
| OSRB01Z     | Replacement of Left Hip Joint with Metal Synthetic Substitute, Open Approach   | ICD-10-PCS       |
| OSRB029     | Replacement of Left Hip Joint with Metal on Polyethylene Synthetic Substitute, Cemented, Open Approach               | ICD-10-PCS       |
| OSRB02A     | Replacement of Left Hip Joint with Metal on Polyethylene Synthetic Substitute, Uncemented, Open Approach             | ICD-10-PCS       |
| OSRB02Z     | Replacement of Left Hip Joint with Metal on Polyethylene Synthetic Substitute, Open Approach                         | ICD-10-PCS       |
| OSRB039     | Replacement of Left Hip Joint with Ceramic Synthetic Substitute, Cemented, Open Approach                             | ICD-10-PCS       |
| OSRB03A     | Replacement of Left Hip Joint with Ceramic Synthetic Substitute, Uncemented, Open Approach                           | ICD-10-PCS       |
| OSRB03Z     | Replacement of Left Hip Joint with Ceramic Synthetic Substitute, Open Approach                                       | ICD-10-PCS       |
| OSRB049     | Replacement of Left Hip Joint with Ceramic on Polyethylene Synthetic Substitute, Cemented, Open Approach             | ICD-10-PCS       |
| OSRB04A     | Replacement of Left Hip Joint with Ceramic on Polyethylene Synthetic Substitute, Uncemented, Open Approach           | ICD-10-PCS       |
| OSRB04Z     | Replacement of Left Hip Joint with Ceramic on Polyethylene Synthetic Substitute, Open Approach                       | ICD-10-PCS       |
| OSRB07Z     | Replacement of Left Hip Joint with Autologous Tissue Substitute, Open Approach                                       | ICD-10-PCS       |
| OSRB0J9     | Replacement of Left Hip Joint with Synthetic Substitute, Cemented, Open Approach                                     | ICD-10-PCS       |
| OSRB0JA     | Replacement of Left Hip Joint with Synthetic Substitute, Uncemented, Open Approach                                   | ICD-10-PCS       |
| OSRB0JZ     | Replacement of Left Hip Joint with Synthetic Substitute, Open Approach   | ICD-10-PCS       |
| OSRB0KZ     | Replacement of Left Hip Joint with Nonautologous Tissue Substitute, Open Approach                                    | ICD-10-PCS       |
| OSRC07Z     | Replacement of Right Knee Joint with Autologous Tissue Substitute, Open Approach                                     | ICD-10-PCS       |
| OSRC0J9     | Replacement of Right Knee Joint with Synthetic Substitute, Cemented, Open Approach                                   | ICD-10-PCS       |
| OSRC0JA     | Replacement of Right Knee Joint with Synthetic Substitute, Uncemented, Open Approach                                 | ICD-10-PCS       |



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| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| OSRC0JZ     | Replacement of Right Knee Joint with Synthetic Substitute, Open Approach  | ICD-10-PCS       |
| OSRC0KZ     | Replacement of Right Knee Joint with Nonautologous Tissue Substitute, Open Approach                                 | ICD-10-PCS       |
| OSRC0L9     | Replacement of Right Knee Joint with Unicondylar Synthetic Substitute, Cemented, Open Approach                      | ICD-10-PCS       |
| OSRC0LA     | Replacement of Right Knee Joint with Unicondylar Synthetic Substitute, Uncemented, Open Approach                    | ICD-10-PCS       |
| OSRC0LZ     | Replacement of Right Knee Joint with Unicondylar Synthetic Substitute, Open Approach                                | ICD-10-PCS       |
| OSRD07Z     | Replacement of Left Knee Joint with Autologous Tissue Substitute, Open Approach                                     | ICD-10-PCS       |
| OSRD0J9     | Replacement of Left Knee Joint with Synthetic Substitute, Cemented, Open Approach                                   | ICD-10-PCS       |
| OSRD0JA     | Replacement of Left Knee Joint with Synthetic Substitute, Uncemented, Open Approach                                 | ICD-10-PCS       |
| OSRD0JZ     | Replacement of Left Knee Joint with Synthetic Substitute, Open Approach   | ICD-10-PCS       |
| OSRD0KZ     | Replacement of Left Knee Joint with Nonautologous Tissue Substitute, Open Approach                                  | ICD-10-PCS       |
| OSRD0L9     | Replacement of Left Knee Joint with Unicondylar Synthetic Substitute, Cemented, Open Approach                       | ICD-10-PCS       |
| OSRD0LA     | Replacement of Left Knee Joint with Unicondylar Synthetic Substitute, Uncemented, Open Approach                     | ICD-10-PCS       |
| OSRD0LZ     | Replacement of Left Knee Joint with Unicondylar Synthetic Substitute, Open Approach                                 | ICD-10-PCS       |
| OSRE009     | Replacement of Left Hip Joint, Acetabular Surface with Polyethylene Synthetic Substitute, Cemented, Open Approach   | ICD-10-PCS       |
| OSRE00A     | Replacement of Left Hip Joint, Acetabular Surface with Polyethylene Synthetic Substitute, Uncemented, Open Approach | ICD-10-PCS       |
| OSRE00Z     | Replacement of Left Hip Joint, Acetabular Surface with Polyethylene Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| OSRE019     | Replacement of Left Hip Joint, Acetabular Surface with Metal Synthetic Substitute, Cemented, Open Approach          | ICD-10-PCS       |
| OSRE01A     | Replacement of Left Hip Joint, Acetabular Surface with Metal Synthetic Substitute, Uncemented, Open Approach        | ICD-10-PCS       |
| OSRE01Z     | Replacement of Left Hip Joint, Acetabular Surface with Metal Synthetic Substitute, Open Approach                    | ICD-10-PCS       |
| OSRE039     | Replacement of Left Hip Joint, Acetabular Surface with Ceramic Synthetic Substitute, Cemented, Open Approach        | ICD-10-PCS       |
| OSRE03A     | Replacement of Left Hip Joint, Acetabular Surface with Ceramic Synthetic Substitute, Uncemented, Open Approach      | ICD-10-PCS       |
| OSRE03Z     | Replacement of Left Hip Joint, Acetabular Surface with Ceramic Synthetic Substitute, Open Approach                  | ICD-10-PCS       |
| OSRE07Z     | Replacement of Left Hip Joint, Acetabular Surface with Autologous Tissue Substitute, Open Approach                  | ICD-10-PCS       |
| OSRE0J9     | Replacement of Left Hip Joint, Acetabular Surface with Synthetic Substitute, Cemented, Open Approach                | ICD-10-PCS       |
| OSRE0JA     | Replacement of Left Hip Joint, Acetabular Surface with Synthetic Substitute, Uncemented, Open Approach              | ICD-10-PCS       |
| OSRE0JZ     | Replacement of Left Hip Joint, Acetabular Surface with Synthetic Substitute, Open Approach                          | ICD-10-PCS       |
| OSRE0KZ     | Replacement of Left Hip Joint, Acetabular Surface with Nonautologous Tissue Substitute, Open Approach               | ICD-10-PCS       |
| OSRF07Z     | Replacement of Right Ankle Joint with Autologous Tissue Substitute, Open Approach                                   | ICD-10-PCS       |
| OSRF0J9     | Replacement of Right Ankle Joint with Synthetic Substitute, Cemented, Open Approach                                 | ICD-10-PCS       |
| OSRF0JA     | Replacement of Right Ankle Joint with Synthetic Substitute, Uncemented, Open Approach                               | ICD-10-PCS       |
| OSRF0JZ     | Replacement of Right Ankle Joint with Synthetic Substitute, Open Approach   | ICD-10-PCS       |
| OSRF0KZ     | Replacement of Right Ankle Joint with Nonautologous Tissue Substitute, Open Approach                                | ICD-10-PCS       |
| OSRG07Z     | Replacement of Left Ankle Joint with Autologous Tissue Substitute, Open Approach                                    | ICD-10-PCS       |
| OSRG0J9     | Replacement of Left Ankle Joint with Synthetic Substitute, Cemented, Open Approach                                  | ICD-10-PCS       |
| OSRG0JA     | Replacement of Left Ankle Joint with Synthetic Substitute, Uncemented, Open Approach                                | ICD-10-PCS       |
| OSRG0JZ     | Replacement of Left Ankle Joint with Synthetic Substitute, Open Approach  | ICD-10-PCS       |
| OSRG0KZ     | Replacement of Left Ankle Joint with Nonautologous Tissue Substitute, Open Approach                                 | ICD-10-PCS       |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| OSRH07Z     | Replacement of Right Tarsal Joint with Autologous Tissue Substitute, Open Approach                           | ICD-10-PCS       |
| OSRH0JZ     | Replacement of Right Tarsal Joint with Synthetic Substitute, Open Approach                                   | ICD-10-PCS       |
| OSRH0KZ     | Replacement of Right Tarsal Joint with Nonautologous Tissue Substitute, Open Approach                        | ICD-10-PCS       |
| OSRJ07Z     | Replacement of Left Tarsal Joint with Autologous Tissue Substitute, Open Approach                            | ICD-10-PCS       |
| OSRJ0JZ     | Replacement of Left Tarsal Joint with Synthetic Substitute, Open Approach                                    | ICD-10-PCS       |
| OSRJ0KZ     | Replacement of Left Tarsal Joint with Nonautologous Tissue Substitute, Open Approach                         | ICD-10-PCS       |
| OSRK07Z     | Replacement of Right Metatarsal-Tarsal Joint with Autologous Tissue Substitute, Open Approach                | ICD-10-PCS       |
| OSRK0JZ     | Replacement of Right Metatarsal-Tarsal Joint with Synthetic Substitute, Open Approach                        | ICD-10-PCS       |
| OSRK0KZ     | Replacement of Right Metatarsal-Tarsal Joint with Nonautologous Tissue Substitute, Open Approach             | ICD-10-PCS       |
| OSRL07Z     | Replacement of Left Metatarsal-Tarsal Joint with Autologous Tissue Substitute, Open Approach                 | ICD-10-PCS       |
| OSRL0JZ     | Replacement of Left Metatarsal-Tarsal Joint with Synthetic Substitute, Open Approach                         | ICD-10-PCS       |
| OSRL0KZ     | Replacement of Left Metatarsal-Tarsal Joint with Nonautologous Tissue Substitute, Open Approach              | ICD-10-PCS       |
| OSRM07Z     | Replacement of Right Metatarsal-Phalangeal Joint with Autologous Tissue Substitute, Open Approach            | ICD-10-PCS       |
| OSRM0JZ     | Replacement of Right Metatarsal-Phalangeal Joint with Synthetic Substitute, Open Approach                    | ICD-10-PCS       |
| OSRM0KZ     | Replacement of Right Metatarsal-Phalangeal Joint with Nonautologous Tissue Substitute, Open Approach         | ICD-10-PCS       |
| OSRN07Z     | Replacement of Left Metatarsal-Phalangeal Joint with Autologous Tissue Substitute, Open Approach             | ICD-10-PCS       |
| OSRN0JZ     | Replacement of Left Metatarsal-Phalangeal Joint with Synthetic Substitute, Open Approach                     | ICD-10-PCS       |
| OSRN0KZ     | Replacement of Left Metatarsal-Phalangeal Joint with Nonautologous Tissue Substitute, Open Approach          | ICD-10-PCS       |
| OSRP07Z     | Replacement of Right Toe Phalangeal Joint with Autologous Tissue Substitute, Open Approach                   | ICD-10-PCS       |
| OSRP0JZ     | Replacement of Right Toe Phalangeal Joint with Synthetic Substitute, Open Approach                           | ICD-10-PCS       |
| OSRP0KZ     | Replacement of Right Toe Phalangeal Joint with Nonautologous Tissue Substitute, Open Approach                | ICD-10-PCS       |
| OSRQ07Z     | Replacement of Left Toe Phalangeal Joint with Autologous Tissue Substitute, Open Approach                    | ICD-10-PCS       |
| OSRQ0JZ     | Replacement of Left Toe Phalangeal Joint with Synthetic Substitute, Open Approach                            | ICD-10-PCS       |
| OSRQ0KZ     | Replacement of Left Toe Phalangeal Joint with Nonautologous Tissue Substitute, Open Approach                 | ICD-10-PCS       |
| OSRR019     | Replacement of Right Hip Joint, Femoral Surface with Metal Synthetic Substitute, Cemented, Open              | ICD-10-PCS       |
| OSRR01A     | Replacement of Right Hip Joint, Femoral Surface with Metal Synthetic Substitute, Uncemented, Open Approach   | ICD-10-PCS       |
| OSRR01Z     | Replacement of Right Hip Joint, Femoral Surface with Metal Synthetic Substitute, Open Approach               | ICD-10-PCS       |
| OSRR039     | Replacement of Right Hip Joint, Femoral Surface with Ceramic Synthetic Substitute, Cemented, Open Approach   | ICD-10-PCS       |
| OSRR03A     | Replacement of Right Hip Joint, Femoral Surface with Ceramic Synthetic Substitute, Uncemented, Open Approach | ICD-10-PCS       |
| OSRR03Z     | Replacement of Right Hip Joint, Femoral Surface with Ceramic Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| OSRR07Z     | Replacement of Right Hip Joint, Femoral Surface with Autologous Tissue Substitute, Open Approach             | ICD-10-PCS       |
| OSRR0J9     | Replacement of Right Hip Joint, Femoral Surface with Synthetic Substitute, Cemented, Open Approach           | ICD-10-PCS       |
| OSRR0JA     | Replacement of Right Hip Joint, Femoral Surface with Synthetic Substitute, Uncemented, Open Approach         | ICD-10-PCS       |
| OSRR0JZ     | Replacement of Right Hip Joint, Femoral Surface with Synthetic Substitute, Open Approach                     | ICD-10-PCS       |
| OSRR0KZ     | Replacement of Right Hip Joint, Femoral Surface with Nonautologous Tissue Substitute, Open Approach          | ICD-10-PCS       |
| OSRS019     | Replacement of Left Hip Joint, Femoral Surface with Metal Synthetic Substitute, Cemented, Open Approach      | ICD-10-PCS       |
| OSRS01A     | Replacement of Left Hip Joint, Femoral Surface with Metal Synthetic Substitute, Uncemented, Open             | ICD-10-PCS       |
| OSRS01Z     | Replacement of Left Hip Joint, Femoral Surface with Metal Synthetic Substitute, Open Approach                | ICD-10-PCS       |
| OSRS039     | Replacement of Left Hip Joint, Femoral Surface with Ceramic Synthetic Substitute, Cemented, Open             | ICD-10-PCS       |



**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| OSRS03A     | Replacement of Left Hip Joint, Femoral Surface with Ceramic Synthetic Substitute, Uncemented, Open Approach | ICD-10-PCS       |
| OSRS03Z     | Replacement of Left Hip Joint, Femoral Surface with Ceramic Synthetic Substitute, Open Approach             | ICD-10-PCS       |
| OSRS07Z     | Replacement of Left Hip Joint, Femoral Surface with Autologous Tissue Substitute, Open Approach             | ICD-10-PCS       |
| OSRS0J9     | Replacement of Left Hip Joint, Femoral Surface with Synthetic Substitute, Cemented, Open Approach           | ICD-10-PCS       |
| OSRS0JA     | Replacement of Left Hip Joint, Femoral Surface with Synthetic Substitute, Uncemented, Open Approach         | ICD-10-PCS       |
| OSRS0JZ     | Replacement of Left Hip Joint, Femoral Surface with Synthetic Substitute, Open Approach                     | ICD-10-PCS       |
| OSRS0KZ     | Replacement of Left Hip Joint, Femoral Surface with Nonautologous Tissue Substitute, Open Approach          | ICD-10-PCS       |
| OSRT07Z     | Replacement of Right Knee Joint, Femoral Surface with Autologous Tissue Substitute, Open Approach           | ICD-10-PCS       |
| OSRT0J9     | Replacement of Right Knee Joint, Femoral Surface with Synthetic Substitute, Cemented, Open Approach         | ICD-10-PCS       |
| OSRT0JA     | Replacement of Right Knee Joint, Femoral Surface with Synthetic Substitute, Uncemented, Open Approach       | ICD-10-PCS       |
| OSRT0JZ     | Replacement of Right Knee Joint, Femoral Surface with Synthetic Substitute, Open Approach                   | ICD-10-PCS       |
| OSRT0KZ     | Replacement of Right Knee Joint, Femoral Surface with Nonautologous Tissue Substitute, Open Approach        | ICD-10-PCS       |
| OSRU07Z     | Replacement of Left Knee Joint, Femoral Surface with Autologous Tissue Substitute, Open Approach            | ICD-10-PCS       |
| OSRU0J9     | Replacement of Left Knee Joint, Femoral Surface with Synthetic Substitute, Cemented, Open Approach          | ICD-10-PCS       |
| OSRU0JA     | Replacement of Left Knee Joint, Femoral Surface with Synthetic Substitute, Uncemented, Open Approach        | ICD-10-PCS       |
| OSRU0JZ     | Replacement of Left Knee Joint, Femoral Surface with Synthetic Substitute, Open Approach                    | ICD-10-PCS       |
| OSRU0KZ     | Replacement of Left Knee Joint, Femoral Surface with Nonautologous Tissue Substitute, Open Approach         | ICD-10-PCS       |
| OSRV07Z     | Replacement of Right Knee Joint, Tibial Surface with Autologous Tissue Substitute, Open Approach            | ICD-10-PCS       |
| OSRV0J9     | Replacement of Right Knee Joint, Tibial Surface with Synthetic Substitute, Cemented, Open Approach          | ICD-10-PCS       |
| OSRV0JA     | Replacement of Right Knee Joint, Tibial Surface with Synthetic Substitute, Uncemented, Open Approach        | ICD-10-PCS       |
| OSRV0JZ     | Replacement of Right Knee Joint, Tibial Surface with Synthetic Substitute, Open Approach                    | ICD-10-PCS       |
| OSRV0KZ     | Replacement of Right Knee Joint, Tibial Surface with Nonautologous Tissue Substitute, Open Approach         | ICD-10-PCS       |
| OSRW07Z     | Replacement of Left Knee Joint, Tibial Surface with Autologous Tissue Substitute, Open Approach             | ICD-10-PCS       |
| OSRW0J9     | Replacement of Left Knee Joint, Tibial Surface with Synthetic Substitute, Cemented, Open Approach           | ICD-10-PCS       |
| OSRW0JA     | Replacement of Left Knee Joint, Tibial Surface with Synthetic Substitute, Uncemented, Open Approach         | ICD-10-PCS       |
| OSRW0JZ     | Replacement of Left Knee Joint, Tibial Surface with Synthetic Substitute, Open Approach                     | ICD-10-PCS       |
| OSRW0KZ     | Replacement of Left Knee Joint, Tibial Surface with Nonautologous Tissue Substitute, Open Approach          | ICD-10-PCS       |
| OSW90JZ     | Revision of Synthetic Substitute in Right Hip Joint, Open Approach  | ICD-10-PCS       |
| OSW93JZ     | Revision of Synthetic Substitute in Right Hip Joint, Percutaneous Approach                                  | ICD-10-PCS       |
| OSW94JZ     | Revision of Synthetic Substitute in Right Hip Joint, Percutaneous Endoscopic Approach                       | ICD-10-PCS       |
| OSWA0JZ     | Revision of Synthetic Substitute in Right Hip Joint, Acetabular Surface, Open Approach                      | ICD-10-PCS       |
| OSWA3JZ     | Revision of Synthetic Substitute in Right Hip Joint, Acetabular Surface, Percutaneous Approach              | ICD-10-PCS       |
| OSWA4JZ     | Revision of Synthetic Substitute in Right Hip Joint, Acetabular Surface, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| OSWB0JZ     | Revision of Synthetic Substitute in Left Hip Joint, Open Approach   | ICD-10-PCS       |
| OSWB3JZ     | Revision of Synthetic Substitute in Left Hip Joint, Percutaneous Approach                                   | ICD-10-PCS       |
| OSWB4JZ     | Revision of Synthetic Substitute in Left Hip Joint, Percutaneous Endoscopic Approach                        | ICD-10-PCS       |
| OSWC0JC     | Revision of Synthetic Substitute in Right Knee Joint, Patellar Surface, Open Approach                       | ICD-10-PCS       |
| OSWC0JZ     | Revision of Synthetic Substitute in Right Knee Joint, Open Approach   | ICD-10-PCS       |
| OSWC3JC     | Revision of Synthetic Substitute in Right Knee Joint, Patellar Surface, Percutaneous Approach               | ICD-10-PCS       |
| OSWC3JZ     | Revision of Synthetic Substitute in Right Knee Joint, Percutaneous Approach                                 | ICD-10-PCS       |
| OSWC4JC     | Revision of Synthetic Substitute in Right Knee Joint, Patellar Surface, Percutaneous Endoscopic Approach    | ICD-10-PCS       |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 0SWC4JZ     | Revision of Synthetic Substitute in Right Knee Joint, Percutaneous Endoscopic Approach                   | ICD-10-PCS       |
| 0SWD0JC     | Revision of Synthetic Substitute in Left Knee Joint, Patellar Surface, Open Approach                     | ICD-10-PCS       |
| 0SWD0JZ     | Revision of Synthetic Substitute in Left Knee Joint, Open Approach                                       | ICD-10-PCS       |
| 0SWD3JC     | Revision of Synthetic Substitute in Left Knee Joint, Patellar Surface, Percutaneous Approach             | ICD-10-PCS       |
| 0SWD3JZ     | Revision of Synthetic Substitute in Left Knee Joint, Percutaneous Approach                               | ICD-10-PCS       |
| 0SWD4JC     | Revision of Synthetic Substitute in Left Knee Joint, Patellar Surface, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| 0SWD4JZ     | Revision of Synthetic Substitute in Left Knee Joint, Percutaneous Endoscopic Approach                    | ICD-10-PCS       |
| 0SWE0JZ     | Revision of Synthetic Substitute in Left Hip Joint, Acetabular Surface, Open Approach                    | ICD-10-PCS       |
| 0SWE3JZ     | Revision of Synthetic Substitute in Left Hip Joint, Acetabular Surface, Percutaneous Approach            | ICD-10-PCS       |
| 0SWE4JZ     | Revision of Synthetic Substitute in Left Hip Joint, Acetabular Surface, Percutaneous Endoscopic Approach | ICD-10-PCS       |
| 0SWF0JZ     | Revision of Synthetic Substitute in Right Ankle Joint, Open Approach                                     | ICD-10-PCS       |
| 0SWF3JZ     | Revision of Synthetic Substitute in Right Ankle Joint, Percutaneous Approach                             | ICD-10-PCS       |
| 0SWF4JZ     | Revision of Synthetic Substitute in Right Ankle Joint, Percutaneous Endoscopic Approach                  | ICD-10-PCS       |
| 0SWG0JZ     | Revision of Synthetic Substitute in Left Ankle Joint, Open Approach                                      | ICD-10-PCS       |
| 0SWG3JZ     | Revision of Synthetic Substitute in Left Ankle Joint, Percutaneous Approach                              | ICD-10-PCS       |
| 0SWG4JZ     | Revision of Synthetic Substitute in Left Ankle Joint, Percutaneous Endoscopic Approach                   | ICD-10-PCS       |
| 0SWH0JZ     | Revision of Synthetic Substitute in Right Tarsal Joint, Open Approach                                    | ICD-10-PCS       |
| 0SWH3JZ     | Revision of Synthetic Substitute in Right Tarsal Joint, Percutaneous Approach                            | ICD-10-PCS       |
| 0SWH4JZ     | Revision of Synthetic Substitute in Right Tarsal Joint, Percutaneous Endoscopic Approach                 | ICD-10-PCS       |
| 0SWJ0JZ     | Revision of Synthetic Substitute in Left Tarsal Joint, Open Approach                                     | ICD-10-PCS       |
| 0SWJ3JZ     | Revision of Synthetic Substitute in Left Tarsal Joint, Percutaneous Approach                             | ICD-10-PCS       |
| 0SWJ4JZ     | Revision of Synthetic Substitute in Left Tarsal Joint, Percutaneous Endoscopic Approach                  | ICD-10-PCS       |
| 0SWK0JZ     | Revision of Synthetic Substitute in Right Metatarsal-Tarsal Joint, Open Approach                         | ICD-10-PCS       |
| 0SWK3JZ     | Revision of Synthetic Substitute in Right Metatarsal-Tarsal Joint, Percutaneous Approach                 | ICD-10-PCS       |
| 0SWK4JZ     | Revision of Synthetic Substitute in Right Metatarsal-Tarsal Joint, Percutaneous Endoscopic Approach      | ICD-10-PCS       |
| 0SWL0JZ     | Revision of Synthetic Substitute in Left Metatarsal-Tarsal Joint, Open Approach                          | ICD-10-PCS       |
| 0SWL3JZ     | Revision of Synthetic Substitute in Left Metatarsal-Tarsal Joint, Percutaneous Approach                  | ICD-10-PCS       |
| 0SWL4JZ     | Revision of Synthetic Substitute in Left Metatarsal-Tarsal Joint, Percutaneous Endoscopic Approach       | ICD-10-PCS       |
| 0SWM0JZ     | Revision of Synthetic Substitute in Right Metatarsal-Phalangeal Joint, Open Approach                     | ICD-10-PCS       |
| 0SWM3JZ     | Revision of Synthetic Substitute in Right Metatarsal-Phalangeal Joint, Percutaneous Approach             | ICD-10-PCS       |
| 0SWM4JZ     | Revision of Synthetic Substitute in Right Metatarsal-Phalangeal Joint, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| 0SWN0JZ     | Revision of Synthetic Substitute in Left Metatarsal-Phalangeal Joint, Open Approach                      | ICD-10-PCS       |
| 0SWN3JZ     | Revision of Synthetic Substitute in Left Metatarsal-Phalangeal Joint, Percutaneous Approach              | ICD-10-PCS       |
| 0SWN4JZ     | Revision of Synthetic Substitute in Left Metatarsal-Phalangeal Joint, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| 0SWP0JZ     | Revision of Synthetic Substitute in Right Toe Phalangeal Joint, Open Approach                            | ICD-10-PCS       |
| 0SWP3JZ     | Revision of Synthetic Substitute in Right Toe Phalangeal Joint, Percutaneous Approach                    | ICD-10-PCS       |
| 0SWP4JZ     | Revision of Synthetic Substitute in Right Toe Phalangeal Joint, Percutaneous Endoscopic Approach         | ICD-10-PCS       |
| 0SWQ0JZ     | Revision of Synthetic Substitute in Left Toe Phalangeal Joint, Open Approach                             | ICD-10-PCS       |
| 0SWQ3JZ     | Revision of Synthetic Substitute in Left Toe Phalangeal Joint, Percutaneous Approach                     | ICD-10-PCS       |
| 0SWQ4JZ     | Revision of Synthetic Substitute in Left Toe Phalangeal Joint, Percutaneous Endoscopic Approach          | ICD-10-PCS       |
| 0SWR0JZ     | Revision of Synthetic Substitute in Right Hip Joint, Femoral Surface, Open Approach                      | ICD-10-PCS       |
| 0SWR3JZ     | Revision of Synthetic Substitute in Right Hip Joint, Femoral Surface, Percutaneous Approach              | ICD-10-PCS       |

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| <b>Code</b>               | <b>Description</b>  | <b>Code Type</b> |
|---------------------------|---|------------------|
| OSWR4JZ                   | Revision of Synthetic Substitute in Right Hip Joint, Femoral Surface, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| OSWS0JZ                   | Revision of Synthetic Substitute in Left Hip Joint, Femoral Surface, Open Approach                      | ICD-10-PCS       |
| OSWS3JZ                   | Revision of Synthetic Substitute in Left Hip Joint, Femoral Surface, Percutaneous Approach              | ICD-10-PCS       |
| OSWS4JZ                   | Revision of Synthetic Substitute in Left Hip Joint, Femoral Surface, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| OSWT0JZ                   | Revision of Synthetic Substitute in Right Knee Joint, Femoral Surface, Open Approach                    | ICD-10-PCS       |
| OSWT3JZ                   | Revision of Synthetic Substitute in Right Knee Joint, Femoral Surface, Percutaneous Approach            | ICD-10-PCS       |
| OSWT4JZ                   | Revision of Synthetic Substitute in Right Knee Joint, Femoral Surface, Percutaneous Endoscopic Approach | ICD-10-PCS       |
| OSWU0JZ                   | Revision of Synthetic Substitute in Left Knee Joint, Femoral Surface, Open Approach                     | ICD-10-PCS       |
| OSWU3JZ                   | Revision of Synthetic Substitute in Left Knee Joint, Femoral Surface, Percutaneous Approach             | ICD-10-PCS       |
| OSWU4JZ                   | Revision of Synthetic Substitute in Left Knee Joint, Femoral Surface, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| OSWV0JZ                   | Revision of Synthetic Substitute in Right Knee Joint, Tibial Surface, Open Approach                     | ICD-10-PCS       |
| OSWV3JZ                   | Revision of Synthetic Substitute in Right Knee Joint, Tibial Surface, Percutaneous Approach             | ICD-10-PCS       |
| OSWV4JZ                   | Revision of Synthetic Substitute in Right Knee Joint, Tibial Surface, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| OSWW0JZ                   | Revision of Synthetic Substitute in Left Knee Joint, Tibial Surface, Open Approach                      | ICD-10-PCS       |
| OSWW3JZ                   | Revision of Synthetic Substitute in Left Knee Joint, Tibial Surface, Percutaneous Approach              | ICD-10-PCS       |
| OSWW4JZ                   | Revision of Synthetic Substitute in Left Knee Joint, Tibial Surface, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| <b>Kidney Replacement</b> |   |                  |
| 556                       | Transplant of kidney  | ICD-9-CM         |
| 5561                      | Renal autotransplantation   | ICD-9-CM         |
| 5569                      | Other kidney transplantation  | ICD-9-CM         |
| 99681                     | Complications of transplanted kidney  | ICD-9-CM         |
| V420                      | Kidney replaced by transplant   | ICD-9-CM         |
| T86.10                    | Unspecified complication of kidney transplant   | ICD-10-CM        |
| T86.11                    | Kidney transplant rejection   | ICD-10-CM        |
| T86.12                    | Kidney transplant failure   | ICD-10-CM        |
| T86.13                    | Kidney transplant infection   | ICD-10-CM        |
| T86.19                    | Other complication of kidney transplant   | ICD-10-CM        |
| Z48.22                    | Encounter for aftercare following kidney transplant   | ICD-10-CM        |
| Z94.0                     | Kidney transplant status  | ICD-10-CM        |
| OTS00ZZ                   | Reposition Right Kidney, Open Approach  | ICD-10-PCS       |
| OTS10ZZ                   | Reposition Left Kidney, Open Approach   | ICD-10-PCS       |
| OTY00Z0                   | Transplantation of Right Kidney, Allogeneic, Open Approach  | ICD-10-PCS       |
| OTY00Z1                   | Transplantation of Right Kidney, Syngeneic, Open Approach   | ICD-10-PCS       |
| OTY00Z2                   | Transplantation of Right Kidney, Zooplastic, Open Approach  | ICD-10-PCS       |
| OTY10Z0                   | Transplantation of Left Kidney, Allogeneic, Open Approach   | ICD-10-PCS       |
| OTY10Z1                   | Transplantation of Left Kidney, Syngeneic, Open Approach  | ICD-10-PCS       |
| OTY10Z2                   | Transplantation of Left Kidney, Zooplastic, Open Approach   | ICD-10-PCS       |
| <b>Mitral Stenosis</b>    |   |                  |
| 394.0                     | Mitral stenosis   | ICD-9-CM         |
| 394.1                     | Rheumatic mitral insufficiency  | ICD-9-CM         |
| 394.2                     | Mitral stenosis with insufficiency  | ICD-9-CM         |
| 396.0                     | Mitral valve stenosis and aortic valve stenosis   | ICD-9-CM         |

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| <b>Code</b>               | <b>Description</b>  | <b>Code Type</b> |
|---------------------------|---|------------------|
| 396.1                     | Mitral valve stenosis and aortic valve insufficiency  | ICD-9-CM         |
| 396.2                     | Mitral valve insufficiency and aortic valve stenosis  | ICD-9-CM         |
| 396.3                     | Mitral valve insufficiency and aortic valve insufficiency                                       | ICD-9-CM         |
| 746.5                     | Congenital mitral stenosis  | ICD-9-CM         |
| 746.6                     | Congenital mitral insufficiency   | ICD-9-CM         |
| I05.0                     | Rheumatic mitral stenosis   | ICD-10-CM        |
| I05.1                     | Rheumatic mitral insufficiency  | ICD-10-CM        |
| I05.2                     | Rheumatic mitral stenosis with insufficiency  | ICD-10-CM        |
| I08.0                     | Rheumatic disorders of both mitral and aortic valves  | ICD-10-CM        |
| I08.3                     | Combined rheumatic disorders of mitral, aortic and tricuspid valves                             | ICD-10-CM        |
| I34.2                     | Nonrheumatic mitral stenosis  | ICD-10-CM        |
| Q23.2                     | Congenital mitral stenosis  | ICD-10-CM        |
| Q23.3                     | Congenital mitral insufficiency   | ICD-10-CM        |
| 027G04Z                   | Dilation of Mitral Valve with Drug-eluting Intraluminal Device, Open Approach                   | ICD-10-PCS       |
| 027G0DZ                   | Dilation of Mitral Valve with Intraluminal Device, Open Approach                                | ICD-10-PCS       |
| 027G0ZZ                   | Dilation of Mitral Valve, Open Approach   | ICD-10-PCS       |
| 02NG0ZZ                   | Release Mitral Valve, Open Approach   | ICD-10-PCS       |
| 02QG0ZZ                   | Repair Mitral Valve, Open Approach  | ICD-10-PCS       |
| 02VG0ZZ                   | Restriction of Mitral Valve, Open Approach  | ICD-10-PCS       |
| <b>Pulmonary Embolism</b> |   |                  |
| 4151                      | Pulmonary embolism and infarction   | ICD-9-CM         |
| 41511                     | Iatrogenic pulmonary embolism and infarction  | ICD-9-CM         |
| 41512                     | Septic pulmonary embolism   | ICD-9-CM         |
| 41519                     | Other pulmonary embolism and infarction   | ICD-9-CM         |
| I26.01                    | Septic pulmonary embolism with acute cor pulmonale  | ICD-10-CM        |
| I26.09                    | Other pulmonary embolism with acute cor pulmonale   | ICD-10-CM        |
| I26.90                    | Septic pulmonary embolism without acute cor pulmonale   | ICD-10-CM        |
| I26.99                    | Other pulmonary embolism without acute cor pulmonale  | ICD-10-CM        |
| T80.0XXA                  | Air embolism following infusion, transfusion and therapeutic injection, initial encounter       | ICD-10-CM        |
| T81.718A                  | Complication of other artery following a procedure, not elsewhere classified, initial encounter | ICD-10-CM        |
| T81.72XA                  | Complication of vein following a procedure, not elsewhere classified, initial encounter         | ICD-10-CM        |
| T82.817A                  | Embolism due to cardiac prosthetic devices, implants and grafts, initial encounter              | ICD-10-CM        |
| T82.818A                  | Embolism due to vascular prosthetic devices, implants and grafts, initial encounter             | ICD-10-CM        |
| <b>Valve Repair</b>       |   |                  |
| 33400                     | REPAIR OF AORTIC VALVE  | CPT-4            |
| 33401                     | VALVULOPLASTY OPEN  | CPT-4            |
| 33403                     | VALVULOPLASTY W/CP BYPASS   | CPT-4            |
| 33420                     | REVISION OF MITRAL VALVE  | CPT-4            |
| 33422                     | REVISION OF MITRAL VALVE  | CPT-4            |
| 33425                     | REPAIR OF MITRAL VALVE  | CPT-4            |
| 33426                     | REPAIR OF MITRAL VALVE  | CPT-4            |
| 33427                     | REPAIR OF MITRAL VALVE  | CPT-4            |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b>              | <b>Description</b>  | <b>Code Type</b> |
|--------------------------|---|------------------|
| 33463                    | VALVULOPLASTY TRICUSPID   | CPT-4            |
| 33464                    | VALVULOPLASTY TRICUSPID   | CPT-4            |
| 33465                    | REPLACE TRICUSPID VALVE   | CPT-4            |
| 33470                    | REVISION OF PULMONARY VALVE   | CPT-4            |
| 33471                    | VALVOTOMY PULMONARY VALVE   | CPT-4            |
| 33472                    | REVISION OF PULMONARY VALVE   | CPT-4            |
| 33474                    | REVISION OF PULMONARY VALVE   | CPT-4            |
| 92986                    | REVISION OF AORTIC VALVE  | CPT-4            |
| 92987                    | REVISION OF MITRAL VALVE  | CPT-4            |
| 92990                    | REVISION OF PULMONARY VALVE   | CPT-4            |
| <b>Valve Replacement</b> |   |                  |
| V422                     | Heart valve replaced by transplant  | ICD-9-CM         |
| V433                     | Heart valve replaced by other means   | ICD-9-CM         |
| 352                      | OPEN & OTHR REPLACEMENT HEART VALVE   | ICD-9-CM         |
| 3520                     | OPEN & OTHER REPL UNS HEART VALVE   | ICD-9-CM         |
| 3521                     | OPEN OTH REPL AORTIC VALVE TISS GFT   | ICD-9-CM         |
| 3522                     | OPEN & OTHR REPLACEMENT AORTIC VALVE  | ICD-9-CM         |
| 3523                     | OPN OTH REPL MITRL VALVE TISS GRAFT   | ICD-9-CM         |
| 3524                     | OPEN & OTHER REPLACEMENT MITRAL VALVE   | ICD-9-CM         |
| 3525                     | OPEN OTH REPL PULM VALVE TISS GRAFT   | ICD-9-CM         |
| 3526                     | OPEN & OTHER REPL PULMONARY VALVE   | ICD-9-CM         |
| 3527                     | OPEN & OTH REPL TV W/TISSUE GRAFT   | ICD-9-CM         |
| 3528                     | OPEN & OTHER REPL TRICUSPID VALVE   | ICD-9-CM         |
| 33405                    | REPLACEMENT OF AORTIC VALVE   | CPT-4            |
| 33406                    | REPLACEMENT OF AORTIC VALVE   | CPT-4            |
| 33410                    | REPLACEMENT OF AORTIC VALVE   | CPT-4            |
| 33411                    | REPLACEMENT OF AORTIC VALVE   | CPT-4            |
| 33412                    | REPLACEMENT OF AORTIC VALVE   | CPT-4            |
| 33413                    | REPLACEMENT OF AORTIC VALVE   | CPT-4            |
| 33430                    | REPLACEMENT OF MITRAL VALVE   | CPT-4            |
| 33465                    | REPLACE TRICUSPID VALVE   | CPT-4            |
| 33475                    | REPLACEMENT PULMONARY VALVE   | CPT-4            |
| 33496                    | REPAIR PROSTH VALVE CLOT  | CPT-4            |
| Z95.2                    | Presence of prosthetic heart valve  | ICD-10-CM        |
| Z95.3                    | Presence of xenogenic heart valve   | ICD-10-CM        |
| Z95.4                    | Presence of other heart-valve replacement   | ICD-10-CM        |
| 02RF07Z                  | Replacement of Aortic Valve with Autologous Tissue Substitute, Open Approach                    | ICD-10-PCS       |
| 02RF08Z                  | Replacement of Aortic Valve with Zooplasic Tissue, Open Approach                                | ICD-10-PCS       |
| 02RF0JZ                  | Replacement of Aortic Valve with Synthetic Substitute, Open Approach                            | ICD-10-PCS       |
| 02RF0KZ                  | Replacement of Aortic Valve with Nonautologous Tissue Substitute, Open Approach                 | ICD-10-PCS       |
| 02RF47Z                  | Replacement of Aortic Valve with Autologous Tissue Substitute, Percutaneous Endoscopic Approach | ICD-10-PCS       |
| 02RF48Z                  | Replacement of Aortic Valve with Zooplasic Tissue, Percutaneous Endoscopic Approach             | ICD-10-PCS       |

**Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes, International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes Used to Define Exclusion Criteria in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 02RF4JZ     | Replacement of Aortic Valve with Synthetic Substitute, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| 02RF4KZ     | Replacement of Aortic Valve with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach                                       | ICD-10-PCS       |
| 02RG07Z     | Replacement of Mitral Valve with Autologous Tissue Substitute, Open Approach   | ICD-10-PCS       |
| 02RG08Z     | Replacement of Mitral Valve with Zooplasic Tissue, Open Approach   | ICD-10-PCS       |
| 02RG0JZ     | Replacement of Mitral Valve with Synthetic Substitute, Open Approach   | ICD-10-PCS       |
| 02RG0KZ     | Replacement of Mitral Valve with Nonautologous Tissue Substitute, Open Approach  | ICD-10-PCS       |
| 02RG37Z     | Replacement of Mitral Valve with Autologous Tissue Substitute, Percutaneous Approach   | ICD-10-PCS       |
| 02RG38Z     | Replacement of Mitral Valve with Zooplasic Tissue, Percutaneous Approach   | ICD-10-PCS       |
| 02RG3JZ     | Replacement of Mitral Valve with Synthetic Substitute, Percutaneous Approach   | ICD-10-PCS       |
| 02RG3KZ     | Replacement of Mitral Valve with Nonautologous Tissue Substitute, Percutaneous Approach  | ICD-10-PCS       |
| 02RG47Z     | Replacement of Mitral Valve with Autologous Tissue Substitute, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| 02RG48Z     | Replacement of Mitral Valve with Zooplasic Tissue, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| 02RG4JZ     | Replacement of Mitral Valve with Synthetic Substitute, Percutaneous Endoscopic Approach  | ICD-10-PCS       |
| 02RG4KZ     | Replacement of Mitral Valve with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach                                       | ICD-10-PCS       |
| 02RH07Z     | Replacement of Pulmonary Valve with Autologous Tissue Substitute, Open Approach  | ICD-10-PCS       |
| 02RH08Z     | Replacement of Pulmonary Valve with Zooplasic Tissue, Open Approach  | ICD-10-PCS       |
| 02RH0JZ     | Replacement of Pulmonary Valve with Synthetic Substitute, Open Approach  | ICD-10-PCS       |
| 02RH0KZ     | Replacement of Pulmonary Valve with Nonautologous Tissue Substitute, Open Approach   | ICD-10-PCS       |
| 02RH47Z     | Replacement of Pulmonary Valve with Autologous Tissue Substitute, Percutaneous Endoscopic Approach                                       | ICD-10-PCS       |
| 02RH48Z     | Replacement of Pulmonary Valve with Zooplasic Tissue, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| 02RH4JZ     | Replacement of Pulmonary Valve with Synthetic Substitute, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| 02RH4KZ     | Replacement of Pulmonary Valve with Nonautologous Tissue Substitute, Percutaneous Endoscopic   | ICD-10-PCS       |
| 02RJ07Z     | Replacement of Tricuspid Valve with Autologous Tissue Substitute, Open Approach  | ICD-10-PCS       |
| 02RJ08Z     | Replacement of Tricuspid Valve with Zooplasic Tissue, Open Approach  | ICD-10-PCS       |
| 02RJ0JZ     | Replacement of Tricuspid Valve with Synthetic Substitute, Open Approach  | ICD-10-PCS       |
| 02RJ0KZ     | Replacement of Tricuspid Valve with Nonautologous Tissue Substitute, Open Approach   | ICD-10-PCS       |
| 02RJ47Z     | Replacement of Tricuspid Valve with Autologous Tissue Substitute, Percutaneous Endoscopic Approach                                       | ICD-10-PCS       |
| 02RJ48Z     | Replacement of Tricuspid Valve with Zooplasic Tissue, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| 02RJ4JZ     | Replacement of Tricuspid Valve with Synthetic Substitute, Percutaneous Endoscopic Approach   | ICD-10-PCS       |
| 02RJ4KZ     | Replacement of Tricuspid Valve with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach                                    | ICD-10-PCS       |
| X2RF03Z     | Replacement of Aortic Valve using Zooplasic Tissue, Rapid Deployment Technique, Open Approach, New Technology Group 2                    | ICD-10-PCS       |
| X2RF43Z     | Replacement of Aortic Valve using Zooplasic Tissue, Rapid Deployment Technique, Percutaneous Endoscopic Approach, New Technology Group 2 | ICD-10-PCS       |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b>   | <b>Description</b>   | <b>Code Type</b> |
|---|--|------------------|
| <b>Gastrointestinal Hemorrhage (inpatient care setting in primary diagnosis position)</b> |  |                  |
| 455.2   | Internal hemorrhoids with other complication   | ICD-9-CM         |
| 455.5   | External hemorrhoids with other complication   | ICD-9-CM         |
| 456.0   | Esophageal varices with bleeding   | ICD-9-CM         |
| 456.20  | Esophageal varices with bleeding in diseases classified elsewhere                                    | ICD-9-CM         |
| 530.7   | Gastroesophageal laceration-hemorrhage syndrome  | ICD-9-CM         |
| 530.82  | Esophageal hemorrhage  | ICD-9-CM         |
| 531.0   | Acute gastric ulcer with hemorrhage  | ICD-9-CM         |
| 531.00  | Acute gastric ulcer with hemorrhage, without mention of obstruction                                  | ICD-9-CM         |
| 531.01  | Acute gastric ulcer with hemorrhage and obstruction  | ICD-9-CM         |
| 531.1   | Acute gastric ulcer with perforation   | ICD-9-CM         |
| 531.10  | Acute gastric ulcer with perforation, without mention of obstruction                                 | ICD-9-CM         |
| 531.11  | Acute gastric ulcer with perforation and obstruction   | ICD-9-CM         |
| 531.2   | Acute gastric ulcer with hemorrhage and perforation  | ICD-9-CM         |
| 531.20  | Acute gastric ulcer with hemorrhage and perforation, without mention of obstruction                  | ICD-9-CM         |
| 531.21  | Acute gastric ulcer with hemorrhage, perforation, and obstruction                                    | ICD-9-CM         |
| 531.3   | Acute gastric ulcer without mention of hemorrhage or perforation                                     | ICD-9-CM         |
| 531.30  | Acute gastric ulcer without mention of hemorrhage, perforation, or obstruction                       | ICD-9-CM         |
| 531.31  | Acute gastric ulcer without mention of hemorrhage or perforation, with obstruction                   | ICD-9-CM         |
| 531.4   | Chronic or unspecified gastric ulcer with hemorrhage   | ICD-9-CM         |
| 531.40  | Chronic or unspecified gastric ulcer with hemorrhage, without mention of obstruction                 | ICD-9-CM         |
| 531.41  | Chronic or unspecified gastric ulcer with hemorrhage and obstruction                                 | ICD-9-CM         |
| 531.5   | Chronic or unspecified gastric ulcer with perforation  | ICD-9-CM         |
| 531.50  | Chronic or unspecified gastric ulcer with perforation, without mention of obstruction                | ICD-9-CM         |
| 531.51  | Chronic or unspecified gastric ulcer with perforation and obstruction                                | ICD-9-CM         |
| 531.6   | Chronic or unspecified gastric ulcer with hemorrhage and perforation                                 | ICD-9-CM         |
| 531.60  | Chronic or unspecified gastric ulcer with hemorrhage and perforation, without mention of obstruction | ICD-9-CM         |
| 531.61  | Chronic or unspecified gastric ulcer with hemorrhage, perforation, and obstruction                   | ICD-9-CM         |
| 532.0   | Acute duodenal ulcer with hemorrhage   | ICD-9-CM         |
| 532.00  | Acute duodenal ulcer with hemorrhage, without mention of obstruction                                 | ICD-9-CM         |
| 532.01  | Acute duodenal ulcer with hemorrhage and obstruction   | ICD-9-CM         |
| 532.1   | Acute duodenal ulcer with perforation  | ICD-9-CM         |
| 532.10  | Acute duodenal ulcer with perforation, without mention of obstruction                                | ICD-9-CM         |
| 532.11  | Acute duodenal ulcer with perforation and obstruction  | ICD-9-CM         |
| 532.2   | Acute duodenal ulcer with hemorrhage and perforation   | ICD-9-CM         |
| 532.20  | Acute duodenal ulcer with hemorrhage and perforation, without mention of obstruction                 | ICD-9-CM         |
| 532.21  | Acute duodenal ulcer with hemorrhage, perforation, and obstruction                                   | ICD-9-CM         |
| 532.3   | Acute duodenal ulcer without mention of hemorrhage or perforation                                    | ICD-9-CM         |
| 532.30  | Acute duodenal ulcer without mention of hemorrhage, perforation, or obstruction                      | ICD-9-CM         |
| 532.31  | Acute duodenal ulcer without mention of hemorrhage or perforation, with obstruction                  | ICD-9-CM         |
| 532.4   | Chronic or unspecified duodenal ulcer with hemorrhage  | ICD-9-CM         |
| 532.40  | Duodenal ulcer, chronic or unspecified, with hemorrhage, without mention of obstruction              | ICD-9-CM         |
| 532.41  | Chronic or unspecified duodenal ulcer with hemorrhage and obstruction                                | ICD-9-CM         |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 532.5       | Chronic or unspecified duodenal ulcer with perforation   | ICD-9-CM         |
| 532.50      | Chronic or unspecified duodenal ulcer with perforation, without mention of obstruction                                 | ICD-9-CM         |
| 532.51      | Chronic or unspecified duodenal ulcer with perforation and obstruction   | ICD-9-CM         |
| 532.6       | Chronic or unspecified duodenal ulcer with hemorrhage and perforation  | ICD-9-CM         |
| 532.60      | Chronic or unspecified duodenal ulcer with hemorrhage and perforation, without mention of obstruction                  | ICD-9-CM         |
| 532.61      | Chronic or unspecified duodenal ulcer with hemorrhage, perforation, and obstruction                                    | ICD-9-CM         |
| 533.0       | Acute peptic ulcer, unspecified site, with hemorrhage  | ICD-9-CM         |
| 533.00      | Acute peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction                                  | ICD-9-CM         |
| 533.01      | Acute peptic ulcer, unspecified site, with hemorrhage and obstruction  | ICD-9-CM         |
| 533.1       | Acute peptic ulcer, unspecified site, with perforation   | ICD-9-CM         |
| 533.10      | Acute peptic ulcer, unspecified site, with perforation, without mention of obstruction                                 | ICD-9-CM         |
| 533.11      | Acute peptic ulcer, unspecified site, with perforation and obstruction   | ICD-9-CM         |
| 533.2       | Acute peptic ulcer, unspecified site, with hemorrhage and perforation  | ICD-9-CM         |
| 533.20      | Acute peptic ulcer, unspecified site, with hemorrhage and perforation, without mention of obstruction                  | ICD-9-CM         |
| 533.21      | Acute peptic ulcer, unspecified site, with hemorrhage, perforation, and obstruction                                    | ICD-9-CM         |
| 533.3       | Acute peptic ulcer, unspecified site, without mention of hemorrhage and perforation                                    | ICD-9-CM         |
| 533.30      | Acute peptic ulcer, unspecified site, without mention of hemorrhage, perforation, or obstruction                       | ICD-9-CM         |
| 533.31      | Acute peptic ulcer, unspecified site, without mention of hemorrhage and perforation, with obstruction                  | ICD-9-CM         |
| 533.4       | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage   | ICD-9-CM         |
| 533.40      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction                 | ICD-9-CM         |
| 533.41      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and obstruction                                 | ICD-9-CM         |
| 533.5       | Chronic or unspecified peptic ulcer, unspecified site, with perforation  | ICD-9-CM         |
| 533.50      | Chronic or unspecified peptic ulcer, unspecified site, with perforation, without mention of obstruction                | ICD-9-CM         |
| 533.51      | Chronic or unspecified peptic ulcer, unspecified site, with perforation and obstruction                                | ICD-9-CM         |
| 533.6       | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and perforation                                 | ICD-9-CM         |
| 533.60      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage and perforation, without mention of obstruction | ICD-9-CM         |
| 533.61      | Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, perforation, and obstruction                   | ICD-9-CM         |
| 534.0       | Acute gastrojejunal ulcer with hemorrhage  | ICD-9-CM         |
| 534.00      | Acute gastrojejunal ulcer with hemorrhage, without mention of obstruction  | ICD-9-CM         |
| 534.01      | Acute gastrojejunal ulcer, with hemorrhage and obstruction   | ICD-9-CM         |
| 534.1       | Acute gastrojejunal ulcer with perforation   | ICD-9-CM         |
| 534.10      | Acute gastrojejunal ulcer with perforation, without mention of obstruction   | ICD-9-CM         |
| 534.11      | Acute gastrojejunal ulcer with perforation and obstruction   | ICD-9-CM         |
| 534.2       | Acute gastrojejunal ulcer with hemorrhage and perforation  | ICD-9-CM         |
| 534.20      | Acute gastrojejunal ulcer with hemorrhage and perforation, without mention of obstruction                              | ICD-9-CM         |
| 534.21      | Acute gastrojejunal ulcer with hemorrhage, perforation, and obstruction  | ICD-9-CM         |
| 534.3       | Acute gastrojejunal ulcer without mention of hemorrhage or perforation   | ICD-9-CM         |
| 534.30      | Acute gastrojejunal ulcer without mention of hemorrhage, perforation, or obstruction                                   | ICD-9-CM         |
| 534.31      | Acute gastrojejunal ulcer without mention of hemorrhage or perforation, with obstruction                               | ICD-9-CM         |
| 534.4       | Chronic or unspecified gastrojejunal ulcer with hemorrhage   | ICD-9-CM         |
| 534.40      | Chronic or unspecified gastrojejunal ulcer with hemorrhage, without mention of obstruction                             | ICD-9-CM         |
| 534.41      | Chronic or unspecified gastrojejunal ulcer, with hemorrhage and obstruction  | ICD-9-CM         |



**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 534.5       | Chronic or unspecified gastrojejunal ulcer with perforation                                    | ICD-9-CM         |
| 534.50      | Chronic or unspecified gastrojejunal ulcer with perforation, without mention of obstruction    | ICD-9-CM         |
| 534.51      | Chronic or unspecified gastrojejunal ulcer with perforation and obstruction                    | ICD-9-CM         |
| 534.6       | Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation                     | ICD-9-CM         |
| 534.60      | Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation, without mention of | ICD-9-CM         |
| 534.61      | Chronic or unspecified gastrojejunal ulcer with hemorrhage, perforation, and obstruction       | ICD-9-CM         |
| 535.01      | Acute gastritis with hemorrhage  | ICD-9-CM         |
| 535.11      | Atrophic gastritis with hemorrhage   | ICD-9-CM         |
| 535.21      | Gastric mucosal hypertrophy with hemorrhage  | ICD-9-CM         |
| 535.31      | Alcoholic gastritis with hemorrhage  | ICD-9-CM         |
| 535.41      | Other specified gastritis with hemorrhage  | ICD-9-CM         |
| 535.51      | Unspecified gastritis and gastroduodenitis with hemorrhage                                     | ICD-9-CM         |
| 535.61      | Duodenitis with hemorrhage   | ICD-9-CM         |
| 537.83      | Angiodysplasia of stomach and duodenum with hemorrhage   | ICD-9-CM         |
| 562.02      | Diverticulosis of small intestine with hemorrhage  | ICD-9-CM         |
| 562.03      | Diverticulitis of small intestine with hemorrhage  | ICD-9-CM         |
| 562.12      | Diverticulosis of colon with hemorrhage  | ICD-9-CM         |
| 562.13      | Diverticulitis of colon with hemorrhage  | ICD-9-CM         |
| 568.81      | Hemoperitoneum (nontraumatic)  | ICD-9-CM         |
| 569.3       | Hemorrhage of rectum and anus  | ICD-9-CM         |
| 569.85      | Angiodysplasia of intestine with hemorrhage  | ICD-9-CM         |
| 578.0       | Hematemesis  | ICD-9-CM         |
| 578.1       | Blood in stool   | ICD-9-CM         |
| 578.9       | Hemorrhage of gastrointestinal tract, unspecified  | ICD-9-CM         |
| I85.01      | Esophageal varices with bleeding   | ICD-10-CM        |
| I85.11      | Secondary esophageal varices with bleeding   | ICD-10-CM        |
| K22.6       | Gastro-esophageal laceration-hemorrhage syndrome   | ICD-10-CM        |
| K22.8       | Other specified diseases of esophagus  | ICD-10-CM        |
| K25.0       | Acute gastric ulcer with hemorrhage  | ICD-10-CM        |
| K25.1       | Acute gastric ulcer with perforation   | ICD-10-CM        |
| K25.2       | Acute gastric ulcer with both hemorrhage and perforation                                       | ICD-10-CM        |
| K25.3       | Acute gastric ulcer without hemorrhage or perforation  | ICD-10-CM        |
| K25.4       | Chronic or unspecified gastric ulcer with hemorrhage   | ICD-10-CM        |
| K25.5       | Chronic or unspecified gastric ulcer with perforation  | ICD-10-CM        |
| K25.6       | Chronic or unspecified gastric ulcer with both hemorrhage and perforation                      | ICD-10-CM        |
| K26.0       | Acute duodenal ulcer with hemorrhage   | ICD-10-CM        |
| K26.1       | Acute duodenal ulcer with perforation  | ICD-10-CM        |
| K26.2       | Acute duodenal ulcer with both hemorrhage and perforation                                      | ICD-10-CM        |
| K26.3       | Acute duodenal ulcer without hemorrhage or perforation   | ICD-10-CM        |
| K26.4       | Chronic or unspecified duodenal ulcer with hemorrhage  | ICD-10-CM        |
| K26.5       | Chronic or unspecified duodenal ulcer with perforation   | ICD-10-CM        |
| K26.6       | Chronic or unspecified duodenal ulcer with both hemorrhage and perforation                     | ICD-10-CM        |
| K27.0       | Acute peptic ulcer, site unspecified, with hemorrhage  | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| K27.1       | Acute peptic ulcer, site unspecified, with perforation  | ICD-10-CM        |
| K27.2       | Acute peptic ulcer, site unspecified, with both hemorrhage and perforation                    | ICD-10-CM        |
| K27.3       | Acute peptic ulcer, site unspecified, without hemorrhage or perforation                       | ICD-10-CM        |
| K27.4       | Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage                        | ICD-10-CM        |
| K27.5       | Chronic or unspecified peptic ulcer, site unspecified, with perforation                       | ICD-10-CM        |
| K27.6       | Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation   | ICD-10-CM        |
| K28.0       | Acute gastrojejunal ulcer with hemorrhage   | ICD-10-CM        |
| K28.1       | Acute gastrojejunal ulcer with perforation  | ICD-10-CM        |
| K28.2       | Acute gastrojejunal ulcer with both hemorrhage and perforation                                | ICD-10-CM        |
| K28.3       | Acute gastrojejunal ulcer without hemorrhage or perforation                                   | ICD-10-CM        |
| K28.4       | Chronic or unspecified gastrojejunal ulcer with hemorrhage                                    | ICD-10-CM        |
| K28.5       | Chronic or unspecified gastrojejunal ulcer with perforation                                   | ICD-10-CM        |
| K28.6       | Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation               | ICD-10-CM        |
| K29.01      | Acute gastritis with bleeding   | ICD-10-CM        |
| K29.21      | Alcoholic gastritis with bleeding   | ICD-10-CM        |
| K29.31      | Chronic superficial gastritis with bleeding   | ICD-10-CM        |
| K29.41      | Chronic atrophic gastritis with bleeding  | ICD-10-CM        |
| K29.51      | Unspecified chronic gastritis with bleeding   | ICD-10-CM        |
| K29.61      | Other gastritis with bleeding   | ICD-10-CM        |
| K29.71      | Gastritis, unspecified, with bleeding   | ICD-10-CM        |
| K29.81      | Duodenitis with bleeding  | ICD-10-CM        |
| K29.91      | Gastroduodenitis, unspecified, with bleeding  | ICD-10-CM        |
| K31.811     | Angiodysplasia of stomach and duodenum with bleeding  | ICD-10-CM        |
| K55.21      | Angiodysplasia of colon with hemorrhage   | ICD-10-CM        |
| K56.60      | Unspecified intestinal obstruction  | ICD-10-CM        |
| K57.01      | Diverticulitis of small intestine with perforation and abscess with bleeding                  | ICD-10-CM        |
| K57.11      | Diverticulosis of small intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.13      | Diverticulitis of small intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.21      | Diverticulitis of large intestine with perforation and abscess with bleeding                  | ICD-10-CM        |
| K57.31      | Diverticulosis of large intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.33      | Diverticulitis of large intestine without perforation or abscess with bleeding                | ICD-10-CM        |
| K57.41      | Diverticulitis of both small and large intestine with perforation and abscess with bleeding   | ICD-10-CM        |
| K57.51      | Diverticulosis of both small and large intestine without perforation or abscess with bleeding | ICD-10-CM        |
| K57.53      | Diverticulitis of both small and large intestine without perforation or abscess with bleeding | ICD-10-CM        |
| K57.81      | Diverticulitis of intestine, part unspecified, with perforation and abscess with bleeding     | ICD-10-CM        |
| K57.91      | Diverticulosis of intestine, part unspecified, without perforation or abscess with bleeding   | ICD-10-CM        |
| K57.93      | Diverticulitis of intestine, part unspecified, without perforation or abscess with bleeding   | ICD-10-CM        |
| K62.5       | Hemorrhage of anus and rectum   | ICD-10-CM        |
| K66.1       | Hemoperitoneum  | ICD-10-CM        |
| K92.0       | Hematemesis   | ICD-10-CM        |
| K92.1       | Melena  | ICD-10-CM        |
| K92.2       | Gastrointestinal hemorrhage, unspecified  | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b>  | <b>Description</b>   | <b>Code Type</b> |
|--|--|------------------|
| <b>Intracranial Hemorrhage (inpatient care setting in primary or secondary diagnosis position)</b> |  |                  |
| 430  | Subarachnoid hemorrhage  | ICD-9-CM         |
| 431  | Intracerebral hemorrhage   | ICD-9-CM         |
| 432  | Other and unspecified intracranial hemorrhage  | ICD-9-CM         |
| 432.0  | Nontraumatic extradural hemorrhage   | ICD-9-CM         |
| 432.1  | Subdural hemorrhage  | ICD-9-CM         |
| 432.9  | Unspecified intracranial hemorrhage  | ICD-9-CM         |
| 852.0  | Subarachnoid hemorrhage following injury without mention of open intracranial wound  | ICD-9-CM         |
| 852.00   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM         |
| 852.01   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM         |
| 852.02   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness   | ICD-9-CM         |
| 852.03   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM         |
| 852.04   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level      | ICD-9-CM         |
| 852.05   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level | ICD-9-CM         |
| 852.06   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM         |
| 852.09   | Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM         |
| 852.2  | Subdural hemorrhage following injury without mention of open intracranial wound  | ICD-9-CM         |
| 852.20   | Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM         |
| 852.21   | Subdural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM         |
| 852.22   | Subdural hemorrhage following injury, without mention of open intracranial wound, brief (less than one hour) loss of consciousness   | ICD-9-CM         |
| 852.23   | Subdural hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM         |
| 852.24   | Subdural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level          | ICD-9-CM         |
| 852.25   | Subdural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level     | ICD-9-CM         |
| 852.26   | Subdural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM         |
| 852.29   | Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM         |
| 852.4  | Extradural hemorrhage following injury without mention of open intracranial wound  | ICD-9-CM         |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 852.40      | Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM         |
| 852.41      | Extradural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM         |
| 852.42      | Extradural hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness   | ICD-9-CM         |
| 852.43      | Extradural hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM         |
| 852.44      | Extradural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level                              | ICD-9-CM         |
| 852.45      | Extradural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level                         | ICD-9-CM         |
| 852.46      | Extradural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM         |
| 852.49      | Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM         |
| 853.0       | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound   | ICD-9-CM         |
| 853.00      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness   | ICD-9-CM         |
| 853.01      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness   | ICD-9-CM         |
| 853.02      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness   | ICD-9-CM         |
| 853.03      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness  | ICD-9-CM         |
| 853.04      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to preexisting conscious level       | ICD-9-CM         |
| 853.05      | Other and unspecified intracranial hemorrhage following injury. Without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level | ICD-9-CM         |
| 853.06      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration  | ICD-9-CM         |
| 853.09      | Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified concussion   | ICD-9-CM         |
| 160.00      | Nontraumatic subarachnoid hemorrhage from unspecified carotid siphon and bifurcation   | ICD-10-CM        |
| 160.01      | Nontraumatic subarachnoid hemorrhage from right carotid siphon and bifurcation   | ICD-10-CM        |
| 160.02      | Nontraumatic subarachnoid hemorrhage from left carotid siphon and bifurcation  | ICD-10-CM        |
| 160.10      | Nontraumatic subarachnoid hemorrhage from unspecified middle cerebral artery   | ICD-10-CM        |
| 160.11      | Nontraumatic subarachnoid hemorrhage from right middle cerebral artery   | ICD-10-CM        |
| 160.12      | Nontraumatic subarachnoid hemorrhage from left middle cerebral artery  | ICD-10-CM        |
| 160.2       | Nontraumatic subarachnoid hemorrhage from anterior communicating artery  | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| I60.30      | Nontraumatic subarachnoid hemorrhage from unspecified posterior communicating artery   | ICD-10-CM        |
| I60.31      | Nontraumatic subarachnoid hemorrhage from right posterior communicating artery   | ICD-10-CM        |
| I60.32      | Nontraumatic subarachnoid hemorrhage from left posterior communicating artery  | ICD-10-CM        |
| I60.4       | Nontraumatic subarachnoid hemorrhage from basilar artery   | ICD-10-CM        |
| I60.50      | Nontraumatic subarachnoid hemorrhage from unspecified vertebral artery   | ICD-10-CM        |
| I60.51      | Nontraumatic subarachnoid hemorrhage from right vertebral artery   | ICD-10-CM        |
| I60.52      | Nontraumatic subarachnoid hemorrhage from left vertebral artery  | ICD-10-CM        |
| I60.6       | Nontraumatic subarachnoid hemorrhage from other intracranial arteries  | ICD-10-CM        |
| I60.7       | Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery  | ICD-10-CM        |
| I60.8       | Other nontraumatic subarachnoid hemorrhage   | ICD-10-CM        |
| I60.9       | Nontraumatic subarachnoid hemorrhage, unspecified  | ICD-10-CM        |
| I61.0       | Nontraumatic intracerebral hemorrhage in hemisphere, subcortical   | ICD-10-CM        |
| I61.1       | Nontraumatic intracerebral hemorrhage in hemisphere, cortical  | ICD-10-CM        |
| I61.2       | Nontraumatic intracerebral hemorrhage in hemisphere, unspecified   | ICD-10-CM        |
| I61.3       | Nontraumatic intracerebral hemorrhage in brain stem  | ICD-10-CM        |
| I61.4       | Nontraumatic intracerebral hemorrhage in cerebellum  | ICD-10-CM        |
| I61.5       | Nontraumatic intracerebral hemorrhage, intraventricular  | ICD-10-CM        |
| I61.6       | Nontraumatic intracerebral hemorrhage, multiple localized  | ICD-10-CM        |
| I61.8       | Other nontraumatic intracerebral hemorrhage  | ICD-10-CM        |
| I61.9       | Nontraumatic intracerebral hemorrhage, unspecified   | ICD-10-CM        |
| I62.00      | Nontraumatic subdural hemorrhage, unspecified  | ICD-10-CM        |
| I62.01      | Nontraumatic acute subdural hemorrhage   | ICD-10-CM        |
| I62.02      | Nontraumatic subacute subdural hemorrhage  | ICD-10-CM        |
| I62.03      | Nontraumatic chronic subdural hemorrhage   | ICD-10-CM        |
| I62.1       | Nontraumatic extradural hemorrhage   | ICD-10-CM        |
| I62.9       | Nontraumatic intracranial hemorrhage, unspecified  | ICD-10-CM        |
| S06.340A    | Traumatic hemorrhage of right cerebrum without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.341A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.342A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 31 minutes to 59 minutes, initial encounter   | ICD-10-CM        |
| S06.343A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 1 hours to 5 hours 59 minutes, initial encounter  | ICD-10-CM        |
| S06.344A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of 6 hours to 24 hours, initial  | ICD-10-CM        |
| S06.345A    | Traumatic hemorrhage of right cerebrum with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                           | ICD-10-CM        |
| S06.346A    | Traumatic hemorrhage of right cerebrum with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter | ICD-10-CM        |
| S06.347A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter             | ICD-10-CM        |
| S06.348A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter              | ICD-10-CM        |
| S06.349A    | Traumatic hemorrhage of right cerebrum with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| S06.350A    | Traumatic hemorrhage of left cerebrum without loss of consciousness, initial encounter   | ICD-10-CM        |
| S06.351A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 30 minutes or less, initial encounter  | ICD-10-CM        |
| S06.352A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 31 minutes to 59 minutes, initial encounter  | ICD-10-CM        |
| S06.353A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 1 hours to 5 hours 59 minutes, initial encounter   | ICD-10-CM        |
| S06.354A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of 6 hours to 24 hours, initial encounter   | ICD-10-CM        |
| S06.355A    | Traumatic hemorrhage of left cerebrum with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                                    | ICD-10-CM        |
| S06.356A    | Traumatic hemorrhage of left cerebrum with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter          | ICD-10-CM        |
| S06.357A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter                      | ICD-10-CM        |
| S06.358A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter                       | ICD-10-CM        |
| S06.359A    | Traumatic hemorrhage of left cerebrum with loss of consciousness of unspecified duration, initial encounter  | ICD-10-CM        |
| S06.360A    | Traumatic hemorrhage of cerebrum, unspecified, without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.361A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.362A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 31 minutes to 59 minutes, initial encounter   | ICD-10-CM        |
| S06.363A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 1 hours to 5 hours 59 minutes, initial encounter  | ICD-10-CM        |
| S06.364A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.365A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                           | ICD-10-CM        |
| S06.366A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter | ICD-10-CM        |
| S06.367A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter             | ICD-10-CM        |
| S06.368A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter              | ICD-10-CM        |
| S06.369A    | Traumatic hemorrhage of cerebrum, unspecified, with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.4X0A    | Epidural hemorrhage without loss of consciousness, initial encounter   | ICD-10-CM        |
| S06.4X1A    | Epidural hemorrhage with loss of consciousness of 30 minutes or less, initial encounter  | ICD-10-CM        |
| S06.4X2A    | Epidural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter  | ICD-10-CM        |
| S06.4X3A    | Epidural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter  | ICD-10-CM        |
| S06.4X4A    | Epidural hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter   | ICD-10-CM        |
| S06.4X5A    | Epidural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter  | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b>                              | <b>Description</b>  | <b>Code Type</b> |
|--|---|------------------|
| S06.4X6A                                 | Epidural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter               | ICD-10-CM        |
| S06.4X7A                                 | Epidural hemorrhage with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter                           | ICD-10-CM        |
| S06.4X8A                                 | Epidural hemorrhage with loss of consciousness of any duration with death due to other causes prior to regaining consciousness, initial encounter                           | ICD-10-CM        |
| S06.4X9A                                 | Epidural hemorrhage with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.5X0A                                 | Traumatic subdural hemorrhage without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.5X1A                                 | Traumatic subdural hemorrhage with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.5X2A                                 | Traumatic subdural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter   | ICD-10-CM        |
| S06.5X3A                                 | Traumatic subdural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial   | ICD-10-CM        |
| S06.5X4A                                 | Traumatic subdural hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.5X5A                                 | Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                               | ICD-10-CM        |
| S06.5X6A                                 | Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter     | ICD-10-CM        |
| S06.5X7A                                 | Traumatic subdural hemorrhage with loss of consciousness of any duration with death due to brain injury before regaining consciousness, initial encounter                   | ICD-10-CM        |
| S06.5X8A                                 | Traumatic subdural hemorrhage with loss of consciousness of any duration with death due to other cause before regaining consciousness, initial encounter                    | ICD-10-CM        |
| S06.5X9A                                 | Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| S06.6X0A                                 | Traumatic subarachnoid hemorrhage without loss of consciousness, initial encounter  | ICD-10-CM        |
| S06.6X1A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of 30 minutes or less, initial encounter   | ICD-10-CM        |
| S06.6X2A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial   | ICD-10-CM        |
| S06.6X3A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter   | ICD-10-CM        |
| S06.6X4A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter  | ICD-10-CM        |
| S06.6X5A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter                           | ICD-10-CM        |
| S06.6X6A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter | ICD-10-CM        |
| S06.6X7A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter             | ICD-10-CM        |
| S06.6X8A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter              | ICD-10-CM        |
| S06.6X9A                                 | Traumatic subarachnoid hemorrhage with loss of consciousness of unspecified duration, initial encounter   | ICD-10-CM        |
| <b>Kidney Disease (any care setting)</b> |   |                  |
| 40311                                    | Hypertensive chronic kidney disease, benign, with chronic kidney disease stage V or end stage renal disease   | ICD-9-CM         |
| 40391                                    | Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage V or end stage renal disease  | ICD-9-CM         |
| 40412                                    | Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V or end stage renal disease                             | ICD-9-CM         |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b>   | <b>Description</b>   | <b>Code Type</b> |
|---|--|------------------|
| 40492   | Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V or end stage renal disease | ICD-9-CM         |
| 585   | Chronic kidney disease   | ICD-9-CM         |
| 5851  | Chronic kidney disease, Stage I  | ICD-9-CM         |
| 5852  | Chronic kidney disease, Stage II (mild)  | ICD-9-CM         |
| 5853  | Chronic kidney disease, Stage III (moderate)   | ICD-9-CM         |
| 5854  | Chronic kidney disease, Stage IV (severe)  | ICD-9-CM         |
| 5855  | Chronic kidney disease, Stage V  | ICD-9-CM         |
| 5856  | End stage renal disease  | ICD-9-CM         |
| 5859  | Chronic kidney disease, unspecified  | ICD-9-CM         |
| 586   | Renal failure, unspecified   | ICD-9-CM         |
| V420  | Kidney replaced by transplant  | ICD-9-CM         |
| V560  | Encounter for extracorporeal dialysis  | ICD-9-CM         |
| V568  | Encounter for other dialysis   | ICD-9-CM         |
| V451  | Postsurgical renal dialysis status   | ICD-9-CM         |
| V4511   | Renal dialysis status  | ICD-9-CM         |
| V4512   | Noncompliance with renal dialysis  | ICD-9-CM         |
| I12.0   | Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease   | ICD-10-CM        |
| I13.11  | Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease                 | ICD-10-CM        |
| N18.1   | Chronic kidney disease, stage 1  | ICD-10-CM        |
| N18.2   | Chronic kidney disease, stage 2 (mild)   | ICD-10-CM        |
| N18.3   | Chronic kidney disease, stage 3 (moderate)   | ICD-10-CM        |
| N18.4   | Chronic kidney disease, stage 4 (severe)   | ICD-10-CM        |
| N18.5   | Chronic kidney disease, stage 5  | ICD-10-CM        |
| N18.6   | End stage renal disease  | ICD-10-CM        |
| N18.9   | Chronic kidney disease, unspecified  | ICD-10-CM        |
| N19   | Unspecified kidney failure   | ICD-10-CM        |
| Z48.22  | Encounter for aftercare following kidney transplant  | ICD-10-CM        |
| Z49.31  | Encounter for adequacy testing for hemodialysis  | ICD-10-CM        |
| Z49.32  | Encounter for adequacy testing for peritoneal dialysis   | ICD-10-CM        |
| Z91.15  | Patient's noncompliance with renal dialysis  | ICD-10-CM        |
| Z94.0   | Kidney transplant status   | ICD-10-CM        |
| Z99.2   | Dependence on renal dialysis   | ICD-10-CM        |
| <b>Ischemic Stroke (inpatient care setting in primary diagnosis position)</b> |  |                  |
| 433.01  | Occlusion and stenosis of basilar artery with cerebral infarction  | ICD-9-CM         |
| 433.11  | Occlusion and stenosis of carotid artery with cerebral infarction  | ICD-9-CM         |
| 433.21  | Occlusion and stenosis of vertebral artery with cerebral infarction  | ICD-9-CM         |
| 433.31  | Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarction   | ICD-9-CM         |
| 433.81  | Occlusion and stenosis of other specified precerebral artery with cerebral infarction  | ICD-9-CM         |
| 433.91  | Occlusion and stenosis of unspecified precerebral artery with cerebral infarction  | ICD-9-CM         |
| 434.01  | Cerebral thrombosis with cerebral infarction   | ICD-9-CM         |
| 434.11  | Cerebral embolism with cerebral infarction   | ICD-9-CM         |



**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>   | <b>Code Type</b> |
|-------------|--|------------------|
| 434.91      | Unspecified cerebral artery occlusion with cerebral infarction                                   | ICD-9-CM         |
| 436         | Acute, but ill-defined, cerebrovascular disease  | ICD-9-CM         |
| I63.22      | Cerebral infarction due to unspecified occlusion or stenosis of basilar arteries                 | ICD-10-CM        |
| I63.139     | Cerebral infarction due to embolism of unspecified carotid artery                                | ICD-10-CM        |
| I63.239     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid arteries     | ICD-10-CM        |
| I63.019     | Cerebral infarction due to thrombosis of unspecified vertebral artery                            | ICD-10-CM        |
| I63.119     | Cerebral infarction due to embolism of unspecified vertebral artery                              | ICD-10-CM        |
| I63.219     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified vertebral arteries   | ICD-10-CM        |
| I63.59      | Cerebral infarction due to unspecified occlusion or stenosis of other cerebral artery            | ICD-10-CM        |
| I63.20      | Cerebral infarction due to unspecified occlusion or stenosis of unspecified precerebral arteries | ICD-10-CM        |
| I63.30      | Cerebral infarction due to thrombosis of unspecified cerebral artery                             | ICD-10-CM        |
| I63.40      | Cerebral infarction due to embolism of unspecified cerebral artery                               | ICD-10-CM        |
| I63.50      | Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral artery      | ICD-10-CM        |
| I67.89      | Other cerebrovascular disease  | ICD-10-CM        |
| I63.00      | Cerebral infarction due to thrombosis of unspecified precerebral artery                          | ICD-10-CM        |
| I63.011     | Cerebral infarction due to thrombosis of right vertebral artery                                  | ICD-10-CM        |
| I63.012     | Cerebral infarction due to thrombosis of left vertebral artery                                   | ICD-10-CM        |
| I63.013     | Cerebral infarction due to thrombosis of bilateral vertebral arteries                            | ICD-10-CM        |
| I63.02      | Cerebral infarction due to thrombosis of basilar artery  | ICD-10-CM        |
| I63.031     | Cerebral infarction due to thrombosis of right carotid artery                                    | ICD-10-CM        |
| I63.032     | Cerebral infarction due to thrombosis of left carotid artery                                     | ICD-10-CM        |
| I63.033     | Cerebral infarction due to thrombosis of bilateral carotid arteries                              | ICD-10-CM        |
| I63.039     | Cerebral infarction due to thrombosis of unspecified carotid artery                              | ICD-10-CM        |
| I63.09      | Cerebral infarction due to thrombosis of other precerebral artery                                | ICD-10-CM        |
| I63.10      | Cerebral infarction due to embolism of unspecified precerebral artery                            | ICD-10-CM        |
| I63.111     | Cerebral infarction due to embolism of right vertebral artery                                    | ICD-10-CM        |
| I63.112     | Cerebral infarction due to embolism of left vertebral artery                                     | ICD-10-CM        |
| I63.113     | Cerebral infarction due to embolism of bilateral vertebral arteries                              | ICD-10-CM        |
| I63.12      | Cerebral infarction due to embolism of basilar artery  | ICD-10-CM        |
| I63.131     | Cerebral infarction due to embolism of right carotid artery                                      | ICD-10-CM        |
| I63.132     | Cerebral infarction due to embolism of left carotid artery                                       | ICD-10-CM        |
| I63.133     | Cerebral infarction due to embolism of bilateral carotid arteries                                | ICD-10-CM        |
| I63.19      | Cerebral infarction due to embolism of other precerebral artery                                  | ICD-10-CM        |
| I63.211     | Cerebral infarction due to unspecified occlusion or stenosis of right vertebral arteries         | ICD-10-CM        |
| I63.212     | Cerebral infarction due to unspecified occlusion or stenosis of left vertebral arteries          | ICD-10-CM        |
| I63.213     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral vertebral arteries     | ICD-10-CM        |
| I63.231     | Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries           | ICD-10-CM        |
| I63.232     | Cerebral infarction due to unspecified occlusion or stenosis of left carotid arteries            | ICD-10-CM        |
| I63.233     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral carotid arteries       | ICD-10-CM        |
| I63.29      | Cerebral infarction due to unspecified occlusion or stenosis of other precerebral arteries       | ICD-10-CM        |
| I63.311     | Cerebral infarction due to thrombosis of right middle cerebral artery                            | ICD-10-CM        |
| I63.312     | Cerebral infarction due to thrombosis of left middle cerebral artery                             | ICD-10-CM        |
| I63.313     | Cerebral infarction due to thrombosis of bilateral middle cerebral arteries                      | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| I63.319     | Cerebral infarction due to thrombosis of unspecified middle cerebral artery                           | ICD-10-CM        |
| I63.321     | Cerebral infarction due to thrombosis of right anterior cerebral artery                               | ICD-10-CM        |
| I63.322     | Cerebral infarction due to thrombosis of left anterior cerebral artery                                | ICD-10-CM        |
| I63.323     | Cerebral infarction due to thrombosis of bilateral anterior arteries                                  | ICD-10-CM        |
| I63.329     | Cerebral infarction due to thrombosis of unspecified anterior cerebral artery                         | ICD-10-CM        |
| I63.331     | Cerebral infarction due to thrombosis of right posterior cerebral artery                              | ICD-10-CM        |
| I63.332     | Cerebral infarction due to thrombosis of left posterior cerebral artery                               | ICD-10-CM        |
| I63.333     | Cerebral infarction to thrombosis of bilateral posterior arteries                                     | ICD-10-CM        |
| I63.339     | Cerebral infarction due to thrombosis of unspecified posterior cerebral artery                        | ICD-10-CM        |
| I63.341     | Cerebral infarction due to thrombosis of right cerebellar artery                                      | ICD-10-CM        |
| I63.342     | Cerebral infarction due to thrombosis of left cerebellar artery                                       | ICD-10-CM        |
| I63.343     | Cerebral infarction to thrombosis of bilateral cerebellar arteries                                    | ICD-10-CM        |
| I63.349     | Cerebral infarction due to thrombosis of unspecified cerebellar artery                                | ICD-10-CM        |
| I63.39      | Cerebral infarction due to thrombosis of other cerebral artery  | ICD-10-CM        |
| I63.411     | Cerebral infarction due to embolism of right middle cerebral artery                                   | ICD-10-CM        |
| I63.412     | Cerebral infarction due to embolism of left middle cerebral artery                                    | ICD-10-CM        |
| I63.413     | Cerebral infarction due to embolism of bilateral middle cerebral arteries                             | ICD-10-CM        |
| I63.419     | Cerebral infarction due to embolism of unspecified middle cerebral artery                             | ICD-10-CM        |
| I63.421     | Cerebral infarction due to embolism of right anterior cerebral artery                                 | ICD-10-CM        |
| I63.422     | Cerebral infarction due to embolism of left anterior cerebral artery                                  | ICD-10-CM        |
| I63.423     | Cerebral infarction due to embolism of bilateral anterior cerebral arteries                           | ICD-10-CM        |
| I63.429     | Cerebral infarction due to embolism of unspecified anterior cerebral artery                           | ICD-10-CM        |
| I63.431     | Cerebral infarction due to embolism of right posterior cerebral artery                                | ICD-10-CM        |
| I63.432     | Cerebral infarction due to embolism of left posterior cerebral artery                                 | ICD-10-CM        |
| I63.433     | Cerebral infarction due to embolism of bilateral posterior cerebral arteries                          | ICD-10-CM        |
| I63.439     | Cerebral infarction due to embolism of unspecified posterior cerebral artery                          | ICD-10-CM        |
| I63.441     | Cerebral infarction due to embolism of right cerebellar artery  | ICD-10-CM        |
| I63.442     | Cerebral infarction due to embolism of left cerebellar artery   | ICD-10-CM        |
| I63.443     | Cerebral infarction due to embolism of bilateral cerebellar arteries                                  | ICD-10-CM        |
| I63.449     | Cerebral infarction due to embolism of unspecified cerebellar artery                                  | ICD-10-CM        |
| I63.49      | Cerebral infarction due to embolism of other cerebral artery  | ICD-10-CM        |
| I63.511     | Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral artery          | ICD-10-CM        |
| I63.512     | Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery           | ICD-10-CM        |
| I63.513     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral middle arteries             | ICD-10-CM        |
| I63.519     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified middle cerebral artery    | ICD-10-CM        |
| I63.521     | Cerebral infarction due to unspecified occlusion or stenosis of right anterior cerebral artery        | ICD-10-CM        |
| I63.522     | Cerebral infarction due to unspecified occlusion or stenosis of left anterior cerebral artery         | ICD-10-CM        |
| I63.523     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral anterior arteries           | ICD-10-CM        |
| I63.529     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified anterior cerebral artery  | ICD-10-CM        |
| I63.531     | Cerebral infarction due to unspecified occlusion or stenosis of right posterior cerebral artery       | ICD-10-CM        |
| I63.532     | Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral artery        | ICD-10-CM        |
| I63.533     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral posterior arteries          | ICD-10-CM        |
| I63.539     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified posterior cerebral artery | ICD-10-CM        |

**Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Characteristics in this Request**

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| <b>Code</b> | <b>Description</b>  | <b>Code Type</b> |
|-------------|---|------------------|
| I63.541     | Cerebral infarction due to unspecified occlusion or stenosis of right cerebellar artery       | ICD-10-CM        |
| I63.542     | Cerebral infarction due to unspecified occlusion or stenosis of left cerebellar artery        | ICD-10-CM        |
| I63.543     | Cerebral infarction due to unspecified occlusion or stenosis of bilateral cerebellar arteries | ICD-10-CM        |
| I63.549     | Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebellar artery | ICD-10-CM        |
| I63.6       | Cerebral infarction due to cerebral venous thrombosis, nonpyogenic                            | ICD-10-CM        |
| I63.8       | Other cerebral infarction   | ICD-10-CM        |
| I63.9       | Cerebral infarction, unspecified  | ICD-10-CM        |

### Appendix G. Specifications Defining Exposure Parameters in this Request

This request used the Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.1.1 to obtain counts of new users of apixaban and warfarin among patients in the Sentinel Distributed Database (SDD). We also examined incidence rates of gastrointestinal hemorrhage, intracranial hemorrhage, and ischemic stroke among patients diagnosed with non-valvular atrial fibrillation in the SDD who were dispensed apixaban compared to warfarin.

**Query Periods:** February 1, 2013 to August 21, 2017  
 February 1, 2013 to September 30, 2015  
 October 1, 2015 to August 21, 2017

**Coverage Requirement:** Drug and Medical Coverage  
**Enrollment Requirement:** 183 days

**Enrollment Gap:** 45 days  
**Age Groups:** 21-64, 65-74, 75-84, 85-99 years

#### Exposure

| Scenario | Incident Exposure | Incidence Criteria                                    | Truncation Criteria                         | Washout Period (days) | Cohort Definition                                 | Episode            |                         | Censor at Death |
|----------|-------------------|---|---|-----------------------|---|--------------------|-------------------------|-----------------|
|          |                   |   |   |                       |   | Episode Gap (days) | Extension Period (days) |                 |
| 1        | Apixaban          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Dabigatran, rivaroxaban, edoxaban, warfarin | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 2        | Warfarin          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Apixaban, dabigatran, rivaroxaban, edoxaban | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 3        | Apixaban          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Dabigatran, rivaroxaban, edoxaban, warfarin | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 4        | Warfarin          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Apixaban, dabigatran, rivaroxaban, edoxaban | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 5        | Apixaban          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Dabigatran, rivaroxaban, edoxaban, warfarin | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 6        | Warfarin          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Apixaban, dabigatran, rivaroxaban, edoxaban | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 7        | Apixaban          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Dabigatran, rivaroxaban, edoxaban, warfarin | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |
| 8        | Warfarin          | Apixaban, dabigatran, rivaroxaban, edoxaban, warfarin | Apixaban, dabigatran, rivaroxaban, edoxaban | 183                   | Retain first valid incident exposure episode only | 7                  | 7                       | No              |

International Classification of Diseases, Ninth and Tenth Revisions, Clinical Modification (ICD-9-CM and ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) codes are provided by Optum360.

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

**Appendix G.1. Specifications Defining Inclusion Criteria, Exclusion Criteria, Event Outcome, and Baseline Characteristic Parameters in this Request**

This request used the Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.1.1 to obtain counts of new users of apixaban and warfarin among patients in the Sentinel Distributed Database (SDD). Additionally, this request examined incidence rates of gastrointestinal hemorrhage, intracranial hemorrhage, and ischemic stroke among patients diagnosed with non-valvular atrial fibrillation in the SDD who were dispensed apixaban compared to warfarin.

**Query Periods:** February 1, 2013 to August 21, 2017  
 February 1, 2013 to September 30, 2015  
 October 1, 2015 to August 21, 2017

**Coverage Requirement:** Drug and Medical Coverage  
**Enrollment Requirement:** 183 days  
**Enrollment Gap:** 45 days  
**Age Groups:** 21-64, 65-74, 75-84, 85-99 years

| Scenario | Inclusion Criteria     |              |                 |                        | Exclusion Criteria  |   |                 |                        | Outcome                     |              |                | Baseline Characteristics |                 |                          |
|----------|------------------------|--------------|-----------------|------------------------|---|---|-----------------|------------------------|-----------------------------|--------------|----------------|--------------------------|-----------------|--------------------------|
|          | Pre-Existing Condition | Care Setting | Include/Exclude | Lookback Period (days) | Pre-Existing Condition  | Care Setting                                | Include/Exclude | Lookback Period (days) | Outcome                     | Care Setting | Washout (days) | Blackout Period (days)   | Characteristics | Evaluation Window (days) |
| 1        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA <sup>1</sup> for dialysis | Exclude         | -183, 0                | Gastrointestinal hemorrhage | IPP          | 0              | 1                        | See Appendix F  | -183, 0                  |
| 2        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis              | Exclude         | -183, 0                | Gastrointestinal hemorrhage | IPP          | 0              | 1                        | See Appendix F  | -183, 0                  |
| 3        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis              | Exclude         | -183, 0                | Intracranial hemorrhage     | IPP, IPS     | 0              | 1                        | See Appendix F  | -183, 0                  |
| 4        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis              | Exclude         | -183, 0                | Intracranial hemorrhage     | IPP, IPS     | 0              | 1                        | See Appendix F  | -183, 0                  |

| Scenario | Inclusion Criteria     |              |                 |                        | Exclusion Criteria  |                                |                 |                        | Outcome                 |              |                | Baseline Characteristics |                 |                          |
|----------|------------------------|--------------|-----------------|------------------------|---|--------------------------------|-----------------|------------------------|-------------------------|--------------|----------------|--------------------------|-----------------|--------------------------|
|          | Pre-Existing Condition | Care Setting | Include/Exclude | Lookback Period (days) | Pre-Existing Condition  | Care Setting                   | Include/Exclude | Lookback Period (days) | Outcome                 | Care Setting | Washout (days) | Blackout Period (days)   | Characteristics | Evaluation Window (days) |
| 5        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis | Exclude         | -183, 0                | Intracranial hemorrhage | IPP          | 0              | 1                        | See Appendix F  | -183, 0                  |
| 6        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis | Exclude         | -183, 0                | Intracranial hemorrhage | IPP          | 0              | 1                        | See Appendix F  | -183, 0                  |
| 7        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis | Exclude         | -183, 0                | Stroke                  | IPP          | 0              | 1                        | See Appendix F  | -183, 0                  |
| 8        | Atrial fibrillation    | Any          | Include         | -183, 0                | Dialysis, kidney replacement, deep vein thrombosis, pulmonary embolism, joint replacement, mitral stenosis, valve replacement or valve repair | Any, except AV/OA for dialysis | Exclude         | -183, 0                | Stroke                  | IPP          | 0              | 1                        | See Appendix F  | -183, 0                  |

<sup>1</sup>Possible care settings include: Inpatient Hospital Stay in the Primary position (IPP), Inpatient Hospital Stay in the Secondary position (IPS), Non-Acute Institutional Stay (IS), Emergency Department (ED), Ambulatory Visit (AV), and Other Ambulatory Visit (OA).

International Classification of Diseases, Ninth and Tenth Revisions, Clinical Modification (ICD-9-CM and ICD-10-CM), International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS), and Current Procedural Terminology, Fourth Edition (CPT-4) codes are provided by Optum360.

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