Prediction of Findings from the Ongoing COBRRA-AF Trial Using Healthcare Database Analyses

## DUPLICATE - COBRRA AF

March $7^{\text {th }}, 2022$

## 1. RCT Details

This section provides a high-level overview of an ongoing RCT that the described real-world evidence study is trying to replicate as closely as possible given the limitations inherent in the healthcare databases.

### 1.1 Title <br> Comparison of Bleeding Risk Between Rivaroxaban and Apixaban in Patients with Atrial Fibrillation (COBRRA - AF)

1.2 Intended aim(s)

To compare the incidence of major and clinically relevant non-major bleeding events in patients with non-valvular atrial fibrillation diagnosed by an ECG.
1.3 Primary endpoint for replication

Time from randomization to the first confirmed, adjudicated occurrence of a major bleeding or clinically relevant non-major bleeding event up to 365 days after initiating anticoagulation treatment.
1.4 Required power for primary endpoint and noninferiority margin (if applicable)

The hazard ratio for the clinical trial is unknown because the trial is ongoing. Based upon Proietti et al., a systematic review of observational studies of apixaban safety in atrial fibrillation patients, we calculated power based on an array of potential effect sizes. ${ }^{1,2}$
1.5 Secondary endpoint for replication (assay sensitivity) and RCT finding

Secondary cardiovascular objectives:

- To assess the frequency of major bleeding events and non-major clinically relevant bleeding events as separate outcomes
- Stroke
- All-cause mortality


### 1.6 Trial estimate

The trial is ongoing and scheduled to complete in December of 2025.

## 2. Person responsible for implementation of replication in Aetion

Luke Zabotka, BA and Mufaddal Mahesri, MD, MPH, implemented the study design in the Aetion Evidence Platform. They are not responsible for the validity of the design and analytic choices. All implementation steps are recorded, and the implementation history is archived in the platform.

## 3. Data Source(s)

Optum CDM, IBM® MarketScan®, CMS NOAC

## 4. Study Design Diagram

The study design diagram visualizes key aspects of the longitudinal study design for expedited review.
Figure 1.

## Design Diagram - COBRRA - AF TRIAL REPLICATION



## 5. Cohort Identification

### 5.1 Cohort Summary

An active-comparator, new-user design, propensity score matched, cohort study will be applied to compare patients that received apixaban vs. rivaroxaban. Patients will enter the cohort upon initiation of apixaban or rivaroxaban after a 180 day washout without anticoagulant exposure. They will be required to have a diagnosis code indicating non-valvular atrial fibrillation in the prior 180 days, and be age 18 or older on the date of initiation of therapy. Subjects will be excluded if they have had any indication of stage IV or V CKD, ESRD, an active bleeding episode, cancer, obesity, liver disease, or another indication for long-term anticoagulation, such as hospitalization for DVT or PE, in the prior 180 days. Patients will also be excluded if they have used any contraindicated medications in the prior 180 days or had an indication for atrial fibrillation that was not non-valvular. All patients were required to have continuous enrollment for 180 days prior to cohort entry to ensure incident use of the study drugs.

### 5.2 Important steps for cohort formation

New use of the exposure (apixaban or rivaroxaban) is defined as no use of either drug in the 180 days prior to cohort entry. The first eligible cohort entry date will be selected after applying all inclusion-exclusion criteria.

### 5.2.1 Eligible cohort entry dates

The apixaban indication for prevention of stroke or systemic embolism in patients with atrial fibrillation was approved by the FDA on December 28 ${ }^{\text {th }}$, 2012. Rivaroxaban was initially approved for the same indication on November $4^{\text {th }}, 2011$.

- IBM® MarketScan®: Dec 28, 2012 - December 31, 2019 (end of available data)
- Optum CDM: Dec 28, 2012 - June 30, 2020 (end of available data)
- CMS NOAC: Dec 28, 2012 - Dec 31, 2017 (end of available data)
5.2.2 Specify inclusion/exclusion criteria for cohort entry and define the index date

Inclusion and exclusion criteria were adapted from the trial as closely as possible. Definitions for all inclusion/exclusion are provided in Appendix and are summarized in the flowcharts below.
5.3 Flowchart of the study cohort assembly

For Apixaban vs. Rivaroxaban

|  | Optum CDM |  | IBM® MarketScan® |  | CMS - NOAC |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Less Excluded Patients | Remaining Patients | Less Excluded Patients | Remaining Patients | Less Excluded Patients | Remaining Patients |
| All patients in our database |  | 81,796,156 |  | 205,537,714 |  | 6,886,908 |
| Patients with <br> Apixaban/Rivaroxaban [measured between Dec 28, 2012 and June 30, 2020.] |  | 856,974 |  | 685,749 |  | 2,232,416 |
| Excluded due to insufficient enrollment [-180, 0] | $\begin{gathered} -118,628 \\ (14 \%) \\ \hline \end{gathered}$ | 738,346 | $\begin{gathered} -54,038 \\ (8 \%) \\ \hline \end{gathered}$ | 631,711 | $\begin{gathered} -373,136 \\ (17 \%) \\ \hline \end{gathered}$ | 1,859,280 |
| After wash-out for prior use of reference (Rivaroxaban) [-180, -1] | $\begin{gathered} -206,560 \\ (28 \%) \\ \hline \end{gathered}$ | 531,786 | $\begin{gathered} -211,703 \\ (34 \%) \\ \hline \end{gathered}$ | 420,008 | $\begin{gathered} -601,148 \\ (32 \%) \\ \hline \end{gathered}$ | 1,258,132 |
| After wash-out for prior use of exposure (Apixaban) [-180, -1] | $\begin{gathered} -278,943 \\ (52 \%) \\ \hline \end{gathered}$ | 252,843 | $\begin{gathered} -170,997 \\ (41 \%) \\ \hline \end{gathered}$ | 249,011 | $\begin{gathered} -549,695 \\ (44 \%) \\ \hline \end{gathered}$ | 708,437 |
| Excluded because patient qualified in $>1$ exposure category | -13 (<1\%) | 252,830 | -24 (<1\%) | 248,987 | -54 (<1\%) | 708,383 |
| Exclusion of Missing Age [-180, 0] | -7 (<1\%) | 252,823 | -0 (<1\%) | 248,987 | -151 (<1\%) | 708,232 |
| Exclusion of Gender (Exclude Missing Values) [start of all available data, 0] | -17 (<1\%) | 252,806 | -0 (<1\%) | 248,987 | -- | -- |
| Inclusion of Age >= 18 [0,0] | -170 (<1\%) | 252,636 | -415 (<1\%) | 248,572 | -- | -- |
| Inclusion of Non-Valvular A-fib [180,0] | $\begin{gathered} -104,252 \\ (41 \%) \\ \hline \end{gathered}$ | 148,384 | $\begin{gathered} -132,025 \\ (53 \%) \\ \hline \end{gathered}$ | 116,547 | $\begin{gathered} -264,650 \\ (37 \%) \\ \hline \end{gathered}$ | 443,581 |
| Exclusion of Anticoagulant Use [- 180, 0] | -7,414 (5\%) | 140,970 | -6,140 (5\%) | 110,407 | $\begin{gathered} -34,042 \\ (8 \%) \\ \hline \end{gathered}$ | 409,539 |
| Exclusion of CKD Stage $4 / 5$ or ESRD [-180,0] | -2,876 (2\%) | 138,094 | -994 (<1\%) | 109,413 | -7,617 (2\%) | 401,922 |
| Exclusion of Dialysis or Renal Transplant) [-180, 0] | -158 (<1\%) | 137,936 | -119 (<1\%) | 109,294 | -421 (<1\%) | 401,501 |


| Exclusion of Bleeding History [-180, <br> $0]$ | $-2,721(2 \%)$ | 135,215 | $-3,332(3 \%)$ | 105,962 | $-23,500$ <br> $(6 \%)$ | 378,001 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Exclusion of Cancer [-180,0] | $-5,556(4 \%)$ | 129,659 | $-3,177(3 \%)$ | 102,785 | $-14,538$ <br> $(4 \%)$ | 363,463 |
| Exclusion of Weight > 120 kg [-180, <br> $0]$ | $-6,963(5 \%)$ | 122,696 | $-3,322(3 \%)$ | 99,463 | $-10,521$ <br> $(3 \%)$ | 352,942 |
| Exclusion of Significant Liver <br> Disease [-180, 0] | $-1,781(1 \%)$ | 120,915 | $-892(<1 \%)$ | 98,571 | $-3,233$ <br> $(<1 \%)$ | 349,709 |
| Exclusion of Use of Contraindicated <br> Medications [-180, 0] | $-693(<1 \%)$ | 120,222 | $-596(<1 \%)$ | 97,975 | $-2,762$ <br> $(<1 \%)$ | 346,947 |
| Exclusion of Dual Antiplatelet <br> Therapy [-180,0] | $-3,219(3 \%)$ | 117,003 | $-2,642(3 \%)$ | 95,333 | $-9,829(3 \%)$ | 337,118 |
| Exclusion of Other Heart Conditions <br> [-180,0] | $-3,603(3 \%)$ | 113,400 | $-3,056(3 \%)$ | 92,277 | $-7,962(2 \%)$ | 329,156 |
| Exclusion of Other Indication of <br> Long-Term Anticoagulation [-180, 0] | $-489(<1 \%)$ | 112,911 | $-293(<1 \%)$ | 91,984 | $-\mathbf{- 1 , 4 4 7}$ |  |
| Exclusion of Pregnancy [-180,0] | $-3(<1 \%)$ | 112,908 | $-4(<1 \%)$ | 91,980 | --- | 327,709 |
| Exclusion of Coagulopathy [-180,0] | $-958(<1 \%)$ | 111,950 | $-320(<1 \%)$ | 91,660 | -- | -- |
| Final cohort | $\mathbf{1 1 1 , 9 5 0}$ |  | $\mathbf{9 1 , 6 6 0}$ |  | $\mathbf{3 2 5 , 9 2 6}$ |  |

*CMS cell suppression policies may result in omitted data
6. Variables

### 6.1 Exposure-related variables:

Study drug:
The study exposure of interest is defined by a prescription drug claim indicating apixaban dispensation. New initiation will be defined by no such records of apixaban in the prior 180 days before treatment initiation (washout period) and fulfillment of study eligibility criteria.

Comparator agent:

The comparator is defined by a prescription drug claim indicating rivaroxaban dispensation. New initiation will be defined by no such records of rivaroxaban in the prior 180 days before treatment initiation (washout period) and fulfillment of study eligibility criteria.

### 6.2 Preliminary Covariates:

- Age
- Gender
- CCl score

The covariate listed above represents only a small subset of the covariate vector that will ultimately be controlled for in the design and analysis. We use the covariates above only for initial feasibility analyses to judge whether there is likely to be sufficient overlap between treatment groups to proceed with the study. Remaining covariates are defined only after the study has passed the initial feasibility analysis and the initial power assessment and are listed in Table 1 (Appendix B).

### 6.3 Outcome variables and study follow-up:

### 6.3.1 Outcome variables

## Safety outcome variables of interest (definitions provided in Appendix):

- Primary outcome: Major bleeding and clinically relevant non-major bleeding through 365 days of treatment with apixaban or rivaroxaban.
- Secondary outcomes:
- To assess the frequency of major bleeding events and clinically relevant non-major bleeding individually
- To assess the frequency of intracranial and extracranial bleeding events
- Stroke
- All-cause mortality
6.3.2 Study follow-up

Both as-treated (AT) and intention-to-treat (ITT) analyses will be conducted with treatment defined as the index drug on day of cohort entry. The as-treated will be the primary analysis. An allowable gap of 10 days between records indicating each treatment will qualify as "continuous therapy" with respect to follow-up in the as-treated analysis.

The follow-up will start the day after drug initiation (i.e., cohort entry date), and will continue until the earliest date of the following events:

- The first occurrence of the outcome of interest
- The date of end of continuous registration in the database
- End of the study period at 365 days
- Measured death event occurs
- Switch
- Discontinuation (10-day allowable grace period and risk window)
- Nursing home admission
- Initiation of another anticoagulant (dabigatran, heparin, warfarin, etc.)

In the secondary ITT analysis, we will not censor for discontinuation, switching among study drugs, or addition of other anticoagulants

## 7. Initial Feasibility Analysis

Aetion report name:
For apixaban vs. rivaroxaban
Optum CDM - https://bwh-dope.aetion.com/projects/details/1813/rwrs/78411
IBM® MarketScan®- https://bwh-dope.aetion.com/projects/details/1814/rwrs/78632
CMS NOAC - https://bwh-dope.aetion.com/projects/details/1814/rwrs/78632
Date conducted: 01/28/2022
Complete Aetion feasibility analysis using age, gender, and CCl as the only covariates and the primary endpoint (Section 6.3.1) as the outcome. No measures of association will be computed, nor will incidence rates be stratified by treatment group.

- Report patient characteristics by treatment group
- Apixaban vs Rivaroxaban

|  | Optum CDM |  |  | IBM® MarketScan® |  |  | CMS - NOAC |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Variable | Rivaroxaban Comparator | Apixaban Exposure | Difference | Rivaroxaban <br> - Comparator | Apixaban <br> - Exposure | Difference | Rivaroxaban Comparator | Apixaban Exposure | Difference |
| Number of patients | 39,628 | 72,322 |  | 41,932 | 49,503 |  | 148,933 | 176,546 |  |
| Age |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \ldots \text { mean } \\ & \text { (sd) } \end{aligned}$ | 71.62 (10.97) | 74.33 (10.15) | $\begin{gathered} -2.71(-2.84, \\ -2.58) \end{gathered}$ | 66.38 (12.81) | $\begin{gathered} 68.13 \\ (13.18) \end{gathered}$ | $\begin{gathered} -1.75(-1.92, \\ -1.58) \end{gathered}$ | 76.19 (8.31) | 77.68 (8.32) | $\begin{gathered} -1.49(-1.55, \\ -1.44) \end{gathered}$ |
| $\begin{aligned} & \text {...median } \\ & {[\text { IQR] }} \end{aligned}$ | $\begin{gathered} 73.00[66.00, \\ 80.00] \end{gathered}$ | $\begin{gathered} 75.00[68.00 \\ 82.00] \end{gathered}$ |  | $\begin{gathered} 65.00 \text { [58.00, } \\ 76.00] \end{gathered}$ | $\begin{gathered} 67.00 \\ {[59.00,} \\ 79.00] \\ \hline \end{gathered}$ |  | $\begin{gathered} 76.00[70.00, \\ 82.00] \end{gathered}$ | $\begin{gathered} 77.00[72.00 \\ 84.00] \end{gathered}$ |  |
| Gender |  |  |  |  |  |  |  |  |  |
| M | $\begin{aligned} & 22,048 \\ & (55.6 \%) \\ & \hline \end{aligned}$ | $\begin{gathered} 35,362 \\ (48.9 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 6.7 \%(6.1 \%, \\ 7.4 \%) \\ \hline \end{gathered}$ | 25,981 (62.0\%) | $\begin{aligned} & 28,450 \\ & (57.5 \%) \\ & \hline \end{aligned}$ | $\begin{gathered} 4.5 \%(3.8 \%, \\ 5.1 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 69,102 \\ (46.4 \%) \end{gathered}$ | 74,655 (42.3\%) | $\begin{gathered} 4.1 \%(3.8 \%, \\ 4.5 \%) \\ \hline \end{gathered}$ |
| F | $\begin{aligned} & 17,580 \\ & (44.4 \%) \\ & \hline \end{aligned}$ | $\begin{gathered} 36,960 \\ (51.1 \%) \\ \hline \end{gathered}$ | $\begin{gathered} -6.7 \%(- \\ 7.4 \%,-6.1 \%) \\ \hline \end{gathered}$ | 15,951 (38.0\%) | $\begin{aligned} & 21,053 \\ & (42.5 \%) \\ & \hline \end{aligned}$ | $\begin{gathered} -4.5 \%(- \\ 5.1 \%,-3.8 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 79,831 \\ (53.6 \%) \\ \hline \end{gathered}$ | $\begin{array}{r} 101,891 \\ (57.7 \%) \\ \hline \end{array}$ | $\begin{gathered} -4.1 \%(- \\ 4.5 \%,-3.8 \%) \\ \hline \end{gathered}$ |
| U |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \text { CCI (180 } \\ & \text { Days } \end{aligned}$ |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \ldots \text { mean } \\ & (\mathrm{sd}) \end{aligned}$ | 2.18 (2.11) | 2.63 (2.37) | $\begin{gathered} -0.45(-0.48, \\ -0.42) \end{gathered}$ | 1.53 (1.58) | 1.80 (1.80) | $\begin{aligned} & -0.27(-0.29, \\ & -0.24) \end{aligned}$ | 1.83 (1.81) | 2.04 (1.95) | $\begin{aligned} & -0.21(-0.22, \\ & -0.20) \end{aligned}$ |
| $\begin{aligned} & \text {...median } \\ & \text { [IQR] } \end{aligned}$ | $\begin{gathered} 2.00[1.00, \\ 3.00] \end{gathered}$ | $\begin{gathered} 2.00[1.00 \\ 4.00] \end{gathered}$ |  | $\begin{gathered} 1.00[0.00, \\ 2.00] \end{gathered}$ | $\begin{gathered} 1.00[0.00, \\ 3.00] \end{gathered}$ |  | $\begin{gathered} 1.00[0.00 \\ 3.00] \end{gathered}$ | $\begin{gathered} 2.00[1.00 \\ 3.00] \end{gathered}$ |  |

- Report summary parameters of study population FEASIBILITY- FOR STUDY OUTCOME
- For Apixaban vs Rivaroxaban

| FEASIBILITY FOR STUDY OUTCOME |  |  |  |
| :--- | :--- | :--- | :--- |
|  | Optum CDM | IBM® MarketScan® | CMS - NOAC |
| Number of patients in full cohort | 111,950 | 91,660 | 325,926 |
| Number of patients dropped as incomplete cases | 0 | 0 | 0 |
| Number of patients that did not begin follow-up | 115 | 225 | 447 |
| Number of patients in analytic cohort | 111,835 | 91,435 | 325,489 |
| Number of events | 2,226 | 2,570 | 17,135 |
| Number of person-years | $44,062.25$ | $35,513.75$ | $126,012.26$ |
| Number of patients in group: Rivaroxaban - Comparator | 39,574 | 41,932 | 148,933 |
| Number of patients in group: Apixaban - Exposure | 72,261 | 49,503 | 176,546 |
| Risk per 1,000 patients | 19.9 | 28.11 | 52.65 |
| Rate per 1,000 person-years | 50.52 | 72.37 | 135.98 |

- Report median follow-up time by treatment group
- For Apixaban vs Rivaroxaban

| FOLLOW-UP TIME FOR STUDY OUTCOME |  |  |  |
| :--- | :---: | :---: | :---: |
| Median Follow-Up Time (Days) |  |  |  |
| IQR] - At 10 days gap |  |  |  |
| Patient Group | Optum CDM | IBM® MarketScan® | CMS - NOAC |
| Overall Patient Population | $98[38,235]$ | $98[38,222]$ | $98[38,222]$ |
| Referent - Rivaroxaban | $98[38,222]$ | $98[38,219]$ | $98[38,219]$ |
| Exposure - Apixaban | $98[38,243]$ | $98[38,225]$ | $98[38,226]$ |

- Report reasons for censoring in the overall study population
- For Apixaban vs Rivaroxaban

| CENSORING REASONS FOR STUDY OUTCOME |  |  |  |
| :--- | :---: | :---: | :---: |
| Reasons | Optum CDM | IBM® MarketScan® | CMS - NOAC |
| Outcome | $2,226(2.0 \%)$ | $2,570(2.8 \%)$ | $17,135(5.3 \%)$ |
| Death | $852(0.8 \%)$ | $38(0.0 \%)$ | $3,744(1.2 \%)$ |
| Start of an additional exposure | $1,423(1.3 \%)$ | $1,250(1.4 \%)$ | $5,584(1.7 \%)$ |
| End of index exposure | $71,747(64.2 \%)$ | $55,668(60.9 \%)$ | $189,840(58.3 \%)$ |
| Maximum follow-up time reached | $16,894(15.1 \%)$ | $12,797(14.0 \%)$ | $42,722(13.1 \%)$ |
| End of patient data | $18(0.0 \%)$ | $5,277(5.8 \%)$ | $38,454(11.8 \%)$ |
| End of patient enrollment | $5,827(5.2 \%)$ | $11,391(12.5 \%)$ | $4,681(1.4 \%)$ |
| Other Anticoagulant Use + Nursing Home Admission | $12,848(11.5 \%)$ | $2,444(2.7 \%)$ | $23,319(7.2 \%)$ |

- Report overall risk of the primary outcome.

|  | Optum CDM | IBM® MarketScan® | CMS - NOAC | Pooled |
| :--- | :---: | :---: | :---: | :---: |
| Risk per 1,000 patients | 20.2089659 | 27.7425893 | 53.4783969 | 41.4990646 |

8. Initial Power Assessment

## Aetion report name:

- For Apixaban vs Rivaroxaban
- Optum CDM - https://bwh-dope.aetion.com/projects/details/1813/rwrs/78412
- IBM® MarketScan®- https://bwh-dope.aetion.com/projects/details/1814/rwrs/78633
- CMS NOAC - https://bwh-dope.aetion.com/projects/details/1831/rwrs/78415

Date conducted: 01/21/2022 and 01/28/2022

In order to complete the initial power analysis, a dummy outcome indicating a 90-day gap in database enrollment will be used. This
outcome is used to ensure that no information on the comparative risks of the outcomes of interest are available at this stage. A 1:1 PS-matched comparative analysis was performed, including age, gender, and CCI score as the only covariates. Power calculations are based on the formulas from Chow et al. (2008).

- Stop analyses until feasibility and power are reviewed by primary investigators and FDA. Reviewers evaluate the results of the analyses described above in Sections 7 and 8, including numbers of patients, patient characteristics, follow-up time, and reasons for censoring by treatment group, as well as overall rates of outcomes and study power. These parameters are re-evaluated and reported in the subsequent sections, after incorporating feedback and refining the protocol.

This emulation is of a trial that is not yet completed. The trial investigators have not published their power calculations. Therefore, we present a range of power calculations for different effect sizes given the feasibility counts and an alpha of 0.05 . The range in potential hazard rations comes from a meta- analysis of safety and efficacy studies of apixaban in patients with atrial fibrillation (Proietti et al. 2017). The target enrollment for the trial is 3,028 participants. We anticipate a pooled analytic cohort of 529,536 subjects.

1. Pooled

| Superiority Analysis - Pooled |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 454,312 | 454,312 | 454,312 | 454,312 | 454,312 |
| Reference | 227,156 | 227,156 | 227,156 | 227,156 | 227,156 |
| Exposure | 227,156 | 227,156 | 227,156 | 227,156 | 227,156 |
| Risk per 1,000 patients | 41.4155034 | 41.4155034 | 41.4155034 | 41.4155034 | 41.4155034 |
| Alpha (2-sided | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |
| Number of events expected | 18815.5602 | 18815.5602 | 18815.5602 | 18815.5602 | 18815.5602 |
| Power | $\mathbf{1}$ | $\mathbf{1}$ | $\mathbf{1}$ | 1 | 1 |

2. Optum CDM

| Superiority Analysis - Optum |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 78,962 | 78,962 | 78,962 | 78,962 | 78,962 |
| Reference | 39,481 | 39,481 | 39,481 | 39,481 | 39,481 |
| Exposure | 39,481 | 39,481 | 39,481 | 39,481 | 39,481 |
| Risk per 1,000 patients | 19.8838767 | 19.8838767 | 19.8838767 | 19.8838767 | 19.8838767 |
| Alpha (2-sided | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |
| Number of events expected | 1570.07067 | 1570.07067 | 1570.07067 | 1570.07067 | 1570.07067 |
| Power | 0.99307189 | 0.99999984 | 1 | 1 | 1 |

3. IBM® MarketScan®

| Superiority Analysis - MarketScan |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 82,730 | 82,730 | 82,730 | 82,730 | 82,730 |
| Reference | 41,365 | 41,365 | 41,365 | 41,365 | 41,365 |
| Exposure | 41,365 | 41,365 | 41,365 | 41,365 | 41,365 |
| Risk per 1,000 patients | 28.0384028 | 28.0384028 | 28.0384028 | 28.0384028 | 28.0384028 |
| Alpha (2-sided | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |
| Number of events expected | 2319.61706 | 2319.61706 | 2319.61706 | 2319.61706 | 2319.61706 |
| Power | 0.99967945 | 1 | 1 | 1 | 1 |

4. CMS - NOAC

| Superiority Analysis - CMS NOAC |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 292,620 | 292,620 | 292,620 | 292,620 | 292,620 |


| Reference | 146,310 | 146,310 | 146,310 | 146,310 | 146,310 |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Exposure | 146,310 | 146,310 | 146,310 | 146,310 | 146,310 |
| Risk per 1,000 patients | 52.5732835 | 52.5732835 | 52.5732835 | 52.5732835 | 52.5732835 |
| Alpha (2-sided | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |
| Number of events expected | 23075.9913 | 15383.9942 | 15383.9942 | 15383.9942 | 15383.9942 |
| Power | 1 | 1 | 1 | 1 | $\mathbf{1}$ |

5. Stop analyses until feasibility and power are reviewed by primary investigators, FDA, and assigned members of advisory board.

| Reviewed by PI: |  | Date reviewed: |  |
| :--- | :--- | :--- | :--- |
| Reviewed by FDA: |  | Date reviewed: |  |
| Reasons for stopping <br> analysis (if required): |  |  |  |

## 9. Balance Assessment

## Aetion report name:

- Rivaroxaban versus Apixaban
- Optum - https://bwh-dope.aetion.com/projects/details/1813/rwrs/79770
- MarketScan - https://bwh-dope.aetion.com/projects/details/1814/rwrs/79771
- CMS NOAC - https://bwh-dope.aetion.com/projects/details/1831/rwrs/79772

Date conducted: 02/25/2022
After review of initial feasibility and power analyses, complete creation of the remaining covariates from Section 6.2. Again, using the
dummy outcome of a 90-day gap in database enrollment, complete a 1:1 PS-matched analysis. The PS should include the complete list of covariates.
6. Provide plot of PS distributions stratified by treatment group.
a. See Appendix B
7. Report covariate balance after matching.
a. See Appendix B
i. CMS cell suppression policy may result in omitted data
8. Report reasons for censoring by treatment group.

| Censoring Reasons for Study Outcome |  |  |  |
| :--- | :--- | :--- | :--- |
| Reasons | Overall | Referent | Exposure |
| Death | $0(0.0 \%)$ | $0(0.0 \%)$ | $0(0.0 \%)$ |
| Start of an additional exposure | $5,906(1.1 \%)$ | $2,416(1.0 \%)$ | $3,490(1.2 \%)$ |
| End of index exposure | $8,557(1.6 \%)$ | $4,649(2.0 \%)$ | $3,908(1.3 \%)$ |
| Maximum follow-up time | $328,427(62.1 \%)$ | $147,012(63.8 \%)$ | $181,415(60.8 \%)$ |
| End of patient data | $74,371(14.1 \%)$ | $31,658(13.7 \%)$ | $42,713(14.3 \%)$ |
| End of patient enrollment | $44,450(8.4 \%)$ | $16,025(7.0 \%)$ | $28,425(9.5 \%)$ |
| Other Anticoagulant Therapy <br> Admission | $22,230(4.2 \%)$ | $9,772(4.2 \%)$ | $12,458(4.2 \%)$ |

9. Report follow-up time by treatment group.

| FOLLOW-UP TIME FOR STUDY OUTCOME |  |  |  |
| :--- | :---: | :---: | :---: |
| Median Follow-Up Time (Days) [IQR] - At 10 days gap |  |  |  |
| Patient Group | Optum CDM | IBM® MarketScan® | CMS - NOAC |
| Overall Patient Population | $98[38,238]$ | $98[38,227]$ | $98[38,228]$ |
| Referent - Rivaroxaban | $98[38,225]$ | $98[38,224]$ | $98[38,225]$ |
| Exposure - Apixaban | $98[38,245]$ | $98[38,231]$ | $98[38,231]$ |

## 10. Final Power Assessment

Date conducted: 02/09/2022
10. Re-calculate power in the appropriate excel table, using the revised number of matched patients from the PS-match in Section 9. All other parameters in the table should be the same as in Section 8.

1. Pooled

| Superiority Analysis - Pooled |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 368,214 | 368,214 | 368,214 | 368,214 | 368,214 |
| Reference | 184,107 | 184,107 | 184,107 | 184,107 | 184,107 |
| Exposure | 184,107 | 184,107 | 184,107 | 184,107 | 184,107 |
| Risk per 1,000 patients | 41.4155034 | 41.4155034 | 41.4155034 | 41.4155034 | 41.4155034 |
| Alpha (2-sided) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |
| Number of events expected | 15249.7682 | 15249.7682 | 15249.7682 | 15249.7682 | 15249.7682 |
| Power | $\mathbf{1}$ | $\mathbf{1}$ | $\mathbf{1}$ | $\mathbf{1}$ | $\mathbf{1}$ |

2. Optum CDM

| Superiority Analysis - Optum |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 68,134 | 68,134 | 68,134 | 68,134 | 68,134 |
| Reference | 34,067 | 34,067 | 34,067 | 34,067 | 34,067 |
| Exposure | 34,067 | 34,067 | 34,067 | 34,067 | 34,067 |
| Risk per 1,000 patients | 19.8838767 | 19.8838767 | 19.8838767 | 19.8838767 | 19.8838767 |
| Alpha (2-sided) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |


| Number of events expected | 1354.76806 | 1354.76806 | 1354.76806 | 1354.76806 | 1354.76806 |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Power | 0.98409053 | 0.99999793 | 1 | 1 | 1 |

3. IBM® MarketScan®

| Superiority Analysis - MarketScan |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 61,846 | 61,846 | 61,846 | 61,846 | 61,846 |
| Reference | 30,923 | 30,923 | 30,923 | 30,923 | 30,923 |
| Exposure | 30,923 | 30,923 | 30,923 | 30,923 | 30,923 |
| Risk per 1,000 patients | 28.0384028 | 28.0384028 | 28.0384028 | 28.0384028 | 28.0384028 |
| Alpha (2-sided) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ | $\mathbf{0 . 4}$ |
| Number of events expected | 1734.06306 | 1734.06306 | 1734.06306 | 1734.06306 | 1734.06306 |
| Power | 0.99638561 | 0.99999998 | $\mathbf{1}$ | 1 | $\mathbf{1}$ |

4. CMS - NOAC

| Superiority Analysis - CMS NOAC |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Number of patients matched | 238,234 | 238,234 | 238,234 | 238,234 | 238,234 |
| Reference | 119,117 | 119,117 | 119,117 | 119,117 | 119,117 |
| Exposure | 119,117 | 119,117 | 119,117 | 119,117 | 119,117 |
| Risk per 1,000 patients | 52.5732835 | 52.5732835 | 52.5732835 | 52.5732835 | 52.5732835 |
| Alpha (2-sided) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
|  |  |  |  |  |  |
| Desired HR from RCT | $\mathbf{0 . 8}$ | $\mathbf{0 . 7}$ | $\mathbf{0 . 6}$ | $\mathbf{0 . 5}$ |  |
| Number of events expected | 12524.7436 | 12524.7436 | 12524.7436 | 12524.7436 | $\mathbf{1 2 5 2 4 . 7 4 3 6}$ |
| Power | 1 | 1 | 1 | 1 | 1 |

- Stop analyses until balance and final power assessment are reviewed by primary investigators, FDA, and assigned members of advisory board.

| Reviewed by PI: |  | Date reviewed: |  |
| :--- | :--- | :--- | :--- |
| Reviewed by FDA: |  | Date reviewed: |  |
| Reasons for stopping <br> analysis (if required): |  |  |  |

## 11. Study Confidence and Concerns

Deadline for voting on study confidence and listing concerns:
Date votes and concerns are summarized:

- If final feasibility and power analyses are reviewed and approved, proceed to the remaining protocol steps.
- All study team and advisory board members that review this protocol should at this stage provide their level of confidence for the success of the RWD study in the Google Form. This form also provides space for reviewers to list any concerns that they feel may contribute to a failure to replicate the findings of the RCT, including differences in study populations, poor measurement of study variables, or residual confounding. All responses will be kept confidential and individual-level results will only be shared with the individual respondent.
- After the deadline for voting has passed, provide the distribution of responses and summarize all concerns here.


## 12. Register study protocol on clinicalTrials.gov

Date conducted:

- Register the study on clinicalTrials.gov and upload this document.


## 13. Comparative Analyses

## Aetion report name:

Date conducted:
13.1 For primary analysis:
13.2 For sensitivity analyses:

## 14. Requested Results

14.1 Table 1: Baseline characteristics before and after adjustment

| Variable | Before adjustment |  |  | After adjustment |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :---: |
|  | Referent | Exposure | Std. diff. | Referent | Exposure | Std. diff. |  |
| Number of patients |  |  | - |  |  | - |  |
| Age categories |  |  |  |  |  |  |  |
| $\ldots$ |  |  |  |  |  |  |  |

### 14.2 Table 2: Follow-up time

| Patient Group | Median Follow-Up Time (Days) [IQR] |
| :--- | :--- |
| Overall Patient Population |  |
| Referent |  |
| Exposure |  |

### 14.3 Table 3: Censoring events

|  | Overall | Referent | Exposure |
| :--- | :--- | :--- | :--- |


| Outcome |  |  |  |
| :--- | :--- | :--- | :--- |
| Death |  |  |  |
| Start of an additional exposure |  |  |  |
| End of index exposure |  |  |  |
| Specified date reached |  |  |  |
| End of patient data |  |  |  |
| End of patient enrollment |  |  |  |
| $\ldots$ |  |  |  |

14.4 Table 4: Results from primary analyses;

| Analysis | No. exposed events | No. referent events | Exposed rate | Referent rate | HR (95\% CI) |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Crude |  |  |  |  |  |
| Analysis 1 |  |  |  |  |  |
| Analysis 2 |  |  |  |  |  |
| $\ldots$ |  |  |  |  |  |

HR, Hazard Ratio; CI, Confidence Interval.

### 14.5 Table 5: Results from secondary analyses;

## 15. References

1. Chow S, Shao J, Wang H. 2008. Sample Size Calculations in Clinical Research. 2nd Ed. Chapman \& Hall/CRC Biostatistics Series. page 177
2. Proietti M, Romanazzi I, Romiti GF, Farcomeni A, Lip GYH. Real-World Use of Apixaban for Stroke Prevention in Atrial Fibrillation: A Systematic Review and Meta-Analysis. Stroke. 2018 Jan;49(1):98-106. doi: 10.1161/STROKEAHA.117.018395. Epub 2017 Nov 22. PMID: 29167388.

## Appendix A

| \# | COBRRA - AF trial definitions | Implementation in routine care | References/Rationale | Color coding |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
|  |  | ICD-10 codes are not listed in this document because of excel cell size limitations and excessive number of ICD-10 codes. Full ICD-10 code lists will be available in the above Google Drive Folder (link above). ICD-9 to ICD-10 code conversions were completed using a SAS macro that implements forward/backward mapping based on the CMS ICD-9 to ICD-10 mapping |  |  |
|  |  | TRIAL DETAALS |  | Cinteria |
|  |  | EXPOSURE vs. COMPARISON |  | b bereplicated in claims |
|  | Apixaban 5 mg PO, twice daily for 12 months of treatment. A dose reduction to 2.5 mg twice daily will apply if patients meet 2 of the following 3 criteria: age $>80$ years, weight, 60 kg ; creatinine $>133$ micromol/L <br> vs. <br> Rivaroxaban 20 mg PO, once daily for 12 months of treatment. A dose reduction to 15 mg daily will apply to patients with creatinine clearance $<50 \mathrm{ml} / \mathrm{min}$ <br> *Patients with AF who are receiving DOAC should have their renal function assessd at baseline and at least annually | $\begin{aligned} & \text { Apixaban: } \\ & \text { vs. } \\ & \text { Rivaroxaban: } \end{aligned}$ |  | Using dummy definitions for measuring in claims |
|  |  | PRIMARY OUTCOME |  | Cant be measured in clams |
|  | The rate of adjudicated clinically relevant bleeding (CRB) events [Time frame: For the duration of the study: 12 months] CRB events are defined as the compsoite of major bleeding (MB) events and clinically relevant non-major bleeding (CRNMB) events | Mesaured [0,365] in any diagnosis position in an inpatient setting (transfusion codes required for non-critical sites) <br> Major Bleeding: <br> See "Major Bleeding" Sheet <br> Measured [0,365] in any diagnosis position in an inpatient setting (transfusion codes not required for non-critical sites) Clinically Relevant Non-Major Bleeding Events: <br> See "CRNM Bleeds Sheet" | Graham DJ, Reichman ME, Wernecke M, et al Stroke, Bleeding, and Mortality Risks in Elderly Medicare Beneficiaries Treated With Dabigatran or Rivaroxaban for Nonvalvular Atrial Fibrillation. JAMA Intern <br> doi:10.1001/jamainternmed.2016.5954 | Can't be measured in claims but not important for the analysis |
|  |  | INCLUSION CRITERIA |  |  |
| 1 | Confirmed new diagnosis of AF on ECG with an indication to start anticoagulation according to Canadian Cardiovascular Society guidelines |  | Prescribing guidelines for AF in Canada: <br> https://ccs.ca/app/uploads/2020/11/AF_Gui_2 018_PG_EN_web.pdf |  |
| 2 | Age $>=18$ years | Age > 18 |  |  |
|  |  | EXCLUSSION CRITERIA |  |  |
| 1 | Have received $>72$ hours of thereapeutic anticagulation | Measured [-180, 0] in prescription claims <br> Use of Anticoagulants: <br> Adeparin Sodium, Porcine, Argatroban, Argatroban in $0.9 \%$ Sodium Chloride, Argatroban in Sodium Chloride, Iso-osmotic, Bivalirudin, Dabigatran Etexilate Mesylate, Dalteparin Sodium Porcine, Danaparoid Sodium Porcine, Desirudin, Edoxaban Tosylate, Enoxaparin Sodium, Fonaparinux Sodium, Heparin Sodium Beef, Heparin Sodium Porcine ( $0.45 \% \mathrm{NaCl}, 0.9 \% \mathrm{NaCl}, 0.9 \% \mathrm{NaCl} / \mathrm{PF}$ ), Heparin Sodium Porcine/Dextrose ( $5 \%$ in water or $5 \%$ in water/PF), Heparin Sodium Procine/PF, Lepirudin Recombinant, Tinzaparin Sodium Porcine, and Warfarin Sodium |  |  |
| 2 | Creatine clearance < $15 \mathrm{ml/min}$ calculated with the Cockeroft-Gault formula |  |  |  |
| 3 | Any contradiction for anticoagulation with apixaban or rivaroxaban as determined by the treating physician such as, but not limited to one of the following: |  |  |  |
| 4 | 1) Active Bleeding | Mesaured [-180, 0] in any diagnosis position and in an inpatient setting (transfusion codes required for non-critical sites) <br> Major Bleeding <br> See "Major Bleeding" Sheet <br> Measured [-180,0] in any diagnosis position in an inpatient setting (transfusion codes not required for non-critical sites) <br> Clinically Relevant Non-Major Bleeding Events <br> See "CRNM Bleeds Sheet" |  |  |
|  | 2) Other Indication for anticoagulation (e.g. mechanical valves, venous thromosis) | Measuered [-180, 0] in any diagnosis position in an inpatient or oupatient setting: <br> DVT <br> ICD-9 Diagnosis: $451.1 \mathrm{x}, 451.2 \mathrm{x}, 451.81,451.9 \mathrm{x}, 453.1 \mathrm{x}, 453.2 \mathrm{x}, 453.8 \mathrm{x}, 453.9 \mathrm{x}, 453.40,453.41,453.42,453.0$ <br> ICD-10 Diagnosis: I80.1x, I80.2, I80.3, I80.9, I82.0, I82.1, I82.2x (except 182.21), I82.4x, I82.6x, I82.890, I82.90, I81.A1x, I82.B1x, I82.C1x <br> PE <br> ICD-9 Diagnosis: $415.1,415.10,415.11,415.12,415.13,415.5,415.16,417.17,415.19,415.199$ ICD-10 Diagnosis: I26.0, I26.01, I26.02, I26.9, I26.92, I26.99, I26.90 <br> Prosthetic Heart Valve <br> ICD-9 Diagnosis: V43.3 <br> ICD-10 Diagnosis: Z95.2 |  |  |

Appendix A

| 6 | ) Dual Antiplatelet Use | Measured $[-180,0]$ in prescription claims <br> Use of Antiplaelets <br> Any of the following: cilostazol, dipyridamole, ticlopidine HCl , aspirin, clopidogrel bisulfate, prasugrel HCl , ticagerlor, aspirin/dipyridamole, ezetimibe |  |
| :---: | :---: | :---: | :---: |
| 7 | 4) Known liver disease with coagulopathy | Measured $[-180,0]$ in any diagnosis position in an inpatient or outpatient setting <br> Significant Liver Disease <br> ICD-9 Diagnosis: $070 . \mathrm{xx}, 570 . \mathrm{xx}-573 . \mathrm{xx}, 456.0 \mathrm{x}-456.2 \mathrm{x}, 576.8 \mathrm{x}, 782.4 \mathrm{x}, 789.5 \mathrm{x}$ <br>  <br>  <br>  <br>  ,K76.4 ,K76.5 ,K77 ,K83.5 <br> ICD-9 Procedure: $39.1 \mathrm{x}, 42.91$ <br> ICD-10 Procedure: See "Liver Bypass" Sheet <br> Coagulopathy <br> ICD-9 Diagnosis: $286,286.1,286.4,286.5,286.52,286.53,286.59,287.5,286.0,286.2,286.3,286.6,286.7,286.9,287.1,287.3,287.4$ <br> ICD-10 Dignosis: D67, D68, D68.1, D68.2, D68.3, D68.31, D68.311, D68.318, D68.4, D68.52, D68.61, D68.69, D68.8, D69.41, D69.49, D69.51, D69.59, D65, D66, D68.0, D68.312, D68.32, D68.5, D68.51, D68.59, D68.6, D68.62, D68.9, D69.1, D69.3, D69.4, D69.42, D69.5, D69.6 |  |
| 8 | 5) Use of contraindicated medications (strong inducers Sinhibitors of CYP 3A4/5, P-glycoprotein) | Measured [-180, 0] in prescription claims <br> Strong CYP3A4 Inhibitors/Inducers <br> Inhibitors: Ketoconazole, itraconazole, voriconazole, telithromycin, clarithromycin, nefazodone, ritonavir, saquinavir, nelfinavir, indinavir, atazanavir Inducers: Rifampin, rifampicin/rifampin, phenytoin, carbamazepine <br> P-gp Inhibitors/Inducers <br> cobicistat, conivaptan, tipranavir | https://depts.washington.edu/anticoag/home/ contentrapixaban |
| 9 | 6) Pregnancy | Measured [-180, 0] in any diagnosis position and inpatient and outpatient care setting <br> Pregnancy <br> See "Pregnancy" Sheet |  |
| 10 | 7) Active malignancy, defined as a) diagnosed with cancer within the past 6 months; or b) recurrent, regionally advanced or metastatic disease; or c) currently receiving treatment or have received any treatment for cancer during the 6 months prior to randomization; or d) a hematologic malignancy not in complete remission |  |  |
| 11 | 8) Weight $>120 \mathrm{~kg}$ | Measured [-180,0] in any diagnosis position in an inpatient or outpatient setting: <br> Bypass Surgery <br> HCPCS: 43659, 43999, 43842, S2082, 43644, 43645, 43770, 43843, 43845, 43846, 43847 <br> ICD-9 Procedure: $43.89,44.69,44.31,44.39,44.95,45.51,45.91,43.82,44.38,44.68$ <br> ICD-10 Procedure: 0D160JB, 0D160KL, 0D160Z9, 0D164JL, 0D1687L, 0D168JB, 0D168Z9, 0D168ZL, OD190ZA, OD194J9, 0D194K9, OD194ZA, OD198k9, 0D198ZA, OD1A0JB, OD1A0ZB, OD1A87A, OD1A8JB, OD1A8KA, 0D1A8KB, 0D1B4JB, 0D1B4KB, 0D1B8JB, 0D760DZ, 0DB63Z3, ODB67ZZ, ODB90ZZ, ODM64ZZ, ODN67ZZ, ODQ64ZZ, ODV60CZ, 0DV63CZ, 0D16079, 0D1607A, 0D1607L, 0D160ZL, 0D164J9, 0D164KA, 0D164KL, 0D1687A, 0D168J9, 0D168ZA, 0D190K9, 0D190KB, 0D19479, 0D1947B, 0D194JA, 0D194KB, 0D1987A, 0D198ZB, 0D1A07A, 0D1A0KB, 0D1A47A, OD1A4KA, 0D1A4ZB, 0D1A8ZA, 0D1A8ZB, 0D1B0JB, OD763DZ, 0D764ZZ, ODB60Z3, ODB67Z3, ODB68Z3, 0DQ68ZZ, ODU64KZ, ODU677Z, ODU67KZ, ODU687Z, ODU68JZ, 0DU68KZ, ODV63ZZ, ODV64CZ, 0DV64DZ, OD164Z9, 0D168JL, 0D168KA, OD168KB, 0D168ZB, 0D190Z9, 0D1947A, 0D194KA, 0D194ZB, 0D1987B, 0D1A07B, 0D1AOJA, OD1A4JA, OD1A4KB, 0D763ZZ, OD764DZ, ODB63ZZ, ODBB0ZZ, ODF67ZZ, 0DF68ZZ, 0DN60ZZ, 0DQ60ZZ, ODU60KZ, ODU647Z, ODU64JZ, ODV60ZZ, ODV64ZZ, 0D1607B, 0D160JL, 0D160K9, 0D160KA, 0D164JB, 0D1687B, 0D1907B, 0D190J9, 0D190JB, 0D190ZB, 0D194Z9, 0D198J9, 0D198KA, 0D1A0ZA, 0D1A47B, 0D1A4JB, 0D1A4ZA, 0D1A8JA, 0D1B47B, 0D1B4ZB, 0D1B8KB, 0D1B8ZB, 0D760ZZ, 0DB64Z3, 0DM60ZZ, 0DN63ZZ, ODN64ZZ, ODN68ZZ, ODU607Z, ODU60JZ, ODV60DZ, ODV63DZ, OD160J9, 0D160JA, OD160KB, OD160ZA, OD160ZB, OD16479, 0D1647A, 0D1647B, 0D1647L, OD164JA, 0D164K9, 0D164KB, 0D164ZA, OD164ZB, OD164ZL, OD16879, OD168JA, OD168K9, 0D168KL, OD19079, 0D1907A, OD190JA, OD190KA, OD194JB, OD19879, 0D198JA, 0D198JB, 0D198KB, 0D198Z9, 0D1A0KA, 0D1A87B, OD1A8ZH, OD1B07B, OD1B0KB, 0D1B0ZB, 0D1B87B, 0D1B8ZH, 0DB60ZZ, 0DB80ZZ, 0DF60ZZ, ODF63ZZ, ODF64ZZ, ODQ63ZZ, ODQ67ZZ, 0DU67JZ, 0DV67ZZ, 0DV68ZZ <br> Obesity <br> ICD-9 Diagnosis: $539.89,649.1$, V85.36, V85.41, V85.42, 649.10, 649.11, 649.20, 649.23, V85.37, V85.44, 278.01, 278.03, 539, 649.13, 649.14, 649.2, 649.22, 649.24, V85.31, V85.34, V85.35, V85.43, 278.0, 278.00, 539.09, 539.8, 539.81, 649.12, 649.21, V85.38, V85.39, 539.0, 539.01, V85.30, V85.32, V85.33, V85.45 <br> ICD-10 Diagnosis: O99.215, Z68.41, O99.210, O99.214, O99.844, Z68.35, Z68.38, Z68.43, Z68.45, O99.845, Z68.32, Z68.33, Z68.36, O99.212, O99.841, O99.842, Z68.34, Z68.37, Z68.42, O99.211, O99.213, O99.840, O99.843, Z68.30, Z68.31, Z68.39, Z68.44 <br> Weight Loss and Appetite Supressors <br> FENFLURAMINE HCL, DIETHYLPROPION HCL, PHENDIMETRAZINE TARTRATE, PHENTERMINE HCL |  |

## Appendix A



## Appendix A

Information from Trial

Trial Name: COBRRA - AF https://clinicaltrials.gov/ct2/show/NCT04642430

NCT: NCT04642430
Therapeutic Area: Cardiology

RCT Category: Equivalence/Superiority
Brand Name: Eliquis and Xarelto

Generic Name: Apixaban and Rivaroxaban

Sponsor: Ottwa Hospital Research Institute

Year: 2020 - Present

Measurable Endpoint: Major Bleeding and Clinically Relevant Non-Major Bleeding

Exposure: Apixaban

Comparator: Rivaroxaban

Populuation: Men and women ages 18 and older presenting with AF

No. of Patients: 3,018

Power: TBD

ICD-9 Dx
336.1 VASCULAR MYELOPATHIES
363.6 CHOROIDAL HEMORRHAGE UNSPECIFIED
376.32 ORBITAL HEMORRHAGE
377.42 HEMORRHAGE IN OPTIC NERVE SHEATHS
379.23 VITREOUS HEMORRHAGE
431
432
432.1
432.1
732.9
719.1
719.11
719.11 HERARTHROSIS INVOLVING SHOULDER REG
719.12 HEMARTHORSIS INVOLVING UPPER ARM
719.14 HEMARTHROSIS INVOLVING HAND
719.15 HEMARTHROSIS INVOLVING PELVIC REGION AND THIGH
719.17 HEMARTHROSIS INVOLVING ANKLE AND FOO
719.19
729.92 antraumic

852 Subarachnoid subdural and extradural
852.05 UBARACHNOID HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH MODERATE ( 1 - 24 HOU
852.06 UBARACHNOID HEMORRHAGEFOLLOWING IN URY WITHOUTOPEN INTRACRANIAL WOUND WITHLOSSOFCONSCIOUSNESS OF UNSPECIFIID DURATION JBARACHNOID HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED
SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH STATE OF CONSCIOUSNESS UNSPECIFIED
位
UBBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH BRIEF (LESS THAN ONE HOUR) LOSS OF CONSCIOUSNESS
852.15 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS WITHOUT RETURN TO PRE-EXISTING CONSCIOUS LEVEL
852.2

信
8.2
852.25
852.3
852.3
852.31 UBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND
UBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH STATE OF CONSCIOUSNESS UNSPECIFIED
852.32 SUBURAL HEMORRHAGE FOLLOWNG INJURY WITH OPEN INTRACRANALL WOUND WITH BRIEF (LESS THAN ONE HOUR) LOSS OF CONSCIOUSNESS
852.33 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH MODERATE ( $1-24$ HOURS) LOSS OF CONSCIOUSNESS
852.34 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL
852.35 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS WITHOUT RETURN TO PRE-EXISTING CONSCIOUS LEVE
852.43
(LES THAN 1HOUR)LOSS OF CONSCIOUSNESS
EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH MODERATE
852.49 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED
852.54 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL

853
OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY
853.01
853.01
853.03
853.05

INGER AND UNSPECIIIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH NO LOSS OF CONSCIOUSNES
THER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH MODERATE (1-24 HOURS) LO
853.05 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS WITHOUT RETURN TO PRE-EXISTING CONSCIOUS LEVEL
853.1
853.12 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH BRIEF (LESS THAN ONE HOUR) LOSS OF CONSCIOUSNESS
853.13 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH MODERATE (1-24 HOURS) LOSS OF CONSCIOUSNESS
853.14 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL 853.15 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS WITHOUT RETURN TO PRE-EXISTING CONSCIOUS LEVEL 866.02 LACERATION OF KIDNEY WITHOUT OPEN WOUND INTO CAVITY
363.72 HEMORRHAGIC CHOROIDAL DETACH HEMOPERICARDIUM
SUBARACHNOID HEMORRHAGE
568.81 HEMOPERITONEUM (NONTRAUMATIC)
719.1 HEMARTHROSIS SITE UNSPECIFIED
719.13 HEMARTHROSIS INVOLVING FOREARM
719.16 hemarthrosis involving Lower leg
719.18 HEMARTHROSIS INVOLVING OTHER SPECIFIED SITES

2 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY wITHOUT MENTION OF OPEN INTRACRANIAL WOUND
852.02 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH BRIEF (LESS THAN ONE HOUR) LOSS OF CONSCIOUSNES
852.04 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL 852.1 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND
852.13 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH MODERATE ( 1 -24 HOURS) LOSS OF CONSCIOUSNESS
852.14 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL
852.16 SUBARACHNOID HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITHLOSS OF CONSCIOUSNESS OF UNSPECIFIED DURATION
852.2 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITHOUT MENTION OF OPEN INTRACRANIAL WOUND
852.21 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH NO LOSS OF CONSCIOUSNESS
852.23 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH MODERATE (1-24 HOURS) LOSS OF CONSCIOUSNESS
852.24 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL 852.26 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITHOUTOPENINTRACRANIAL WOUND WITHLOSS OF CONSCIOUSNESS OF UNSPECIFIEDDURATION
852.29 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED
852.36 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH LOSS OF CONSCIOUSNESS OF UNSPECIFIED DURATION
852.39 SUBDURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED
852.4 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT MENTION OF OPEN INTRACRANIAL WOUND
852.4 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH STATE OF CONSCIOUSNESS UNSPECIFIED
852.41 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH NO LOSS OF CONSCIOUSNESS
852.44 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS AND RETURN TO PRE-EXISTING CONSCIOUS LEVEL 852.46 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITHLOSS OF CONSCIOUSNESS OF UNSPECIFIED DURATION
852.5 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND
852.5 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH STATE OF CONSCIOUSNESS UNSPECIFIED
852.51 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH NO LOSS OF CONSCIOUSNESS
852.52 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH BRIEF (LESS THAN ONE HOUR) LOSS OF CONSCIOUSNESS
852.53 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH MODERATE ( $1-24$ HOURS) LOSS OF CONSCIOUSNESS
852.55 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH PROLONGED (MORE THAN 24 HOURS) LOSS OF CONSCIOUSNESS WITHOUT RETURN TO PRE-EXISTING CONSCIOUS LEVEL
852.56 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH LOSS OF CONSCIOUSNESS OF UNSPECIFIED DURATION
852.59 EXTRADURAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED

853 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT MENTION OF OPEN INTRACRANIAL WOUND
853.02 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH BRIEF (LESS THAN ONE HOUR) LOSS OF CONSCIOUSNESS
853.06 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH LOSS OF CONSCIOUSNESS OF UNSPECIFIED
853.09 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITHOUT OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED
853.1 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH STATE OF CONSCIOUSNESS UNSPECIFIED
853.16 OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN NTRACRANIAL WOUND WITH LOSS OF CONSCIOUSNESS OF UNSPECIFIED DURATION
853.19 Other and UNSPECIFIED INTRACRANIAL HEMORRHAGE FOLLOWING INJURY WITH OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED
866.01 HEMATOMA OF KIDNEY WITHOUT RUPTURE OF CAPSULE WITHOUT OPEN WOUND INTO CAVITY
866.1 HEMATOMA OF KIDNEY WITHOUT RUPTURE OF CAPSULE WITH OPEN WOUND INTO CAVITY
866.12 LACERATION OF KIDNEY WITH OPEN WOUND INTO CAVIT

The occurrencє of Inpatient Confinement with the following attributes:

TRANSFUSION OF PLATELETS
OTHER TRANSFUSION OF WHOLE BLOOD
transfusion of packed cells
99.06 TRANSFUSION OF COAGULATION FACTORS

INTERNAL THROMBOSED HEMORRHOIDS
UNSPECIFIED THROMBOSED HEMORRHOIDS
UNSPECIFIED HEMORRHOIDS WITH OTHER COMPLICATION
RESIDUAL HEMORRHOIDAL SKIN TAGS
ESOPHAGITIS
SOPHAGITIS UNSPECIFIED
OOSINOPHILIC ESOPHAGITIS
GASTROESOPHAGEAL LACERATION-HEMORRHAGE SYNDROM
30.82 ESOPHAGEAL

531
531.2 ACUTE GASTRIC ULCER WITH HEMORRAGE WITH OBSTRUCTION
531.21 A
531.3 A
531.3 A
531.4
531.5
531.6
531.6 CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
31.61 CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
531.7
531.9

319 GASTRIC ULCER UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
ACUTE DUODENAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
52.01 ACUTE DUODENAL ULCER WITH HEMORRHAGE WITH OBSTRUCTION
532.1 ACUTE DUODENAL ULCER WITH PERFORATION
532.3 ACUTE DUODENAL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
532.4
32.41
532.5

RONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE WITH OBSTRUCTION
RONIC OR UNSPECIFIED DUODENAL ULCER WITH PERFORATION
iention of hemorrhage or perforation
ACUTE PEPIC ULCER F
ACUTE PETC
33.21 ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
533.4 CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE WITHOUT OBSTRUCTIO
533.41 HRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE WITH OBSTRUCTION
533.5 C
533.6 CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION
533.9 PEPTIC ULCER OF UNSPECIFIED SITE UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION

ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE
534.2 ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION
534.21 ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
534.4 CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE

CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION
CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
GASTROJEJUNAL ULCER UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
ATROPHIC GASTRITIS WITH HEMORRHAGE
35.31 ALCOHOLIC GASTRITIS WITH HEMORRHAG
535.4 OTHER SPECIFIED GASTRITIS (WITHOUT HEMORRHAGE)
535.51 UNSPECIFIED GASTRITIS AND GASTRODUODENITIS WITH HEMORRHAGE
35.61 DUODENITIS WITH HEMORRHAGE
562.01 DIVERTICULITIS OF SMALL INTESTINE (WITHOUT HEMORRHAGE)
562.03 DIVERTICULITIS OF SMALL INTESTINE WITH HEMORRHAGE
562.11 DIVERTICULITIS OF COLON (WITHOUT HEMORRHAGE)
62.12 DIVERTICULOSIS OF COLON WITH HEMORRHAGE
569.85 A

ANGIODYSPLASIA OF INTESTINE WITH HEMORRHAG
578.1

BLOOD IN STOOL
623.8

GROSS HEMATURIA
OTHER SPECIFIED NONINFLAMMATORY DISORDERS OF VAGINA
her disorders of menstruation and other abnormal bleeding from female genital tract
784.7 EPISTAXIS
784.8 HEMORRHAGE FROM THROAT
786.3
786.39

DTHER HEMOPTYSIS
IRON DEFICIENCY ANEMIA SECONDARY TO BLOOD LOSS (CHRONIC)
acute posthemorrhagic anemia
EXTERNAL THROMBOSED HEMORRHOIDS
5 EXTERNAL HEMORRHOIDS WITH OTHER COMPLICATION
455.6

ESOPHAGEAL VARICES WITH BLEEDNG
SOPHAGEAL VARICES IN DISEASES CLASSIFIED ELSEWHERE WITH BLEEDING
530.11
530.12

ACUTE ESOPHAGITIS
531
531.1
531.4

CIC
31.41
531.6

CHONIC R WECIFIED GASTRIC ULCER WITH HEMORRHAGE WITH OBSTRUCTION
ACUTE DUODENAL ULCER WITH HEMORRHAGE
ACUTE DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION
532.2 ACUTE DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
532.21 A
532.4

R UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION
5261
532.7 HRONIC OR UNSPECIFID DUOEAL ULCE WITH
532.7 OUTIC DUL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
A
ACUTE PEPTIC ULER OF UNSPECIFIED SITE WITH HEMORRHAGE WITH OBGTRUC
53 .

CHRONIC OR URER ORFOTION
CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFED SITE WITH HEMORRHAGE
OS.
33.61
533.7

信
ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
534.01
534.1
3.1 ACUTE GASTROJEJUNAL ULCER WITH PERFORATION
53.2 ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
3.3 ACUTE GASTROJEJUNAL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
.
53.5 CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH PERFORATION
34.61
534.7

ACUTE GASTRITIS (WITHOUT HEMORRHAGE)
.0. ACU T GASTRIIIS WITH HEMORRHAG
535.1 ATROPHIC GASTRITIS (WITHOUT HEMORRHAGE
535.2 GASTRIC MUCOSAL HYPERTROPHY (WITHOUT HEMORRHAGE)
35.21 GASTRIC MUCOSAL HYPERTROPHY WITH HEMORRHAGE
535.3 ALCOHOLIC GASTRITIS (WITHOUT HEMORRHAGE
535.5 UNSPECIFIED GASTRITIS AND GASTRODUODENITIS (WITHOUT HEMORRHAGE)
535.6 DUODENITIS (WITHOUT HEMORRHAGE)
537.83 ANGIODYSPLASIA OF STOMACH AND DUODENUM WITH HEMORRHAGE

2 DIVERTICULOSIS OF SMALL INTESTINE (WITHOUT HEMORRHAGE)
2.2 DIVERTICULOSIS OF SMALL INTESTINE WITH HEMORRHAG
562.1 DIVERTICULOSIS OF COLON (WITHOUT HEMORRHAGE)

## Appendix A <br> App-------------

| 562.13 | diverticulitis of colon with hemorrhage |
| :---: | :---: |
| 569.3 | HEmORRHAGE OF RECTUM AND ANUS |
| 578 | HEMATEMESIS |
| 578.9 | HEMORRHAGE OF GASTROINTESTINAL TRACT UNSPECIFIED |
| 593.81 | VASCULAR DISORDERS OF KIDNEY |
| 599.7 | HEMATURIA UNSPECIIIED |
| 623.6 | VAginal hematoma |
| 626.6 | METRORRHAGIA |
| 786.3 | HEMOPTYSIS UNSPECIFIED |
| 786.31 | ACUTE IDIOPATHIC PULMONARY HEMORRHAGE IN INFANTS |
| ICD-10 Dx |  |
| G95.19 | Other vascular myelopathies |
| H05.232 | Hemorrhage of left orbit |
| H05.239 | Hemorrhage of unspecified orbit |
| H31.30 | Unspecified choroidal hemorrhage |
| H31.301 | Unspecified choroidal hemorrhage, right eye |
| H31.303 | Unspecified choroidal hemorrhage, bilateral |
| H31.312 | Expulsive choroidal hemorrhage, left eye |
| H31.313 | Expulsive choroidal hemorrhage, bilateral |
| H31.411 | Hemorrhagic choroidal detachment, right eye |
| H31.419 | Hemorrhagic choroidal detachment, unspecified eye |
| H43.1 | Vitreous hemorrhage |
| H43.10 | Vitreous hemorrhage, unspecified eye |
| H43.11 | Vitreous hemorrhage, right eye |
| H43.13 | Vitreous hemorrhage, bilateral |
| H47.022 | Hemorrhage in optic nerve sheath, left eye |
| H47.023 | Hemorrhage in optic nerve sheath, bilateral |
| H47.029 | Hemorrhage in optic nerve sheath, unspecified eye |
| 160.0 | Nontraumatic subarachnoid hemorrhage from carotid siphon and bifurcation |
| 160.00 | Nontraumatic subarachnoid hemorrhage from unspecified carotid siphon and bifurcation |
| 160.01 | Nontraumatic subarachnoid hemorrhage from right carotid siphon and bifurcation |
| 160.1 | Nontraumatic subarachnoid hemorrhage from middle cerebral artery |
| 160.11 | Nontraumatic subarachnoid hemorrhage from right middle cerebral artery |
| 160.31 | Nontraumatic subarachnoid hemorrhage from right posterior communicating artery |
| 160.4 | Nontraumatic subarachnoid hemorrhage from basilar artery |
| 160.51 | Nontraumatic subarachnoid hemorrhage from right vertebral artery |
| 160.7 | Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery |
| 160.8 | Other nontraumatic subarachnoid hemorrhage |
| 161.0 | Nontraumatic intracerebral hemorrhage in hemisphere, subcortical |
| 161.2 | Nontraumatic intracerebral hemorrhage in hemisphere, unspecified |
| 161.3 | Nontraumatic intracerebral hemorrhage in brain stem |
| 161.5 | Nontraumatic intracerebral hemorrhage, intraventricular |
| 161.6 | Nontraumatic intracerebral hemorrhage, multiple localized |
| 161.8 | Other nontraumatic intracerebral hemorrhage |
| 162 | Other and unspecified nontraumatic intracranial hemorrhage |
| 162.0 | Nontraumatic subdural hemorrhage |
| 162.00 | Nontraumatic subdural hemorrhage, unspecified |
| 162.01 | Nontraumatic acute subdural hemorrhage |
| 162.02 | Nontraumatic subacute subdural hemorrhage |
| 162.9 | Nontraumatic intracranial hemorrhage, unspecified |
| K66.1 | Hemoperitoneum |
| M25.0 | Hemarthrosis |
| M25.01 | Hemarthrosis, shoulder |
| M25.012 | Hemarthrosis, left shoulder |
| M25.019 | Hemarthrosis, unspecified shoulder |
| M25.021 | Hemarthrosis, right elbow |
| M25.029 | Hemarthrosis, unspecified elbow |
| M25.03 | Hemarthrosis, wrist |
| M25.039 | Hemarthrosis, unspecified wrist |
| M25.05 | Hemarthrosis, hip |

Hemarthrosis, right hip
Hemarthrosis, left hip
Hemarthrosis, knee
Hemarthrosis, right knee
Hemarthrosis, ankle and foot
Hemarthrosis, right ankle
Hemarthrosis, unspecified ankle
Hemarthrosis, right foot
Hemarthrosis, left foot
Hemarthrosis, other specified site
Nontraumatic hematoma of soft tissue
Epidural hemorrhage
Epidural hemorrhage
Epidural hemorrhage without loss of consciousness
Epidural hemorrhage without loss of consciousness, subsequent encounter
Epidural hemorrhage with loss of consciousness of 30 minutes or less, initial encounter
Epidural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, sequel
Epidural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes
Epidural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter
Epidural hemorrhage with loss of consciousness of 6 hours to 24 hours
Eid
Epidura her han 24 hours with return to pre-existing conscious level, subsequent encounter
Epidural himorthage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, sequela
Epidua
Epidura hemorrhage whin loss of consciousness of any duration win deanh due to brain injury priorto regaining consciousness

Epidural hemorrhage with loss of consciousness of unspecified duration
Epidural hemorrhage with loss of consciousness of unspecified duration, initial encounter
Traumatic subdural hemorrhag
Traumatic subdural hemorrhage
Traumatic subdural hemorrhage without loss of consciousness
Traumatic subdural hemorrhage with loss of consciousness of 31 minutes to 59 minutes
Traumatic subdural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter
Traumatic subdural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter
Traumatic subdural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, subsequent encounter
Traumatic subdural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, sequela
Traumatic subdural hemorrhage with loss of consciousness of 6 hours to 24 hours, sequela
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, sequela
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, subsequent encounter
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, sequela
Traumatic subdural hemorrhage with loss of consciousness of any duration with death due to other cause before regaining consciousness
Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, initial encounter
Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, subsequent encounter
Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, sequela
Traumatic subarachnoid hemorrhage
Traumatic subarachnoid hemorrhage without loss of consciousness
Traumatic subarachnoid hemorrhage without loss of consciousness, initial encounter
Traumatic subarachnoid hemorrhage without loss of consciousness, subsequent encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 30 minutes or less
Traumatic subarachnoid hemorrhage with loss of consciousness of 30 minutes or less, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 30 minutes or less, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness of 31 minutes to 59 minutes, subsequent encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, subsequent encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 6 hours to 24 hours
Traumatic subarachnoid hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 6 hours to 24 hours, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level

Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving
Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness
S06.6X7
S06.6X8A
S06.6X9S
S26.0
S26.01XA
S26.01XA
S26.020A
S26.020A
S26.021
S26.021S
S26.021S
S26.022
S26.022D
S26.09
S26.09
S26.09XD
S26.09xs
S26.09X
S37.01
S37.011D
537.011S

S37.012A
S37.012D
S37.012S
S37.02
S37.021
S37.021D
S37.021S
S37.022D
S37.022S
S37.029
S37.031A
S37.031D
S37.032
S37.032D
S37.032S
S37.039
S37.039D
S37.04
S37.041
S37.041A
S37.041A
S37.041D
S37.041S
S37.042A
S37.042A
S37.042D
S37.042D
S37.042S
S37.042S
S37.051
S37.051
S37.051A
S37.051A
S37.051S
S37.052S
S37.059D
S37.059S
S37.061s
S37.061S
S37.062
S37.062S
S37.069A
S37.069A
S37.069S
S37.069S
H05.23
H05.231

Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of unspecified duration, sequela
injury of heart with hemopericardium
Contusion of heart with hemopericardium
Contusion of heart with hemopericardium, initial encounter
Mild laceration of heart with hemopericardium
Mild laceration of heart with hemopericardium, initial encounter
Moderate laceration of heart with hemopericardium, subsequent encounter
Moderate laceration of heart with hemopericardium, sequela
Major laceration of heart with hemopericardium
Major laceration of heart with hemopericardium, subsequent encounter
Other injury of heart with hemopericardium
Other injury of heart with hemopericardium, subsequent encounter
Other injury of heart with hemopericardium, sequela
nor contusion of kidney
Minor contusion of right kidney,
Minor contusion of right kidney, sequela
Minor contusion of left kidney, initial encounte
Minor contusion of left kidney, subsequent encounter
Minor contusion of let kianey, sequela
Major contusion of kidney
Major contusion of right kidney
Major contusion of right kidney, subsequent encounter
Major contusion of right kidney, sequela
Major contusion of left kidney, subsequent encounter
Major contusion of left kidney, sequela
Major contusion of unspecified kidney
Laceration of right kidney, unspecified degree, initial encounter
Laceration of right kidney, unspecified degree, subsequent encounte
Laceration of left kidney, unspecified degree
Laceration of left kianey, unspecified degree, subsequent encounter
Laceration of left kidney, unspecified degree, sequel
Laceration of unspecified kidney, unspecified degree
Laceration of unspecified kidney, unspecified degree, subsequent encounter
Minor laceration of kidney
Minor laceration of right kidney
Minor laceration of right kidney, initial encounter
Minor laceration of right kidney, subsequent encounter
Minor laceration of right kidney, sequela
Minor
Minor laceration of left kidney, subsequent encounter
Moderate
Moderate laceration of right kidney
Moderate laceration of right kidney, initial encounter
Moderate laceration of righ
Moderate laceration of right kidney, sequela
Moderate laceration of unspecified kidney, subsequent encounter
Moderate laceration of unspecified kidney, sequela
Major laceration of right kidney, sequela
Major laceration of left kidney
Major laceration of left kidney, sequel
Major laceration of unspecified kidney, initial encounter
Major laceration of unspecified kidney, sequela
Hemorrhage of orbit
Hemorrhage of right orbit

Hemorrhage of bilateral orbit
Unspecified choroidal hemorrhage, left eye
Unspecified choroidal hemorrhage, unspecified eye
Expulsive choroidal hemorrhage
Expulsive choroidal hemorrhage, right eye
Expulsive choroidal hemorrhage, unspecified eye
Hemorrhagic choroidal detachment
Hemorrhagic choroidal detachment, left eye
Hemorrhagic choroidal detachment, bilateral
Vitreous hemorrhage, left eye
Hemorrhage in optic nerve sheath
Hemorrhage in optic nerve sheath, right eye
Hemopericardium as current complication following acute myocardial infarction
Hemopericardium, not elsewhere classified
Nontraumatic subarachnoid hemorrhage
Nontraumatic subarachnoid hemorrhage from left carotid siphon and bifurcation
Nontraumatic subarachnoid hemorrhage from unspecified middle cerebral artery
Nontraumatic subarachnoid hemorrhage from left middle cerebral artery
Nontraumatic subarachnoid hemorrhage from anterior communicating artery
Nontraumatic subarachnoid hemorrhage from posterior communicating artery
Nontraumatic subarachnoid hemorrhage from unspecified posterior communicating artery
Nontraumatic subarachnoid hemorrhage from left posterior co municating artery
Nontraumatic subarachnoid hemorrhage from vertebral artery
Nontraumatic subarachnoid hemorrhage from unspecified vertebral artery
Nontraumatic subarachnoid hemorrhage from left vertebral artery
Nontraumatic subarachnoid hemorrhage from other intracranial arteries
Nontraumatic subarachnoid hemorrhage, unspecified
Nontraumatic intracerebral hemorrhage
Nontraumatic intracerebral hemorrhage in hemisphere, cortical
Nontraumatic intracerebral hemorrhage in cerebellum
Nontraumatic intracerebral hemorrhage, unspecified
Nontraumatic chronic subdural hemorrhage
Nontraumatic extradural hemorrhage
Hemarthrosis, unspecified joint
Hemarthrosis, right shoulder
Hemarthrosis, elbow
Hemarthrosis, left elbow
Hemarthrosis, right wrist
Hemarthrosis, left wrist
Hemarthrosis, hand
Hemarthrosis, right hand
Hemarthrosis, left hand
Hemarthrosis, unspecified hand
Hemarthrosis, unspecified hip
Hemarthrosis, left knee
Hemarthrosis, unspecified knee
Hemarthrosis, left ankle
Hemarthrosis, unspecified foot
Epidural hemorrhage without loss of consciousness, initial encounter
Epidural hemorrhage without loss of consciousness, sequela
Epidural hemorrhage with loss of consciousness of 30 minutes or less
Epidural hemorrhage with loss of consciousness of 30 minutes or less, subsequent encounter
Epidural hemorrhage with loss of consciousness of 30 minutes or less, sequela
Epidural hemorrhage with loss of consciousness of 31 minutes to 59 minutes
Epidural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter
Epidural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, subsequent encounter
Epidural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, subsequent encounter
Epidural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, sequela
Epidural hemorrhage with loss of consciousness of 6 hours to 24 hours, subsequent encounter
Epidural hemorrhage with loss of consciousness of 6 hours to 24 hours, sequela

S06.4X5 S06.4X5A
S06.4X6 S06.4X6A S06.4X6S S06.4X6S
S06.4X8 S06.4X8A S06.4X9D $\mathrm{s} 00.4 \times 9 \mathrm{D}$
s 06.4 X 9 S $\mathrm{S} 06.4 \times 9 \mathrm{~S}$
$\mathrm{~S} 06.5 \times 0 \mathrm{~A}$ S06.5X0A S06.5×0D S06.5X0S S06.5X1 S06.5X1A
S06.5×1D S06.5X1D S06.5×1S S06.5X2D S06.5X2S S06.5X3 $\mathrm{S} 06.5 \times 4$
$\mathrm{~S} 06.5 \times 4 \mathrm{~A}$ S06.5X4A S06.5X4D S06.5X5D S06.5X6 S06.5X7 S06.5X7A $506.5 \times 8 \mathrm{~A}$ S06.5X9 S06.6 S06.6X0S S06.6X1D S06.6X2 S06.6X2A $506.6 \times 2 \mathrm{~A}$ S06.6X2S S06.6x3 S06.6X3A S06.6X3S S06.6X4D S06.6X5A S06.6X5D

Epidural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious leve Epidural hemorrhage with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter
Epidural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving
Epidural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter
Epidural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, sequela
Epidural hemorrhage with loss of consciousness of any duration with death due to other causes prior to regaining consciousness
Epidural hemorrhage with loss of consciousness of any duration with death due to other causes prior to regaining consciousness, initial encounter
Epidural hemorrhage with loss of consciousness of unspecified duration, subsequent encounter
Epidural hemorrhage with loss of consciousness of unspecified duration, sequela
Traumatic subdural hemorrhage without loss of consciousness, initial encounter
Traumatic subdural hemorrhage without loss of consciousness, subsequent encounte
Traumatic subdural hemorrhage without loss of consciousness, sequela
Traumatic subdural hemorrhage with loss of consciousness of 30 minutes or less
Traumatic subdural hemorrhage with loss of consciousness of 30 minutes or less, initial encounter
Traumatic subdural hemorrhage with loss of consciousness of 30 minutes or less, subsequent encounter
Traumatic subdural hemorrhage with loss of consciousness of 30 minutes or less, sequela
Traumatic subdural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, subsequent encounter
Traumatic subdural hemorrhage with loss of consciousness of 31 minutes to 59 minutes, sequela
Traumatic subdural hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes
raumatic subdural hemorrhage with loss of consciousness of 6 hours to 24 hours
Traumatic subdural hemorrhage with loss of consciousness of 6 hours to 24 hours, initial encounter
Triac
.
Traumatic subdural hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving
Traumatic subdural hemorrhage with loss of consciousness of any duration with death due to brain injury before regaining consciousness
Traumatic subdual her hage lith Traumatic subdural hemorrhage with loss of consciousness of unspecified duration
Traumatic subarachnoid hemorrhage
Traumatic subarachnoid hemorrhage without loss of consciousness, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness of 30 minutes or less, subsequent encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 31 minutes to 59 minutes
Traumatic subarachnoid hemorrhage with loss of consciousness of 31 minutes to 59 minutes, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 31 minutes to 59 minutes, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes
Traumatic subarachnoid hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of 1 hour to 5 hours 59 minutes, sequela
Traumatic subarachnoid hemorrhage with loss of consciousness of 6 hours to 24 hours, subsequent encounter
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Traumatic subarachnoid hemorrhage with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, subsequent encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter
Traumatic subarachnoid hemorrhage with loss of consciousness of any duration with death due to other cause prior to regaining consciousness
Traumatic subarachnoid hemorrhage with loss of consciousness of unspecified duration

Unspecified injury of heart with hemopericardium
Unspecified injury of heart with hemopericardium, initial encounter
Unspecified injury of heart with hemopericardium, subsequent encounter
Unspecified injury of heart with hemopericardium, sequela
Contusion of heart with hemopericardium, subsequent encounter
Contusion of heart with hemopericardium, sequela
Laceration of heart with hemopericardium
Mild laceration of heart with hemopericardium, subsequent encounter
Mild laceration of heart with hemopericardium, sequel
Moderate laceration of heart with hemopericardium
oderate laceration of heart with hemopericardium, initial encounter
Major laceration of heart with hemopericardium, initial encounter
Major laceration of heart with hemopericardium, sequela
Other injury of heart with hemopericardium, initial encounter

Minor contusion of right kidney
Minor contusion of right kidney, initial encounter
Minor contusion of left kidney
Minor contusion of unspecified kidney
Minor contusion of unspecified kidney, initial encounter
Minor contusion of unspecified kidney, subsequent encounter
Minor contusion of unspecified kidney, sequela
Major contusion of right kidney, initial encounter
Major contusion of left kidney
Major contusion of left kidney, initial encounter
Major contusion of unspecified kidney, initial encounter
Major contusion of unspecified kidney, subsequent encounter
Major contusion of unspecified kidney, sequela
Laceration of kidney, unspecified degree
Laceration of right kidney, unspecified degree
Laceration of right kidney, unspecified degree, sequela
Laceration of left kidney, unspecified degree, initial encounter
Laceration of unspecified kidney, unspecified degree, initial encounter
Laceration of unspecified kidney, unspecified degree, sequela
Minor laceration of left kidney
nor laceration of pecified kidney
Mnor lacer initial encounter
Minor laceration of unspecified kidney, subsequent encounte
Minor laceration of unspeciried kianey, sequela
Moderate laceration of kidney
Moderae lacerail or
Moderate laceration of left kidney
Moderate laceration of left kidney, initial encounter
Moderate laceration of left kidney, subsequent encounter
Moderate laceration of unspecified kidney
Moderate laceration of unspecified kidney, initial encounter
Major laceration of kidney
Major laceration of right kidney
Major laceration of right kidney, initial encounter
Major laceration of right kidney, subsequent encounter
Major laceration of left kidney, initial encounter
Major laceration of left kidney, subsequent encounter Major laceration of unspecified kidney
Major laceration of unspecified kidney, subsequent encounter
S37.069D
The occurrence of Inpatient Confinement with the following attributes:
Procedure
Code (Any

Position
AND
D50.0
${ }^{\text {D62 }} 185.11$
K20
K20.0
K20.8
K20.9
K20.9
K21.0
K22.11
K22.11
K25.1
K25.2
K25.4

| K25.5 | Chronic or unspecified gastric ulcer with perforation |
| :--- | :--- |


|  | Acute duodenal ulcer with both hemorrhage and perforation <br> Chronic or unspecified duodenal ulcer with hemorrhage <br> Chronic or unspecified duodenal ulcer with both hemorrhage and perforation <br> Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage <br> Chronic or unspecified peptic ulcer, site unspecified, with perforation <br> Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation <br> Acute gastrojejunal ulcer with perforation <br> Acute gastrojejunal ulcer with both hemorrhage and perforation <br> Chronic superficial gastritis with bleeding <br> Gastroduodenitis, unspecified, with bleeding <br> Diverticulosis of small intestine without perforation or abscess with bleeding <br> Diverticulitis of large intestine with perforation and abscess with bleeding <br> Diverticulosis of both small and large intestine without perforation or abscess with bleeding <br> Diverticulitis of both small and large intestine without perforation or abscess with bleeding <br> Diverticulitis of intestine, part unspecified, without perforation or abscess with bleeding <br> Hemorrhage of anus and rectum <br> Second degree hemorrhoids <br> Fourth degree hemorrhoids <br> Unspecified hemorrhoids <br> Hematemesis <br> Melena <br> Hematocolpos <br> Excessive and frequent menstruation with irregular cycle <br> Other specified abnormal uterine and vaginal bleeding <br> Epistaxis <br> Gross hematuria <br> Hematuria, unspecified <br> Hemorrhage, not elsewhere classified <br> Esophageal varices with bleeding <br> Gastro-esophageal laceration-hemorrhage syndrome <br> Acute gastric ulcer with hemorrhage <br> Chronic or unspecified gastric ulcer with both hemorrhage and perforation <br> Acute duodenal ulcer with hemorrhage <br> Acute duodenal ulcer with perforation <br> Chronic or unspecified duodenal ulcer with perforation <br> Acute peptic ulcer, site unspecified, with hemorrhage <br> Acute peptic ulcer, site unspecified, with perforation <br> Acute peptic ulcer, site unspecified, with both hemorrhage and perforation <br> Acute gastrojejunal ulcer with hemorrhage <br> Chronic or unspecified gastrojejunal ulcer with hemorrhage <br> Chronic or unspecified gastrojejunal ulcer with perforation <br> Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation <br> Acute gastritis with bleeding <br> Alcoholic gastritis with bleeding <br> Chronic atrophic gastritis with bleeding <br> Unspecified chronic gastritis with bleeding <br> Other gastritis with bleeding <br> Gastritis, unspecified, with bleeding <br> Duodenitis with bleeding <br> Angiodysplasia of stomach and duodenum with bleeding <br> Angiodysplasia of colon with hemorrhage <br> Diverticulitis of small intestine with perforation and abscess with bleeding <br> Diverticulosis of large intestine without perforation or abscess with bleeding <br> Diverticulitis of both small and large intestine with perforation and abscess with bleeding <br> Diverticulitis of intestine, part unspecified, with perforation and abscess with bleeding <br> Diverticulosis of intestine, part unspecified, without perforation or abscess with bleeding <br> First degree hemorrhoids <br> Third degree hemorrhoids <br> Residual hemorrhoidal skin tags <br> Perianal venous thrombosis |
| :---: | :---: |

## Appendix A

| K64.8 | Other hemorrhoids |
| :--- | :--- |
| K92.2 | O. |

Gastrointestinal hemorrhage, unspecified
Other specified noninflammatory disorders of vagina
Abnormal uterine and vaginal bleeding, unspecified
Hemorrhage from throat

| R04.2 Hemoptysis |
| :--- | :--- | :--- |

Inpatient, Any Diagnosis: ICD-9 Codes
280.0 - IRON DEFICIENCY ANEMIA SECONDARY TO BLOOD LOSS (CHRONIC)
455.7 - UNSPECIFIED THROMBOSED HEMORRHOIDS
459.0 - HEMORRHAGE UNSPECIFIED
530.10 - ESOPHAGITIS UNSPECIFIED
530.13 - EOSINOPHILIC ESOPHAGITIS
531.0 - ACUTE GASTRIC ULCER WITH HEMORRHAGE
531.1 - ACUTE GASTRIC ULCER WITH PERFORATION
531.2 - ACUTE GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION
531.20 - ACUTE GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
531.3 - ACUTE GASTRIC ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
531.4 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE
531.6 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION
531.61 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
531.9 - GASTRIC ULCER UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
532.0 - ACUTE DUODENAL ULCER WITH HEMORRHAGE
532.00 - ACUTE DUODENAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
532.01 - ACUTE DUODENAL ULCER WITH HEMORRHAGE WITH OBSTRUCTION
532.2 - ACUTE DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION
532.20 - ACUTE DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
532.3 - ACUTE DUODENAL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
532.4 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE
532.41 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE WITH OBSTRUCTION
532.5 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH PERFORATION
532.61 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
533.0 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE
533.00 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE WITHOUT OBSTRUCTION
533.01 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE WITH OBSTRUCTION
533.1 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH PERFORATION
533.2 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION
533.20 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
533.3 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITHOUT MENTION OF HEMORRHAGE AND PERFORATION
533.6 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION
533.60 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION 533.7 - CHRONIC PEPTIC ULCER OF UNSPECIFIED SITE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
534.00 - ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
534.01 - ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE WITH OBSTRUCTION
534.20 - ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
534.3 - ACUTE GASTROJEJUNAL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
534.40 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
534.41 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE WITH OBSTRUCTION
534.61 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
534.7 - CHRONIC GASTROJEJUNAL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
534.9 - GASTROJEJUNAL ULCER UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
535.00 - ACUTE GASTRITIS (WITHOUT HEMORRHAGE)
535.01 - ACUTE GASTRITIS WITH HEMORRHAGE
535.10 - ATROPHIC GASTRITIS (WITHOUT HEMORRHAGE)
535.20 - GASTRIC MUCOSAL HYPERTROPHY (WITHOUT HEMORRHAGE)
535.21 - GASTRIC MUCOSAL HYPERTROPHY WITH HEMORRHAGE 535.31 - ALCOHOLIC GASTRITIS WITH HEMORRHAGE
535.40 - OTHER SPECIFIED GASTRITIS (WITHOUT HEMORRHAGE)
535.41 - OTHER SPECIFIED GASTRITIS WITH HEMORRHAGE
562.00 - DIVERTICULOSIS OF SMALL INTESTINE (WITHOUT HEMORRHAGE)
562.01 - DIVERTICULITIS OF SMALL INTESTINE (WITHOUT HEMORRHAGE)
562.03 - DIVERTICULITIS OF SMALL INTESTINE WITH HEMORRHAGE
562.11 - DIVERTICULITIS OF COLON (WITHOUT HEMORRHAGE)
562.13 - DIVERTICULITIS OF COLON WITH HEMORRHAGE
569.85 - ANGIODYSPLASIA OF INTESTINE WITH HEMORRHAGE
578.0 - HEMATEMESIS
578.1 - BLOOD IN STOOL
578.9 - HEMORRHAGE OF GASTROINTESTINAL TRACT UNSPECIFIED
593.81 - VASCULAR DISORDERS OF KIDNEY
599.70 - HEMATURIA UNSPECIFIED
599.71 - GROSS HEMATURIA
623.6 - VAGINAL HEMATOMA
626.6 - METRORRHAGIA
784.7 - EPISTAXIS
784.8 - HEMORRHAGE FROM THROAT
786.31 - ACUTE IDIOPATHIC PULMONARY HEMORRHAGE IN INFANTS
285.1 - ACUTE POSTHEMORRHAGIC ANEMIA
455.1 - INTERNAL THROMBOSED HEMORRHOIDS
455.2 - INTERNAL HEMORRHOIDS WITH OTHER COMPLICATION
455.4 - EXTERNAL THROMBOSED HEMORRHOIDS
455.5 - EXTERNAL HEMORRHOIDS WITH OTHER COMPLICATION
455.6 - UNSPECIFIED HEMORRHOIDS WITHOUT COMPLICATION
455.8 - UNSPECIFIED HEMORRHOIDS WITH OTHER COMPLICATION
455.9 - RESIDUAL HEMORRHOIDAL SKIN TAGS
456.0 - ESOPHAGEAL VARICES WITH BLEEDING
456.20 - ESOPHAGEAL VARICES IN DISEASES CLASSIFIED ELSEWHERE WITH BLEEDING
530.1 - ESOPHAGITIS
530.11 - REFLUX ESOPHAGITIS
530.12 - ACUTE ESOPHAGITIS
530.19 - OTHER ESOPHAGITIS
530.7 - GASTROESOPHAGEAL LACERATION-HEMORRHAGE SYNDROME
530.82 - ESOPHAGEAL HEMORRHAGE
531.00 - ACUTE GASTRIC ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
531.01 - ACUTE GASTRIC ULCER WITH HEMORRHAGE WITH OBSTRUCTION
531.21 - ACUTE GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
531.40 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
531.41 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE WITH OBSTRUCTION
531.5 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH PERFORATION
531.60 - CHRONIC OR UNSPECIFIED GASTRIC ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
531.7 - CHRONIC GASTRIC ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
532.1 - ACUTE DUODENAL ULCER WITH PERFORATION
532.21 - ACUTE DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
532.40 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE WITHOUT OBSTRUCTION
532.6 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION
532.60 - CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION 532.7 - CHRONIC DUODENAL ULCER WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
532.9 - DUODENAL ULCER UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION
533.21 - ACUTE PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
533.4 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE
533.40 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE WITHOUT OBSTRUCTION 533.41 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE WITH OBSTRUCTION
533.5 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH PERFORATION
533.61 - CHRONIC OR UNSPECIFIED PEPTIC ULCER OF UNSPECIFIED SITE WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION 533.9 - PEPTIC ULCER OF UNSPECIFIED SITE UNSPECIFIED AS ACUTE OR CHRONIC WITHOUT MENTION OF HEMORRHAGE OR PERFORATION 534.0 - ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE
534.1 - ACUTE GASTROJEJUNAL ULCER WITH PERFORATION
534.2 - ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION
534.21 - ACUTE GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITH OBSTRUCTION
534.4 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE
534.5 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH PERFORATION
534.6 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION
534.60 - CHRONIC OR UNSPECIFIED GASTROJEJUNAL ULCER WITH HEMORRHAGE AND PERFORATION WITHOUT OBSTRUCTION
535.11 - ATROPHIC GASTRITIS WITH HEMORRHAGE
535.30 - ALCOHOLIC GASTRITIS (WITHOUT HEMORRHAGE)
535.50 - UNSPECIFIED GASTRITIS AND GASTRODUODENITIS (WITHOUT HEMORRHAGE)
535.51 - UNSPECIFIED GASTRITIS AND GASTRODUODENITIS WITH HEMORRHAGE
535.60 - DUODENITIS (WITHOUT HEMORRHAGE)
535.61 - DUODENITIS WITH HEMORRHAGE
537.83 - ANGIODYSPLASIA OF STOMACH AND DUODENUM WITH HEMORRHAGE
562.02 - DIVERTICULOSIS OF SMALL INTESTINE WITH HEMORRHAGE
562.10 - DIVERTICULOSIS OF COLON (WITHOUT HEMORRHAGE)
562.12 - DIVERTICULOSIS OF COLON WITH HEMORRHAGE
569.3 - HEMORRHAGE OF RECTUM AND ANUS
623.8 - OTHER SPECIFIED NONINFLAMMATORY DISORDERS OF VAGINA
626.8 - OTHER DISORDERS OF MENSTRUATION AND OTHER ABNORMAL BLEEDING FROM FEMALE GENITAL TRACT
786.3 - HEMOPTYSIS
786.30 - HEMOPTYSIS UNSPECIFIED
786.39 - OTHER HEMOPTYSIS
285.9 - ANEMIA UNSPECIFIED
790.92 - ABNORMAL COAGULATION PROFILE
363.63 - CHOROIDAL RUPTURE
626.2 - EXCESSIVE OR FREQUENT MENSTRUATION
372.72-CONJUNCTIVAL HEMORRHAGE

## Inpatient, Any Diagnosis: ICD-10 Codes

D50.0 - Iron deficiency anemia secondary to blood loss (chronic)
D62 - Acute posthemorrhagic anemia
185.01 - Esophageal varices with bleeding

I85.11 - Secondary esophageal varices with bleeding
K20.0 - Eosinophilic esophagitis
K20.8 - Other esophagitis
|K22.11 - Ulcer of esophagus with bleeding
K22.6 - Gastro-esophageal laceration-hemorrhage syndrome
K25.0 - Acute gastric ulcer with hemorrhage
K25.1 - Acute gastric ulcer with perforation
K25.2 - Acute gastric ulcer with both hemorrhage and perforation
K25.4 - Chronic or unspecified gastric ulcer with hemorrhage
K25.5 - Chronic or unspecified gastric ulcer with perforation
K26.1 - Acute duodenal ulcer with perforation
K26.2 - Acute duodenal ulcer with both hemorrhage and perforation
K26.4 - Chronic or unspecified duodenal ulcer with hemorrhage
K27.1 - Acute peptic ulcer, site unspecified, with perforation
K27.2 - Acute peptic ulcer, site unspecified, with both hemorrhage and perforation
K27.5 - Chronic or unspecified peptic ulcer, site unspecified, with perforation
K27.6 - Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation
K28.0 - Acute gastrojejunal ulcer with hemorrhage
K28.4 - Chronic or unspecified gastrojejunal ulcer with hemorrhage
K28.6 - Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation
K29.01 - Acute gastritis with bleeding
K29.31 - Chronic superficial gastritis with bleeding
K29.41 - Chronic atrophic gastritis with bleeding
K29.51 - Unspecified chronic gastritis with bleeding
K29.71 - Gastritis, unspecified, with bleeding
K57.11 - Diverticulosis of small intestine without perforation or abscess with bleeding
K57.21 - Diverticulitis of large intestine with perforation and abscess with bleeding
K57.41 - Diverticulitis of both small and large intestine with perforation and abscess with bleeding
K57.51 - Diverticulosis of both small and large intestine without perforation or abscess with bleeding
K57.81 - Diverticulitis of intestine, part unspecified, with perforation and abscess with bleeding
K57.91 - Diverticulosis of intestine, part unspecified, without perforation or abscess with bleeding
K57.93 - Diverticulitis of intestine, part unspecified, without perforation or abscess with bleeding
K62.5 - Hemorrhage of anus and rectum
K64.0 - First degree hemorrhoids
K64.5 - Perianal venous thrombosis
K64.8 - Other hemorrhoids
K64.9 - Unspecified hemorrhoids
K92.0 - Hematemesis
K92.2-Gastrointestinal hemorrhage, unspecified
N89.7- Hematocolpos
N93.8 - Other specified abnormal uterine and vaginal bleeding
R04.2 - Hemoptysis
R31.0-Gross hematuria
K20 - Esophagitis
K20.9 - Esophagitis, unspecified
K21.0 - Gastro-esophageal reflux disease with esophagitis
K25.6 - Chronic or unspecified gastric ulcer with both hemorrhage and perforation
K26.0 - Acute duodenal ulcer with hemorrhage
K26.5 - Chronic or unspecified duodenal ulcer with perforation
K26.6 - Chronic or unspecified duodenal ulcer with both hemorrhage and perforation
K27.0 - Acute peptic ulcer, site unspecified, with hemorrhage

K27.4 - Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage
K28.1 - Acute gastrojejunal ulcer with perforation
K28.2 - Acute gastrojejunal ulcer with both hemorrhage and perforation
K28.5 - Chronic or unspecified gastrojejunal ulcer with perforation
K29.21 - Alcoholic gastritis with bleeding
K29.61 - Other gastritis with bleeding
K29.81 - Duodenitis with bleeding
K29.91 - Gastroduodenitis, unspecified, with bleeding
K31.811 - Angiodysplasia of stomach and duodenum with bleeding
K55.21 - Angiodysplasia of colon with hemorrhage
K57.01 - Diverticulitis of small intestine with perforation and abscess with bleeding
K57.31 - Diverticulosis of large intestine without perforation or abscess with bleeding
K57.53 - Diverticulitis of both small and large intestine without perforation or abscess with bleeding
K64.1 - Second degree hemorrhoids
K64.2 - Third degree hemorrhoids
K64.3 - Fourth degree hemorrhoids
K64.4 - Residual hemorrhoidal skin tags
K92.1 - Melena
N89.8 - Other specified noninflammatory disorders of vagina
N93.9 - Abnormal uterine and vaginal bleeding, unspecified
R04.0-Epistaxis
R04.1-Hemorrhage from throat
R58-Hemorrhage, not elsewhere classified
D64.9 - Anemia, unspecified
R79.1 - Abnormal coagulation profile
H11.30 - Conjunctival hemorrhage, unspecified eye
H11.31 - Conjunctival hemorrhage, right eye
H11.32 - Conjunctival hemorrhage, left eye
H11.33 - Conjunctival hemorrhage, bilateral
H31.321 - Choroidal rupture, right eye
H31.322 - Choroidal rupture, left eye
H31.323 - Choroidal rupture, bilateral
H31.329 - Choroidal rupture, unspecified eye
N92.1 - Excessive and frequent menstruation with irregular cycle
R31.1 - Benign essential microscopic hematuria
R31.2 - Other microscopic hematuria
R31.29 - Other microscopic hematuria
N92.0-Excessive and frequent menstruation with regular cycle
R31.21 - Asymptomatic microscopic hematuria
R31.9 - Hematuria, unspecified

## Appendix A

| Procedure Cod | description |
| :---: | :---: |
| CPT-4 codes |  |
| 1960 | Anesthesia for vaginal delivery only |
| 1961 | Anesthesia for cesarean delivery only |
| 1962 | Anesthesia for urgent hysterectomy following delivery |
| 1963 | Anesthesia for cesarean hysterectomy wo any labor analgesia/anesthesia care |
| 1967 | Neuraxial labor analgesialanesthesia, planned vaginal delivery |
| 1968 | Anesthesia for cesarean delivery following neuraxial labor analgesia/anesthesia |
| 1969 | Anes for cesarean hysterectomy following neuraxial labor analgesialanesthesia |
| 59050 | Fetal monitoring in labor, physician w/writen report; \& i |
| 59051 | Fetal monitoring in labor, physician w/witten report; intrepretation only |
| 59400 | ROUTINE TOTAL OBSTETRIC CARE including antepartum care, vaginal delivery (with or without episiotomy, and/o forceps) and postpartum care. |
| 59409 | Vaginal delivery only (w/wo episiotomy \&/or forceps) |
| 59410 | Vaginal delivery only (w/wo episiotomy \&/or forceps); w/postpartum care |
| 59412 | Ext ephalic version, w/wo tocolysis |
| 59414 | Delivery of placenta (separate proc) |
| 59430 | Postpartum care only |
| 59510 | Routine obstetric care wantepartum care, cesarean delivery, \& postpartum care |
| 59514 | Cesarean delivery only |
| 59515 | Cesarean delivery only; w/postpartum care |
| 59525 | Subtotallotala hysterectomy ater cesarean delivery |
| 59610 | Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care, after previous cesarean delivery |
| 59612 | Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps) |
| 59614 | Vaginal delivery only, previous cesarean delivery w/postpartum care |
| 59618 | Routine obstetric care including antepartum care, cesarean delivery, and postpartum care, following attempted vaginal delivery after previous cesarean delivery |
| 59620 | Cesareand delivery after failed vaginal delivery, previous cesarean delivery |
| 59622 | Cesarean delivery after failed vaginal delivery, previous cesarean delivery; w/postpartum care |
| 99436 | Attendance at delivery, at request of delivering physician, \& stabiilzation of newborn |
| 99440 | Newborn resuscitation |
| .9 procedure |  |
| codes |  |
| 72.xx | Forceps, vacuum, \& breech |
| 73.xx | Other including manual delivery |
| $74 x x$ | Cesarean section |
| 75.4x | Manual removal of placenta |
| ${ }_{\text {procedure }}^{\text {ICD-10 }}$ |  |
| codes |  |
| Normal |  |
| Delivery |  |
| $10 \mathrm{EOX22}$ | Delivery of Products of Conception, External Approach |
| C-Section |  |
| 1000020 | Extraction of Products of Conception, High, Open Approach |
| ${ }^{1000021}$ | Extraction of Products of Conception, Low, Open Approach |
| 1000022 | Extraction of Products of Conception, Extraperitoneal, Open Approach |
| Other assisted de | delivery (forceps, vacuum, internal version, other) |
| 1000723 | Extraction of Products of Conception, Low Forceps, Via Natural or A Atificial Opening |
| 1000724 | Extraction of Products of Conception, Mid Forceps, Via Natural or Artificial Opening |
| 10 D 725 | Extraction of Products of Conception, High Forceps, Via Natural or Arificial Opening |
| 1000726 | Extraction of Products of Conception, Vacuum, Via Natural or Artificial Opening |
| 1000727 | Extraction of Products of Conception, Internal Version, Via Natural or Attificial Opening |
| 10 D 728 | Extraction of Products of Conception, Other, Via Natura or Artificial Opening |
| ICD.9 code | Definition Gestational Age |
|  | Weeks Days |
| 765.21 | Less than 24 c 241168 |
| 765.22 | 24 completed weeks of gestation |
| 765.23 | $25-26$ comple $26 \quad 182$ |
| 765.24 | $27-28$ comple $28 \quad 196$ |
| 765.25 | 29.30 comple $30 \quad 210$ |
| 765.26 | 31-32 comple $32 \quad 224$ |
| 765.27 | ${ }^{33-34}$ comple $34 \quad 238$ |
| 765.28 | $35-36$ comple $36 \quad 252$ |
| $1 \mathrm{CD}-10$ code | Definition Gestational Age |

## Appendix A

|  | Weeks | Days |
| :---: | :---: | :---: |
| P07. 21 | Extreme imm 23 | 161 |
| P07.22 | Extreme imm 23 | 161 |
| P07. 23 | Extreme imm 24 | 168 |
| P07. 24 | Extreme imm 25 | 175 |
| P07. 25 | Extreme imm 26 | 182 |
| P07.26 | Extreme imm 27 | 189 |
| P07.31 | Preterm new 28 | 196 |
| P07.32 | Preterm new 29 | 203 |
| P07.33 | Preterm new 30 | 210 |
| P07.34 | Preterm new 31 | 217 |
| P07.35 | Preterm new 32 | 224 |
| P07.36 | Preterm new 33 | 231 |
| P07.37 | Preterm new 34 | 238 |
| P07.38 | Preterm new 35 | 245 |
| P07.39 | Preterm new 36 | 252 |
| Codes indicating extreme prematurity |  |  |
| ICD.9 code | Definition Gestation | Gestational Age |
|  | Weeks | Days |
| 765.0 | Disorders rela 28 | 196 |
| 765.00 | Extreme immaturity, unspecified [weight] |  |
| 765.01 | Extreme immaturity, less than 500 grams |  |
| 765.02 | Extreme immaturity, $500-749$ grams |  |
| 765.03 | Extreme immaturity, 750-999 grams |  |
| 765.04 | Extreme immaturity, 1,000-1,249 grams |  |
| 765.05 | Extreme immaturity, 1,250-1,499 grams |  |
| 765.06 | Extreme immaturity, 1,500-1,749 grams |  |
| 765.07 | Extreme immaturity, 1,750-1,999 grams |  |
| 765.08 | Extreme immaturity, 2,000-2,499 grams |  |
| ICD-10 code | Definition Gestational Age |  |
|  | Weeks | Days |
| P07. 2 | Extreme imm 28 | 196 |
| P07.20 | Extreme immaturity of newborn, unspecified weeks of gestation |  |
| 042.012 | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, second trimester |  |
| Other preterm codes ICD-9 code |  |  |
|  | Definition Gestatio |  |
|  | Weeks | Days |
| 765.1 | Disorders rela 35 | 245 |
| 765.10 | Other preterm infants, unspecified [weight] |  |
| 765.11 | Other preterm infants, less than 500 grams |  |
| 765.12 | Other preterm infants, 500-749 grams |  |
| 765.13 | Other preterm infants, $750-999$ grams |  |
| 765.14 | Other preterm infants, 1,000-1,249 grams |  |
| 765.15 | Other preterm infants, 1,250-1,499 grams |  |
| 765.16 | Other preterm infants, 1,500-1,749 grams |  |
| 765.17 | Other preterm infants, 1,750-1,999 grams |  |
| 765.18 | Other preterm infants, 2,000-2,499 grams |  |
| 644.21 | Onset of delivery before 37 completed weeks of gestation |  |
| ICD-10 code | Definition Gestatio |  |
|  | Weeks | Days |
| P05.01 | Disorders of n35 | 245 |
| P05.02 | Disorders of newborn rersin | ed to slow fetal growth and fetal malnutrition, $500-749$ grams |
| P05.03 | Disorders of newborn rer | ed to slow fetal growth and fetal malnutrition, 750-999 grams |
| P05.04 | Disorders of newborn r | ed to slow fetal growth and fetal malnutrition, 1000-1249 grams |
| P05.05 | Disorders of newborn r | ed to slow fetal growth and fetal malnutrition, 1250-1499 grams |
| P05.06 | Disorders of newborn r | ed to slow fetal growth and fetal malnutrition, 1500-1749 grams |
| P05.07 | Disorders of newborn re | ed to slow fetal growth and fetal malnutrition, 1750-1999 grams |
| P05.11 | Newborn small for gesta | al age, less than 500 grams |
| P05.12 | Newborn small for gest | al age, 500-749 grams |
| P05.13 | Newborn small for gesta | al age, 750-999 grams |
| P05.14 | Newborn small for gest | al age, 1000-1249 grams |

## Appendix A

| P05.15 | Newborn small for gestational age, 1250-1499 grams |
| :---: | :---: |
| P05.16 | Newborn small for gestational age, 1500-1749 grams |
| P05.17 | Newborn small for gestational age, 1750-1999 grams |
| P07.0 | Extremely low birth weight newborn |
| P07.00 | Extremely low birth weight newborn, unspecified weight |
| P07.01 | Extremely low birth weight newborn, less than 500 grams |
| P07.02 | Extremely low birth weight newborn, 500-749 grams |
| P07.03 | Extremely low birth weight newborn, 750-999 grams |
| P07.1 | Other low birth weight newborn |
| P07.10 | Other low birth weight newborn, unspecified weight |
| P07. 14 | Other low birth weight newborn, 1000-1249 grams |
| P07.15 | Other low birth weight newborn,1250-1499 grams |
| P07.16 | Other low birth weight newborn,1500-1749 grams |
| P07.17 | Other low birth weight newborn,1750-1999 grams |
| P07.3 | Preterm [premature] newborn [other] |
| P07.30 | Preterm newborn, unspecified weeks of gestation |
| 060.1 | Preterm labor with preterm delivery |
| O42.01 | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture |
| 042.019 | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, unspecified trimester |
| 042.013 | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, third trimester |
| 644.2 | early onset of delivery |
| 644.20 | Early onset of delivery, unspecified as to episode of care or not applicable |
| 644.21 | Early onset of delivery, delivered, with or without mention of antepartum condition |
| 776.6 | anemia of prematurity |
| 362.20 | retinopathy of prematurity, unspecified |
| 362.22 | retinopathy of prematurity, stage 0 |
| 362.23 | retinopathy of prematurity, stage 1 |
| 362.24 | retinopathy of prematurity, stage 2 |
| 362.25 | retinopathy of prematurity, stage 3 |
| 362.26 | retinopathy of prematurity, stage 4 |
| 362.27 | retinopathy of prematurity, stage 5 |
| CPT |  |
| 49491 | repair, initial inguinal hernia, preterm infant (younger than 37 weeks gestation at birth), performed from birth up to 50 weeks postconception |
| 49492 | repair, initial inguinal hernia, preterm infant (younger than 37 weeks gestation at birth), performed from birth up to 50 weeks postconception |
| 67229 | treatment of extensive or progressive retinopathy, 1 or more sessions; preterm infant (less than 37 weeks gestation at birth), performed from |
| 836 | anesthesia for hernia repairs in the lower abdomen not otherwise specified, infants younger than 37 weeks gestational age at birth |
| ICD-10 code | Definition |
| H35.1 | Retinopathy of prematurity |
| P61.2 | Anemia of prematurity |
| V27.2 | Twins both liveborn |
| V27.3 | Mother with twins one liveborn and one stillborn |
| V27.4 | Mother with twins both stillborn |
| V27.5 | Other multiple birth, all liveborn |
| V27.6 | Other multiple birth, some liveborn |
| V31 | Twin, mate liveborn |
| V32 | Twin birth mate stillborn |
| V33 | Twin, unspecified |
| V34 | Other multiple, mates all liveborn |
| V35 | Other multiple birth (three or more) mates all stillborn |
| V36 | Other multiple, mates live- and stillborn |
| V37 | Other multiple, unspecified |
| 651 | Multiple gestation |
| $651.0 \times$ | Twin Pregnancy |
| 655.1 x | Triplet pregnancy |
| 651.2 x | Quadruplet pregnancy |
| $651.3 \times$ | Twin pregnancy with fetal loss and retention of one fetus |
| $651.4 \times$ | Triplet pregnancy with fetal loss and retention of one or more fetus(es) |
| 651.5 x | Quadruplet pregnancy with fetal loss and retention of one or more fetus(es) |
| $651.6 \times$ | Other multiple pregnancy with fetal loss and retention of one or more fetus(es) |
| $651.7 \times$ | Multiple gestation following (elective) fetal reduction |
| $651.8 \times$ | Other specified multiple gestation |
| 1651.9 x | Unspecified multiple gestation |

## Appendix A

Multiple gestation with malpresentation of one fetus or more
Locked Twins
Delayed delivery of second twin, triplet, etc.
Multiple pregnancy

## Description

Multiple gestation
Complications specific to multiple gestation
elus-to-etetus placental transfusion syndrome twin, triplet, etc.
Twins, both liveborn
Twins, one liveborn and one stillborn
Other multiple births, all liveborn
Multiple births, unspecified, all liveborn
Triplets, all liveborn
Quadruplets, all ivebor
Sextuplets, all liveborn
Other multiple births, all liveborn
Other multiple births, some liveborn
Multiple births, unspecified, some liveborn
Triplets, some liveborn
Quadruplets, some liveborn
Quintuplets, some liveborn
Other multiple births, so
Twin liveborn infant, some liveborn
Twin liveborn infant, delivered vaginally
Twin liveborn infant delivered by cesarea
Twin liveborn infant, born outside hospital
Twin liveborn infant, unspecified as to place of birth Other multiple liveborn infant, born in hospital Triplet liveborn infant, delivered vaginally Triplet liveborn infant, delivered by cesarean Quadruplet liveborn infant, delivered vaginally Quadruplet liveborn infant, delivered by cesarea Quintuplet liveborn infant, delivered vaginally Quintuplet liveborn infant, delivered by cesarea Other multiple liveborn infant, delivered vaginally Other multiple liveborn infant, delivered by cesarean Other multiple ilveborn infant, born outside hospital Nher place of birth Newborn affected by multiple pregnancy

Late Pregnancy
Post term pregnancy
Post term pregnancy, unspecified as to episode of care or not applicable
Post term pregnancy, delivered, with or without mention of antepartum condition
Post term pregnancy, antepartum condition or complication
Prolonged pregnancy
Prolonged pregnancy, unspecified as to episode of care or not applicable
Prolonged pregnancy, delivered, with or without mention of antepartum condition Prolonged pregnancy, antepartum condition or complication
y-for-dates'
ost-term infant
Prolonged gestation of infant
Late pregnancy
Post-term pregnancy
Post-term pregnancy
Prolonged pregnancy
Late newborn, not heavy for gestational age
Post-term newborn
Prolonged gestation of newborn
41 weeks gestation of pregnanc
42 weeks gestation of pregnancy

23A. $49 \quad$ Greater than 42 weeks gestation of pregnancy

## ICD-10 CODES <br> indicating <br> PREGNANCY

Dx codes:
009.XY2 Supervision of high risk pregnancy \{if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)

O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium (if last digitindicating first/second/third/unspecified trimesternspecified as to time period)
011 Pre-existing hypertension with pre-eclampsia \{if last digiti indicating first/second/third/unspecified trimester/unspecified as to time period)
013 Gestational [pregnandinduced] edema and proteinuria without hypertension (if last digit indicating first/secondthird/unspecified trimester/a
O13 Gestational [pregnancy-induced] hypertension without significant proteinuria (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
14 Pre-eclampsia (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O16 Unspecified maternal hypertension (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O20 Hemorrhage in early pregnancy
O21 Excessive vomiting in pregnancy (last digit refers to first/second/third/unspecified trimester)
022 Venous complications and hemorrhoids in pregnancy
023 Infections of genitourinary tract in pregnancy (last digit refers to first/second/third/unspecified trimester)
O24 Diabetes mellitus in pregnancy, childbirth, and the puerperium (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O25 Malnutrition in pregnancy, childbirth and the puerperium (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O26 Maternal care for other conditions predominantly related to pregnancy (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O28 Abnormal findings on antenatal screening of mother
22 Complications of anesthesia during pregnancy (last digit refers to first/second/third/unspecified trimester)
30 Multiple gestation (last digit refers to first/second/third/unspecified trimester)
3 Min
O32 Maternal care for malpresentation of fetus
33 Maternal care for disproportion
O34 Maternal care for abnormality of pelvic organs (most codes indicate first/second/third/unspecified trimester)
Naternal care for known or suspected fetal abnormality and damage
S. Maternal care for other fetal problems (codes indicate first/second/third/unspecified trimester)

41 Other
2.1 Premisorders of amniotic fluid and membranes (codes indicate firstsecond/hird/unspecified trimester)
24..9 Premature rupture of membranes, onset of labor more than 24 hours following rupture

243 Placentare rupture of membranes, unspecified as to length of time between rupture and onset of labor
043 Placental disorders $\{$ last digit refers to first/second/third/unspecified trimester)
O44 Placenta previa (last digit refers to first/second/third/unspecified trimester)
O45 Premature separation of placenta (last digit refers to first/second/third/unspecified trimester)
O46 Antepartum hemorrhage, not elsewhere classified (last digit refers to first/second/third/unspecified trimester)

## 47 False labor

060.0 Preterm labor without delivery

061 Failed induction of labor
071.0 Rupture of uterus \{spontaneous) before onset of labor

072 Postpartum hemorrhage
72.2 Delayed and secondary postpart
72.3 Postpartum coagulation defects

073 Retained placenta and membranes, without hemorrhag
075 Other complications of labor and delivery, not elsewhere classified
094 Sequelae of complication of pregnancy, childbirth, and the puerperium
098 Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium \{if last digit indicates first trimester, second trimester, third trimester, unspecified, or nothing)
099 Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium \{if last digit indicates first trimester, second trimester, third trimester, unspecified, or nothing)
09A Maternal malignant neoplasms, traumatic in uries and abuse classifiable elsewhere but complicating pregnancy, childbirth and the puerperium \{if last digit indicates first trimester, second trimester, third trimester, unspecified, or nothing
232.01 Encounter for pregnancy test - result positive

233 Pregnant state
234 Encounter for supervision of normal pregnancy
236 Encounter for antenatal screening of mother
239 Encounter for maternal postpartum care and examination
239.2 Encounter for routine postpartum follow-up

23A Weeks of gestation
23A Weeks
Proc codes:
102 Change
109 Drainage
10 H Insertion
10J Inspection
10P Removal
10Q Repair

10S Reposition
10 S Reposition
10 Y Transplantation
ICD-10 CODES INDICATING DELIVERY (diagnostic codes that were not considered in the algorithm to identify delive ries)
Dx codes:
Use the following codes only if the last digitindicates childbirth or puerperium or labor
O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium
010 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium
011 Pre-existing hypertension with pre-eclampsia
012 Gestational [pregnancy-induced] edema and proteinuria without hypertensio
013 Gestational [pregnancy-induced] hypertension without significant proteinuria
014 Pre-eclamp
016 Unspecified maternal hypertension
024 Diabetes mellitus in pregnancy, childbirth, and the puerperium
025 Malnutrition in pregnancy, childbirth and the puerperium
O26 Maternal care for other conditions predominantly related to pregnancy
042.0 Premature rupture of membranes, onset of labor within 24 hours of rupture, except 042.011 (first trimester)

048 Late pregnancy
060.1 Preterm labor with preterm delivery

O60.2 Term delivery with preterm labo
062 Abnormalities of forces of labor
063 Long labor
064 Obstructed labor due to malposition and malpresentation of fetus
65 Obstructed labor due to maternal pelvic abnormality
66 Other obstructed labor
67 Labor and delivery complicated by intrapartum hemorrhage, not elsewhere classifie
88 Labor and delivery complicated by abnormality of fetal acid-base balance
69 Labor and delivery complicated by umbilical cord complication
070 Perineal laceration during delivery
71.1 Rupture of uterus during labor
71.2 Postpartum inversion of uteru
71.4 Obstetric high vaginal laceration alone
72.0 Third-stage hemorrhage
72.1 Other immediate postpartum hemorrhage

074 Complications of anesthesia during labor and delivery
O76 Abnormality in fetal heart rate and rhythm complicating labor and delivery
O77 Other fetal stress complicating labor and delivery
O80 Encounter for full-term uncomplicated delivery
082 Encounter for cesarean delivery without indication
098 Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbith and the puerperium \{if last digit indicates childbirth or puerperium)
99 Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium \{if last digit indicates childbirth or puerperium)
09A Maternal malignant neoplasms, traumatic in uries and abuse classifiable elsewhere but complicating pregnancy, childbith and the puerperium \{if last digit indicates childbirth or puerperium)
237 Outcome of delivery (For livebirth cohort, exclude 237.1, 237.4, 237.7 - all stillbirth codes)
238 Liveborn infants according to place of birth and type of delivery
239.0 Encounter for care and examination of mother immediately after delivery

ICD-10 CODES INDICATING PREGNANCY WITH ABORTIVE/NON-LIVE BIRTH OUTCOMES
000-008 Pregnancy with abortive outcome
roc codes:
10A Abortion
10 D 1729 Manual Extraction of Products of Conception, Retained, Via Natural or Artificial Opening
10D1722 Extraction of Products of Conception, Retained, Via Natural or Artificial Opening
OD1829 Manual Extraction of Products of Conception, Retained, Via Natural or Artificial Opening Endoscopic
D1822 Extraction of Products of Conception, Retained, Via Natural or Artificial Opening Endoscopic D-10 CODES INDICATING ECTOPIC PREGNAN CY
D2722 Extraction of Products of Conception, Ectopic, Via Natural or Artificial Opening
10 D 2822 Extraction of Products of Conception, Ectopic, Via Natural or Artificial Opening Endoscopic
10 S2 Reposition Products of Conception, Ectopic
$10 T$ Resection \{Ectopic)

## Appendix A

| Dialysis Codes |
| :--- |
| Codes include: |
| -ICD9 prox codes: |
| 39.95, Hemodialysis |
| 54.98, Peritoneal dialysis |
| -ICD9 dx codes: |
| $585.5 x$, Chronic kidney disease, Stage V (for ESRD with no mention of dialysis) |
| $585.6 x$, End stage renal disease (for ESRD with dialysis) |
| V56.0x, encounter for dialysis NOS |
| V56.8x, encounter for peritoneal dialysis |
| V45.1x, renal dialysis status |
| -CPT4 codes: |
| 90957,90960, ESRD related services monthly, for patients $12-19$ and 20 years of age and older; with 4 or more face-to-face physician |
| visits per month |
| 90958,90961, ESRD related services monthly, for patients $12-19$ and 20 years of age and older; with $2-3$ face-to-face physician visits |
| 90959,90962, ESRD related services monthly, for patients $12-19$ and 20 years of age and older; with 1 face-to-face physician visit per |
| 90920,90921, ESRD related services per full month; for patients $12-19$ and twenty years of age and over |
| 90924,90925, ESRD related services (less than full month), per day; for patients $12-19$ and twenty years of age and over |
| 90935, Hemodialysis procedure with single physician evaluation |
| 90937, Hemodialysis procedure requiring repeated evaluation(s) with or without substantial revision of dialysis prescription |
| 90945, Dialysis procedure other than hemodialysis (eg, peritoneal dialysis, hemofiltration, or other continuous renal replacement |
| therapies), with single physician evaluation |
| 90947, Dialysis procedure other than hemodialysis (eg, peritoneal dialysis, hemofiltration, or other continuous renal replacement |
| therapies) requiring repeated physician evaluations, with or without substantial revision of dialysis prescription |
| 90965,90966, ESRD related services for home dialysis per full month, for patients $12-19$ and 20 years of age and older |
| 90969,90970, ESRD related services for dialysis less than a full month of service, per day; for patients $12-19$ and 20 years of age and |
| 90989, Dialysis training, patient, including helper where applicable, any mode, completed course |
| 90993, Dialysis training, patient, including helper where applicable, any mode, course not completed, per training session |
| 90999, Unlisted dialysis procedure, inpatient or outpatient |
| 99512, Home visit for hemodialysis |
| - HCPCS codes: |
| G0257, Unscheduled or emergency dialysis treatment for ESRD patient in a hospital outpatient dept. that is not certified as an ESRD |

## Appendix A

G0314, G0317, ESRD related services during the course of treatment, for patients $12-19$ and 20 yrs of age an over to include monitoring for the adequacy of nutrition, etc. w/4 or more physician visit per month
G0315, G0318, ESRD related services during the course of treatment, for patients $12-19$ and 20yrs of age and over to include monitoring for the adequacy of nutrition, etc. w/2 or 3 physician visit per month
G0316, G0319, ESRD related services during the course of treatment, for patients 12-19 and 20 yrs of age and over to include monitoring for the adequacy of nutrition, etc. w/1 physician visit per month
G0322, G0323, ESRD related services for home dialysis patients per full month: for patients $12-19$ and 20 yrs of age and over to include monitoring for adequacy of nutrition and etc.
G0326, G0327, ESRD related services for home dialysis (less than full month), per day; for patients 12-19 and 20 yrs of age and over S9335, Home therapy, hemodialysis; administrative services, professional pharmacy services, care coordination, and all necessary supplies and equipment (drugs and nursing services coded separately), per diem
S9339, Home therapy, peritoneal dialysis, administrative services, care coordination and all necessary supplies and equipment, per

## OR

Kidney transplant, defined as either 1 inpatient or 1 outpatient code
Codes include:
-ICD9 dx codes:
V42.0x, Kidney transplant status
996.81 Complications of transplanted kidney
-ICD9 prox codes:
55.6x, Transplant of kidney (Exclude 55.61)

- CPT4 codes:

50360, Renal allotransplantation, implantation, graft, w/o donor \& recipient nephrectomy
50365, Renal allotransplantation, implantation, graft, w/ donor \& recipient nephrectomy

## Appendix A

## Liver Bypass ICD-10 Procedure Codes

$06100 Z 5$ - Bypass Inferior Vena Cava to Superior Mesenteric Vein, Open Approach
0610496 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06104K5 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
$06104 Z 5$ - Bypass Inferior Vena Cava to Superior Mesenteric Vein, Percutaneous Endoscopic Approach
06104ZY - Bypass Inferior Vena Cava to Lower Vein, Percutaneous Endoscopic Approach
061107B - Bypass Splenic Vein to Left Renal Vein with Autologous Tissue Substitute, Open Approach
0611099 - Bypass Splenic Vein to Right Renal Vein with Autologous Venous Tissue, Open Approach
06110AY - Bypass Splenic Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06110J9 - Bypass Splenic Vein to Right Renal Vein with Synthetic Substitute, Open Approach
0611479 - Bypass Splenic Vein to Right Renal Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061147Y - Bypass Splenic Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
06114J9 - Bypass Splenic Vein to Right Renal Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06120ZY - Bypass Gastric Vein to Lower Vein, Open Approach
06140AY - Bypass Hepatic Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
061507Y - Bypass Superior Mesenteric Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
061509Y - Bypass Superior Mesenteric Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061549Y - Bypass Superior Mesenteric Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06154AY - Bypass Superior Mesenteric Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
061647Y - Bypass Inferior Mesenteric Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061709Y - Bypass Colic Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061807Y - Bypass Portal Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
061809B - Bypass Portal Vein to Left Renal Vein with Autologous Venous Tissue, Open Approach
061809Y - Bypass Portal Vein to Lower Vein with Autologous Venous Tissue, Open Approach
06180J9 - Bypass Portal Vein to Right Renal Vein with Synthetic Substitute, Open Approach
0618079 - Bypass Portal Vein to Right Renal Vein, Open Approach
0618479 - Bypass Portal Vein to Right Renal Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061849B - Bypass Portal Vein to Left Renal Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06184AB - Bypass Portal Vein to Left Renal Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06184JB - Bypass Portal Vein to Left Renal Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06184ZB - Bypass Portal Vein to Left Renal Vein, Percutaneous Endoscopic Approach
06190ZY - Bypass Right Renal Vein to Lower Vein, Open Approach
061947Y - Bypass Right Renal Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061949Y - Bypass Right Renal Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach

## Appendix A

061B0ZY - Bypass Left Renal Vein to Lower Vein, Open Approach
061B4AY - Bypass Left Renal Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
061B4KY - Bypass Left Renal Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
061J09Y - Bypass Left Hypogastric Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061JOKY - Bypass Left Hypogastric Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06L30ZZ - Occlusion of Esophageal Vein, Open Approach
061007Y - Bypass Inferior Vena Cava to Lower Vein with Autologous Tissue Substitute, Open Approach
06100A5 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Autologous Arterial Tissue, Open Approach
06100J5 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Synthetic Substitute, Open Approach
06100K6 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Nonautologous Tissue Substitute, Open Approach
06110JB - Bypass Splenic Vein to Left Renal Vein with Synthetic Substitute, Open Approach
06110KB - Bypass Splenic Vein to Left Renal Vein with Nonautologous Tissue Substitute, Open Approach
06114JY - Bypass Splenic Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
$061207 Y$ - Bypass Gastric Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
061407Y - Bypass Hepatic Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
061409Y - Bypass Hepatic Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061449Y - Bypass Hepatic Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06144AY - Bypass Hepatic Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06150KY - Bypass Superior Mesenteric Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06154ZY - Bypass Superior Mesenteric Vein to Lower Vein, Percutaneous Endoscopic Approach
061607Y - Bypass Inferior Mesenteric Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
06160ZY - Bypass Inferior Mesenteric Vein to Lower Vein, Open Approach
06164AY - Bypass Inferior Mesenteric Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
061749Y - Bypass Colic Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06174AY - Bypass Colic Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06174KY - Bypass Colic Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0618099 - Bypass Portal Vein to Right Renal Vein with Autologous Venous Tissue, Open Approach
06180K9 - Bypass Portal Vein to Right Renal Vein with Nonautologous Tissue Substitute, Open Approach
06184 J 9 - Bypass Portal Vein to Right Renal Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06184JY - Bypass Portal Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
$06184 Z 9$ - Bypass Portal Vein to Right Renal Vein, Percutaneous Endoscopic Approach
061909Y - Bypass Right Renal Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061J4JY - Bypass Left Hypogastric Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06L34CZ - Occlusion of Esophageal Vein with Extraluminal Device, Percutaneous Endoscopic Approach

## Appendix A

0610075 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Autologous Tissue Substitute, Open Approach 06100A6 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Autologous Arterial Tissue, Open Approach
06100K5 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Nonautologous Tissue Substitute, Open Approach
06100KY - Bypass Inferior Vena Cava to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06100ZY - Bypass Inferior Vena Cava to Lower Vein, Open Approach
061049Y - Bypass Inferior Vena Cava to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06104A5 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06104A6 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06104JY - Bypass Inferior Vena Cava to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
$06104 Z 6$ - Bypass Inferior Vena Cava to Inferior Mesenteric Vein, Percutaneous Endoscopic Approach
061107Y - Bypass Splenic Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
06110KY - Bypass Splenic Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06110ZB - Bypass Splenic Vein to Left Renal Vein, Open Approach
061149Y - Bypass Splenic Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06114A9 - Bypass Splenic Vein to Right Renal Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06114AB - Bypass Splenic Vein to Left Renal Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06114AY - Bypass Splenic Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06114ZB - Bypass Splenic Vein to Left Renal Vein, Percutaneous Endoscopic Approach
06140KY - Bypass Hepatic Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06140ZY - Bypass Hepatic Vein to Lower Vein, Open Approach
06144ZY - Bypass Hepatic Vein to Lower Vein, Percutaneous Endoscopic Approach
06150AY - Bypass Superior Mesenteric Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06150ZY - Bypass Superior Mesenteric Vein to Lower Vein, Open Approach
061609Y - Bypass Inferior Mesenteric Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061649Y - Bypass Inferior Mesenteric Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06164JY - Bypass Inferior Mesenteric Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06164KY - Bypass Inferior Mesenteric Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06164ZY - Bypass Inferior Mesenteric Vein to Lower Vein, Percutaneous Endoscopic Approach
06170KY - Bypass Colic Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
061807B - Bypass Portal Vein to Left Renal Vein with Autologous Tissue Substitute, Open Approach
06180JB - Bypass Portal Vein to Left Renal Vein with Synthetic Substitute, Open Approach
06180KY - Bypass Portal Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06180ZY - Bypass Portal Vein to Lower Vein, Open Approach
061847Y - Bypass Portal Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach

## Appendix A

06184DY - Bypass Portal Vein to Lower Vein with Intraluminal Device, Percutaneous Endoscopic Approach
06184KY - Bypass Portal Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06190AY - Bypass Right Renal Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06194JY - Bypass Right Renal Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
061B07Y - Bypass Left Renal Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
061B0AY - Bypass Left Renal Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
061B4ZY - Bypass Left Renal Vein to Lower Vein, Percutaneous Endoscopic Approach
061J07Y - Bypass Left Hypogastric Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
061J4ZY - Bypass Left Hypogastric Vein to Lower Vein, Percutaneous Endoscopic Approach
06L33DZ - Occlusion of Esophageal Vein with Intraluminal Device, Percutaneous Approach
06L34DZ - Occlusion of Esophageal Vein with Intraluminal Device, Percutaneous Endoscopic Approach
0610096 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Autologous Venous Tissue, Open Approach
061009Y - Bypass Inferior Vena Cava to Lower Vein with Autologous Venous Tissue, Open Approach
$06100 Z 6$ - Bypass Inferior Vena Cava to Inferior Mesenteric Vein, Open Approach
0610476 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
06104AY - Bypass Inferior Vena Cava to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06104J5 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06104J6 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06104KY - Bypass Inferior Vena Cava to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06110JY - Bypass Splenic Vein to Lower Vein with Synthetic Substitute, Open Approach
06110K9 - Bypass Splenic Vein to Right Renal Vein with Nonautologous Tissue Substitute, Open Approach
06110ZY - Bypass Splenic Vein to Lower Vein, Open Approach
0611499 - Bypass Splenic Vein to Right Renal Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06114JB - Bypass Splenic Vein to Left Renal Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06114K9 - Bypass Splenic Vein to Right Renal Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06114KB - Bypass Splenic Vein to Left Renal Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06114 KY - Bypass Splenic Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
$06114 Z 9$ - Bypass Splenic Vein to Right Renal Vein, Percutaneous Endoscopic Approach
$06114 Z$ Y - Bypass Splenic Vein to Lower Vein, Percutaneous Endoscopic Approach
06120KY - Bypass Gastric Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
061247Y - Bypass Gastric Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061249Y - Bypass Gastric Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06124AY - Bypass Gastric Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06150JY - Bypass Superior Mesenteric Vein to Lower Vein with Synthetic Substitute, Open Approach

## Appendix A

06154JY - Bypass Superior Mesenteric Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06160KY - Bypass Inferior Mesenteric Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
061747 Y - Bypass Colic Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
06174ZY - Bypass Colic Vein to Lower Vein, Percutaneous Endoscopic Approach
0618079 - Bypass Portal Vein to Right Renal Vein with Autologous Tissue Substitute, Open Approach
06180AY - Bypass Portal Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06180JY - Bypass Portal Vein to Lower Vein with Synthetic Substitute, Open Approach
06180KB - Bypass Portal Vein to Left Renal Vein with Nonautologous Tissue Substitute, Open Approach
06180ZB - Bypass Portal Vein to Left Renal Vein, Open Approach
06183DY - Bypass Portal Vein to Lower Vein with Intraluminal Device, Percutaneous Approach
061847B - Bypass Portal Vein to Left Renal Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0618499 - Bypass Portal Vein to Right Renal Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06184AY - Bypass Portal Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06184K9 - Bypass Portal Vein to Right Renal Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06184ZY - Bypass Portal Vein to Lower Vein, Percutaneous Endoscopic Approach
061907Y - Bypass Right Renal Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
06194ZY - Bypass Right Renal Vein to Lower Vein, Percutaneous Endoscopic Approach
061B0JY - Bypass Left Renal Vein to Lower Vein with Synthetic Substitute, Open Approach
061B0KY - Bypass Left Renal Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
061B47Y - Bypass Left Renal Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061B4JY - Bypass Left Renal Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
061 JOAY - Bypass Left Hypogastric Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
061J0ZY - Bypass Left Hypogastric Vein to Lower Vein, Open Approach
061J47Y - Bypass Left Hypogastric Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
06L30CZ - Occlusion of Esophageal Vein with Extraluminal Device, Open Approach
06L30DZ - Occlusion of Esophageal Vein with Intraluminal Device, Open Approach
06L33CZ - Occlusion of Esophageal Vein with Extraluminal Device, Percutaneous Approach
06L33ZZ - Occlusion of Esophageal Vein, Percutaneous Approach
0610076 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Autologous Tissue Substitute, Open Approach
0610095 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Autologous Venous Tissue, Open Approach
06100AY - Bypass Inferior Vena Cava to Lower Vein with Autologous Arterial Tissue, Open Approach
06100J6 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Synthetic Substitute, Open Approach
06100JY - Bypass Inferior Vena Cava to Lower Vein with Synthetic Substitute, Open Approach
0610475 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach

## Appendix A

061047Y - Bypass Inferior Vena Cava to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0610495 - Bypass Inferior Vena Cava to Superior Mesenteric Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06104K6 - Bypass Inferior Vena Cava to Inferior Mesenteric Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0611079 - Bypass Splenic Vein to Right Renal Vein with Autologous Tissue Substitute, Open Approach
061109B - Bypass Splenic Vein to Left Renal Vein with Autologous Venous Tissue, Open Approach
061109Y - Bypass Splenic Vein to Lower Vein with Autologous Venous Tissue, Open Approach
06110A9 - Bypass Splenic Vein to Right Renal Vein with Autologous Arterial Tissue, Open Approach
06110AB - Bypass Splenic Vein to Left Renal Vein with Autologous Arterial Tissue, Open Approach
$06110 Z 9$ - Bypass Splenic Vein to Right Renal Vein, Open Approach
061147B - Bypass Splenic Vein to Left Renal Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
061149B - Bypass Splenic Vein to Left Renal Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
061209Y - Bypass Gastric Vein to Lower Vein with Autologous Venous Tissue, Open Approach
06120AY - Bypass Gastric Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06120JY - Bypass Gastric Vein to Lower Vein with Synthetic Substitute, Open Approach
06124JY - Bypass Gastric Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06124KY - Bypass Gastric Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06124ZY - Bypass Gastric Vein to Lower Vein, Percutaneous Endoscopic Approach
06140JY - Bypass Hepatic Vein to Lower Vein with Synthetic Substitute, Open Approach
061447Y - Bypass Hepatic Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
06144JY - Bypass Hepatic Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06144KY - Bypass Hepatic Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
061547Y - Bypass Superior Mesenteric Vein to Lower Vein with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
06154KY - Bypass Superior Mesenteric Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06160AY - Bypass Inferior Mesenteric Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06160JY - Bypass Inferior Mesenteric Vein to Lower Vein with Synthetic Substitute, Open Approach
061707Y - Bypass Colic Vein to Lower Vein with Autologous Tissue Substitute, Open Approach
06170AY - Bypass Colic Vein to Lower Vein with Autologous Arterial Tissue, Open Approach
06170JY - Bypass Colic Vein to Lower Vein with Synthetic Substitute, Open Approach
06170ZY - Bypass Colic Vein to Lower Vein, Open Approach
06174JY - Bypass Colic Vein to Lower Vein with Synthetic Substitute, Percutaneous Endoscopic Approach
06180A9 - Bypass Portal Vein to Right Renal Vein with Autologous Arterial Tissue, Open Approach
06180AB - Bypass Portal Vein to Left Renal Vein with Autologous Arterial Tissue, Open Approach
061849Y - Bypass Portal Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
06184A9 - Bypass Portal Vein to Right Renal Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach

## Appendix A

06184KB - Bypass Portal Vein to Left Renal Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06190JY - Bypass Right Renal Vein to Lower Vein with Synthetic Substitute, Open Approach
06190KY - Bypass Right Renal Vein to Lower Vein with Nonautologous Tissue Substitute, Open Approach
06194AY - Bypass Right Renal Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
06194KY - Bypass Right Renal Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
061B09Y - Bypass Left Renal Vein to Lower Vein with Autologous Venous Tissue, Open Approach
061B49Y - Bypass Left Renal Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
061J0JY - Bypass Left Hypogastric Vein to Lower Vein with Synthetic Substitute, Open Approach
061J49Y - Bypass Left Hypogastric Vein to Lower Vein with Autologous Venous Tissue, Percutaneous Endoscopic Approach
061J4AY - Bypass Left Hypogastric Vein to Lower Vein with Autologous Arterial Tissue, Percutaneous Endoscopic Approach
061J4KY - Bypass Left Hypogastric Vein to Lower Vein with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
06L34ZZ - Occlusion of Esophageal Vein, Percutaneous Endoscopic Approach

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Procedure Codes Description
1960 Anesthesia for vaginal delivery only
1962 Anesthesia or cesarean delivery only 
1963 Anesthesia for cesarean hysterectomy w/o any labor analgesia/anesthesia care 1967
Neuraxial labor analgesia/anesthesia, planned vaginal delivery
    Anesthesia for cesarean delivery following neuraxial labor analgesia/anesthesia 1969
Anes for cesarean hysterectomy following neuraxial labor analgesia/anesthesia 59050
Fetal monitoring in labor, physician w/written report; s & i
59051 Fetal monitoring in labor, physician w/written report; intrepretation only
59400 ROUTINE TOTAL OBSTETRIC CARE including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care. 59409
Vaginal delivery only (w/wo episiotomy &/or forceps)
59410 Vaginal delivery only (w/wo episiotomy &/or forceps); w/postpartum care 59412
Ext cephalic version, w/wo tocolysis
5 9 4 1 4 ~ D e l i v e r y ~ o f ~ p l a c e n t a ~ ( s e p a r a t e ~ p r o c )
59430 Postpartum care only
59510 Routine obstetric care w/antepartum care, cesarean delivery, & postpartum care 59514
Cesarean delivery only
59515 Cesarean delivery only; w/postpartum care
59525 Subtotal/total hysterectomy after cesarean delivery
59610 Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care, after previous cesarean delivery 59612
Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps)
Vaginal delivery only, atter previous cesarean delivery (with or without episiotomy a
ICD.9 procedur
F
\7..x
74xx
75.4x}\quad\mathrm{ Manual removal of placenta
ICD-10
procedure
codes
Normal
10EOXZZ Delivery of Products of Conception, External Approach
C-Section Extraction of Products of Conception, High, Open Approach
10D00Z1 Extraction of Products of Conception, Low, Open Approach
10D00z2 Extraction of Products of Conception, Extraperitoneal, Open Approach
Other assisted delivery (forceps, vacuum, internal version, other)
10D07Z3 Extraction of Products of Conception, Low Forceps, Via Natural or Artificial Opening 10D07Z4
Extraction of Products of Conception, Mid Forceps, Via Natural or Artificial Opening 10D07Z5
Extraction of Products of Conception, High Forceps, Via Natural or Artificial Opening 10D07Z6
Extraction of Products of Conception, Vacuum, Via Natural or Artificial Opening 10D07Z7
Exiraction of Products of Conception, Vacuum, Via
765.21 Less than 24c24 Weeks Days
Less than 24 c 24 168
765.22 24 completed weeks of gestatio
765.25
7
#
ICD-10 code Definition Gestational Age
```

| P07. 2 | Weeks | Days |
| :---: | :---: | :---: |
| 1 P07.2 | Exeme imm 23Exeme | 161 |
| 2 P 07.2 | imm 23 Extreme | 161 |
| 3 P07.2 | imm 24 Extreme | 168 |
| 4 P07. 2 | imm 25 Extreme | 175 |
| 5 P07.2 | imm 26 Extreme | 182 |
| 6 P07.3 | imm 27 Preterm | 189 |
| 1 P07.3 | new 28 Preterm | 196 |
| 2 P07.3 | new 29 Preterm | 203 |
| 3 P07.3 | new 30 Preterm | 210 |
| $4 \mathrm{P07.3}$ | new 31 Preterm | 217 |
| 5 P07.3 | new 32 Preterm | 224 |
| 6 P07.3 | new 33 Preterm | 231 |
| 7 P07.3 | new 34 Preterm | 238 |
| 8 P07.3 | new 35 Preterm | 245 |
| 9 | new 36 | 252 |
| Codes indicating extreme prematurity |  |  |
| ICD-9 code | Definition Gestational Age |  |
| 765. | Weeks | Days |
| 0 | Disorders rela 28 | 196 |
| 765.00 | Exteme immaturit, unspecified [weight] Exteme |  |
| 765.01 | immaturity, less than 500 grams Extreme |  |
| 765.02 | immaturity, 500-749 grams Extreme |  |
| 765.03 | immaturity, 750-999 grams Extreme |  |
| 765.04 | immaturity, 1,000-1,249 grams Extreme |  |
| 765.05 | immaturity, 1,250-1,499 grams Extreme |  |
| 765.06 | immaturity, 1,500-1,749 grams Extreme |  |
| 765.07 | immaturity, 1,750-1,999 grams Extreme |  |
| 765.08 | immaturity, 2,000-2,499 grams |  |
| ICD-10 code | Definition Gestational Age |  |
| P07. 2 | Weeks | Days |
| P07.20 | Extreme imm 28 | 196 |
| 042.012 | Extreme immaturity of newborn, unspecified weeks of gestation |  |
|  | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, second trimester |  |
| Other preterm codes |  |  |
| ICD-9 code | Definition Gestational Age |  |
| 765. | Weeks | Days |
| 1 | Disorders rela 35 | 245 |
| 765.10 | Other preterm infants, unspecified [weight] Other |  |
| 765.11 | preterm infants, less than 500 grams Other |  |
| 765.12 | preterm infants, 500-749 grams Other |  |
| 765.13 | preterm infants, 750-999 grams Other |  |
| 765.14 | preterm infants, 1,000-1,249 grams Other |  |
| 765.15 | preterm infants, 1,250-1,499 grams Other |  |
| 765.16 | preterm infants, 1,500-1,749 grams Other |  |
| 765.17 | preterm infants, 1,750-1,999 grams Other |  |
| 765.18 | preterm infants, 2,000-2,499 grams |  |
| 644.21 | Onset of delivery before 37 completed weeks of gestation |  |
| ICD-10 code | Definition Gestatio |  |
|  | Weeks | Days |
| P05.01 | Disorders of n35 | 245 |
| P05.02 | Disorders of newborn rela | to slow fetal growth and fetal malnutrition, $500-749$ grams Disorders |
| P05.03 | of newborn related to | fetal growth and fetal malnutrition, 750-999 grams Disorders |
| P05.04 | of newborn related to $s$ | fetal growth and fetal malnutrition, 1000-1249 grams Disorders |
| P05.05 | of newborn related to 5 | fetal growth and fetal malnutrition, 1250-1499 grams Disorders |
| P05.06 | of newborn related to 5 | fetal growth and fetal malnutrition, 1500-1749 grams Disorders |
| P05.07 | of newborn related to 5 | fetal growth and fetal malnutrition, 1750-1999 grams Newborn |
| P05.11 | small for gestational ag | ss than 500 grams |
| P05.12 | Newbom small for gestatio | age, 500-749 grams Newbom |
| P05.13 | small for gestational ag | 50-999 grams Newborn |
| P05.14 | small for gestational ag | 00-1249 grams |


| P05.15 P0 | Newbom small for gestaional age, 1250-1499 grams Newbom |
| :---: | :---: |
| P07.00 P0 | small for gestational age, 1500-1749 grams Newborn |
| 060.1 04: | small for gestational age, 1750-1999 grams Extremely |
|  | low birth weight newborn |
|  | Extremely low bith weight newborn, unspecified weight Extremely |
|  | low birth weight newborn, less than 500 grams Extremely |
|  | low birth weight newborn, 500-749 grams Extremely |
|  | low birth weight newborn, 750-999 grams Other |
|  | low birth weight newborn |
|  | Other low birth weight newbom, unspecified weight Other |
|  | low birth weight newborn,1000-1249 grams Other |
|  | low birth weight newborn,1250-1499 grams Other |
|  | low birth weight newborn,1500-1749 grams Other |
|  | low birth weight newborn, 1750-1999 grams Preterm |
|  | [premature] newborn [other] |
|  | Preterm newborn, unspecified weeks of gestation Preterm labor with preterm delivery |
|  | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture |
|  | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, unspecified trimester |
|  | Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, third trimester |
| 644.2 | early onset of delivery |
| 644.20 | Early onset of delivery, unspecified as to episode of care or not applicable |
| 644.21 | Early onset of delivery, delivered, with or without mention of antepartum condition anemia |
| 776.6 | of prematurity |
| 362.20 | refinopally of prematurit, unspeciededreinopalhy |
| 362.22 | of prematurity, stage 0 retinopathy |
| 362.23 | of prematurity, stage 1 retinopathy |
| 362.24 | of prematurity, stage 2 retinopathy |
| 362.25 | of prematurity, stage 3 retinopathy |
| 362.26 | of prematurity, stage 4 retinopathy |
| 362.27 | of prematurity, stage 5 |
| CPT |  |
| 49491 | repair, initial inguinal hermia, preterm infant (younger than 37 weeks gestation at birth), performed from birth up to 50 weeks postconception repair, |
| 49492 | initial inguinal hernia, preterm infant (younger than 37 weeks gestation at birth), performed from birth up to 50 weeks postconception treatment |
| 67229 | of extensive or progressive retinopathy, 1 or more sessions; preterm infant (less than 37 weeks gestation at birth), performed from anesthesia |
| 836 | for hernia repairs in the lower abdomen not otherwise specified, infants younger than 37 weeks gestational age at birth |
| ICD-10 code | Definition |
| H35. |  |
| 1 P61. | Recinopatly ofpremaxiuly Anemia |
| 2 | of prematurity |
| V27.2 | Twins both liveborn |
| V27.3 | Mother with twins one livebom and one stilloom Mother |
| V27.4 | with twins both stillborn |
| V27.5 | Other multiple birth, all liveborn Other |
| V27.6 | multiple birth, some liveborn Twin, |
| V31 V | mate liveborn |
| 32 V33 | Twin bith mate stillom Twin, |
| V34V | unspecified |
| 35 V36 | Other multiple, mates all liveborn |
| V376 | Other multiple birth (three or more) mates all stillbom Other |
| 51 | multiple, mates live- and stillborn |
| 651.0 x | Onermuliple, unspecified Mulitle |
| 651.1 x | gestation |
| 651.2 x | Twin Pregnancy Triplet |
| 651.3 x | pregnancy Quadruplet |
| 651.4 x | pregnancy |
| 651.5 x | Twin pregnancy with fetal loss and retention of one fetus |
| 651.6 x | Triplet pregnancy with fetal loss and retention of one or more fetus(es) Quadruplet |
| $651.7 \times$ | pregnancy with fetal loss and retention of one or more fetus(es) Other |
| 651.8 x | multiple pregnancy with fetal loss and retention of one or more fetus(es) Multiple |
| 651.9 x | gestation following (elective) fetal reduction |
|  | Other specified multiple gestation Unspecified multiple gestation |
|  | mutiple gestation |


| 652.6x | Multiple gestation with malpresentation of one fetus or more Locked |
| :---: | :---: |
| 660.5 x | Twins |
| 662.3x | Delayed delivery of second twin, triplet, |
| 761.5 x | etMMupe pregrang |
| ICD10 Code | Description |
| 030xxxx | Multiple gestation |
| 031xxxx | Complications speciic to multiple gestation Fetus-to-fetus |
| 043.02 | placental transfusion syndrome Delayed |
| 063.2 | delivery of second twin, triplet, etc. Twins, |
| Z37.2 | both liveborn |
| Z37.3 | Twins, one liveborn and one stillborn Other |
| Z37.5 | multiple births, all liveborn Multiple |
| Z37.50 | births, unspecified, all liveborn Triplets, |
| Z37.51 | all liveborn |
| Z37.52 | Quadpets, al lvebom Quintpes, |
| Z37.53 | all liveborn Sextuplets, |
| Z37.54 | all liveborn |
| Z37.59 | Other multiple births, all liveborn Other |
| z37.6 | multiple births, some liveborn |
| Z37.60 | Mutiple births, unspecified, some livebom Tniplets, |
| Z37.61 | some liveborn |
| Z37.62 | Quadupts, sme hebom Quintpes, |
| Z37.63 | some liveborn Sextuplets, |
| Z37.64 | some liveborn |
| Z37.69 | Other multiple births, some liveborn Twin |
| z38.3 | liveborn infant, born in hospital Twin |
| Z38.30 | liveborn infant, delivered vaginally |
| Z38.31 | Twin liveborn infant, delivered by cesarean Twin |
| Z38.4 | liveborn infant, born outside hospital |
| z38.5 | Twin livebom infant, unspecified as to place of birth Other |
| z38.6 | multiple liveborn infant, born in hospital Triplet |
| Z38.61 | liveborn infant, delivered vaginally |
| Z38.62 | Triplet liveborm infant, delivered by cesarean Quadruplet |
| Z38.63 | liveborn infant, delivered vaginally Quadruplet |
| Z38.64 | liveborn infant, delivered by cesarean Quintuplet |
| Z38.65 | liveborn infant, delivered vaginally Quintuplet |
| Z38.66 | liveborn infant, delivered by cesarean Other |
| Z38.68 | multiple liveborn infant, delivered vaginally Other |
| Z38.69 | multiple liveborn infant, delivered by cesarean Other |
| z38.7 | multiple liveborn infant, born outside hospital |
| Z38.8 | Other multiple livebom infant, unspecified as to place of birth Newbom |
| P01.5 | affected by multiple pregnancy |
| 64 |  |
| 5 | Late Pregnancy |
| 645.1 | Post term pregnancy |
| 645.10 | Post term pregnancy, unspecified as to episode of care or not applicable |
| 645.11 | Post term pregnancy, delivered, with or without mention of antepartum condition Post |
| 645.13 | term pregnancy, antepartum condition or complication |
| 645.2 | Prolonged pregnancy |
| 645.20 | Prolonged pregnancy, unspecified as to episode of care or not applicable Prolonged |
| 645.21 | pregnancy, delivered, with or without mention of antepartum condition Prolonged |
| 645.23 | pregnancy, antepartum condition or complication |
| 766.2 | Late infant, not 'heav-for-dates' Post-tem |
| 766.21 | infant |
| 766.22 | Prolonged gestation of infant |
| 048 | Late pregnancy |
| 048.0 | PostempegrenyPforned |
| 048.1 | pregnancy |
| P08.2 | Late newbom, not heavy for gestational age Postterm |
| P08.21 | newborn |
| P08.22 | Prolonged gestation of newborn 41 |
| Z3A.41 | weeks gestation of pregnancy 42 |
| Z3A.42 | weeks gestation of pregnancy |

## ICD- 10 CODES <br> indicating

PREGNANC
Dx codes:
O09.XYZ Supervision of high risk pregnancy (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
11 Pre-existing hypertension with pre-eclampsia (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)

Gestational [pregnancy-induced] hypertension without significant proteinuria (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period) O14
Pre-eclampsia (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
016 Unspecified maternal hypertension (if last digititindicating first/second/third/unspecified trimester/unspecified as to time period) O20
Hemorrhage in early pregnancy
O21 Excessive vomiting in pregnancy (last digit refers to first/second/third/unspecified trimester) O22
Venous complications and hemorrhoids in pregnancy
O23 Infections of genitourinary tract in pregnancy (last digit refers to first/second/third/unspecified trimester)
024 Diabetes mellitus in pregnancy, childbirth, and the puerperium (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period) O25
Malnutrition in pregnancy, childbirth and the puerperium (if last digit indicating first/second/third/unspecified trimester/unspecified as to time period)
O26 Maternal care for other conditions predominantly related to pregnancy (if last digititindicating first/second/third/unspecified trimester/unspecified as to time period) O28
Abnormal findings on antenatal screening of mother
O29 Complications of anesthesia during pregnancy (last digit refers to first/second/third/unspecified trimester) O30
Multiple gestation (last digit refers to first/second/third/unspecified trimester)
O3 Complealions (certain digit refers to first/second/third/unspecified trimester) O32
O33 Maternal care for disproportion
O34 Maternal care for abnormality of pelvic organs (most codes indicate first/second/third/unspecified trimester)
O35 Maternal care for known or suspected fetal abnormality and damage
O36 Maternal care for other fetal problems (codes indicate firstsecond/third/unspecified trimester) O40
Polyhydramnios (codes indicate first/second/third/unspecified trimester)
041 Other disorders of amniotic fluid and membranes (codes indicate firstsecond/hird/unspecified trimester)
O42.1 Premature rupture of membranes, onset of labor more than 24 hours following rupture
O42.9 Premature rupture of membranes, unspecified as to length of time between rupture and onset of labor
O43 Placental disorders (last digit refers to first/second/third/unspecified trimester)
O44 Placenta previa (last digit refers to first/second/third/unspecified trimester)
O45 Premature separation of placenta (last digit refers to first/second/third/unspecified trimester)
046 Antepartum hemorrhage, not elsewhere classified (last digit refers to first/second/third/unspecified trimester)
047 False labo
60.0 Preterm labor without delivery 061
711.0 Ruction of labor
71.0 Rupture of uterus (spontaneous) before onset of labo

72 Postpartum hemorrhage
O72.3 Postpartum coagulation defects
073 Retained placenta and membranes, without hemorrhag
O75 Other complications of labor and delivery, not elsewhere classified
094 Sequelae of complication of pregnancy, childbirth, and the puerperium
98 Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, chilabirth and the puerperium (if last digit indicates first trimester, second trimester, third trimester, unspecified, or nothing)
O99 Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (if last digit indicates first trimester, second trimester, third trimester, unspecified, or nothing)
O9A Maternal malignant neoplasms, traumatic injuries and abuse classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (if last digit indicates first trimester, second trimester, third trimester, unspecified, or nothing)
Z32.01 Encounter for pregnancy test - result positive
Z33 Pregnant state
$Z 34$ Encounter for supervision of normal pregnancy
Z36 Encounter for antenatal screening of mother
Zncounter for maternal postpartum care and examination
Z39.2 Encounter for routine postpartum follow-up
Z3A Weeks of gestation
Z3A Weeks of
Proc codes:
102 Change
109 Drainage
10H Insertion
10J Inspection
10P Removal
10Q Repair

## 10S Reposition

10 Y Transplantation
ICD-10 CODES INDICATING DELIVERY (diagnostic codes that were not considered in the algorithm to identify delive ries)
Dx codes:
Use the following codes only if the last digit indicates childbith or puerperium or labor O10
Pre-existing hypertension complicating pregnancy, childbirth and the puerperium 011
Pre-existing hypertension with pre-eclampsia
012 Gestational [pregnancy-induced] edema and proteinuria without hypertension 013
Gestational [pregnancy-induced] hypertension without significant proteinuria 014
O15 Eclampsia
O15 Eclampssia
016 Unspecified maternal hypertension
O24 Diabetes mellitus in pregnancy, childbirth, and the puerperium
O25 Malnutrition in pregnancy, childbirth and the puerperium
O26 Maternal care for other conditions predominantly related to pregnancy
O42.0 Premature rupture of membranes, onset of labor within 24 hours of rupture, except 042.011 (first trimester)
048 Late pregnancy
O60.1 Preterm labor with preterm delivery 060.2
Term delivery with preterm labor 062
Abnormalities of forces of labor
063 Long labor
O64 Obstructed labor due to malposition and malpresentation of
fetus 065 Obstructed labor due to maternal pelvic abnormality
066 Other obstructed labor
067 Labor and delivery complicated by intrapartum hemorrhage, not elsewhere
068 Labor and delivery complicated by abnormality of fetal acid-base balance
069 Labor and delivery complicated by umbilical cord
complications 070 Perineal laceration during delivery
071.1 Rupture of uterus during labor
071.2 Postpartum inversion of uterus

O71.4 Obstetric high vaginal laceration alone
072.0 Third-stage hemorrhage
072.1 Other immediate postpartum hemorrhage

074 Complications of anesthesia during labor and delivery
076 Abnormality in fetal heart rate and rhythm complicating labor and
delivery 077 Other fetal stress complicating labor and delivery
O80 Encounter for full-term uncomplicated
delivery 082 Encounter for cesarean delivery withou
indication
098 Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (if last digit indicates childbirth or puerperium)
O99 Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (if last digit indicates childbirth or puerperium)
O9A Maternal malignant neoplasms, traumatic injuries and abuse classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (if last digit indicates childbirth or puerperium)
Z37 Outcome of delivery (For livebirth cohort, exclude Z37.1, Z37.4, Z37.7 - all stillbirth codes)
Z338 Livicome of delivery (For livebirth cohort, exclude Z37.1, Z37.4, Z37.7 - all stilbirt
ICD-10 CODES INDICATING PREGNANCY WITH ABORTIVE/NON-LIVE BIRTH OUTCOMES
Dx codes:
000-008 Pregnancy with abortive outcome
Proc codes:
10A Abortion
10D17Z9 Manual Extraction of Products of Conception, Retained, Via Natural or Artificial Opening
10D17ZZ Extraction of Products of Conception, Retained, Via Natural or Artificial Opening
10D18z9 Manual Extraction of Products of Conception, Retained, Via Natural or Artificial Opening Endoscopic
10D18ZZ Extraction of Products of Conception, Retained, Via Natural or Artificial Opening Endoscopic
ICD-10 CODES INDICATING ECTOPIC PREGNAN CY
1002827 Extraction of Products of Conception, Ectopic, Via Natural or Artificial Opening
10S2 Reposition Products of Conception, Ectopic
10S2 Reposition Produ
10T Resection (Ectopic)

| Unmatched |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Optum |  |  | MarketScan |  |  | Medicare |  |  | Pooled |  |  |
| Variable <br> Number of patients | $\begin{gathered} \text { Rivaroxaban } \\ 39.574 \end{gathered}$ | Apixaban | St. Diff | Rivaroxaban | Apixaban 49,503 | St. Diff | Rivaroxaban 148,933 | Apixaban 176,546 | St. Diff | Rivaroxaban 230,439 | Apixaban | St. Diff |
| Age |  |  |  |  |  |  |  |  |  |  |  |  |
| ...mean (sd) | 71.62 (10.97) | 74.33 (10.14) | -0.26 | 66.38 (12.81) | 68.13 (13.18) | -0.13 | 76.19 (8.31) 760000000 | ${ }^{77.68(8.32)}$ | -0.18 | 73.62 (9.75) | 75.28 (9.73) | -0.17 |
| .median [IQR] | 73.00 [66.00, 80.00] | 75.00 [6.00, 82.00$]$ | -0.19 | ${ }_{76.001}{ }^{\text {che }}$ | 67.00 [59.00, 79.00] | -0.15 | 82.00] | 84.00] | -0.12 | 73.48 (9.75) | 74.86 (9.73) | -0.14 |
| Age categories |  |  |  |  |  |  |  |  |  |  |  |  |
| -.18-54; ${ }^{\text {(\%) }}$ | 2,971 (7.5\%) | 3,087(4.3\%) | 0.14 | ${ }^{6,634(15.8 \%)}$ | 6,712 (13.6\%) | ${ }^{0.06}$ | ${ }^{1,576}$ (1.1.\%) | 1,057 (0.6\%) | 0.05 | 11,181(4.9\%) | 10.856 (3.6\%) | 0.06 |
| ...55-64; n (\%) | 5.841 (14.8\%) | 7,454 (10.3\%) | 0.14 | 14,308 (34.1\%) | 16,051 (32.4\%) | 0.04 | 4,325 (2.9\%) | 3.681 (2.1\%) | 0.05 | 24.474 (10.6\%) | 27,186 (9.1\%) | 0.05 |
| ...65-74; ${ }^{\text {(\%) }}$ | 13,453 (34.0\%) | 22,947(31.8\%) | 0.05 | 8.881( 21.2 \%\%) | 9,746 (19.7\%) | 0.04 | $59.453(39.9 \%)$ | 61.457 (34.8\%) | 0.11 | 81,787 (35.5\%) | 94,150(31.6\%) | 0.08 |
| Calendar Year |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| ...2012-2013; n (\%) | 4,197 (10.6\%) | 867 (1.2\%) | 0.41 | 9,233 (22.0\%) | 2,364 (4.8\%) |  | 25.035 (16.8\%) | 6,172 (3.5\%) |  |  |  |  |
| ...2014; n (\%) | 4.602 (11.6\%) | 2.864 (4.0\%) | 0.29 | 9,189 (21.9\%) | 5,504 (11.1\%) | 0.29 | 31.251 (21.0\%) | 22,092 (12.5\%) | 0.23 | 45,042 (19.5\%) | 30,400 (10.2\%) | 0.26 |
| ...2015; n (\%) | 4.140 (10.5\%) | 4,852 (6.7\%) | 0.14 | 5.973 (14.2\%) | 6,793 (13.7\%) | 0.01 | 28.517 (19.1\%) | ${ }^{38,857}(22.0 \%)$ | $-0.07$ | 38.630 (16.8\%) | 50,502 (16.9\%) | 0.00 |
| $\ldots 2016 ; \mathrm{n}$ \%) | 4,683 (11.8\%) | 7.836 (10.8\%) | 0.03 | 5,979 (14.3\%) | 9,613 (19.4\%) | -0.14 | $29,355(19.7 \%)$ | 54.270 (30.7\%) | -0.26 | 40,037 (17.4\%) | $71,799(24.0 \%)$ | -0.16 |
| ...2017; ${ }^{\text {\% \% }}$ ) | 6,255 (15.8\%) | ${ }^{11,4322(15.8 \%)}$ | 0.00 | 4,651 (11.1\%) | 8,328 (16.8\%) | -0.17 | 34,755 (23.3\%) | 55.155 (31.2\%) | -0.18 | 45,661 (19.8\%) | 74.915 (25.1\%) | -0.13 |
| $\ldots 2018 ; \mathrm{n}$ (\%) | 6,939 (17.5\%) | 16,269 (22.5\%) | -0.13 | 3,747 (8.9\%) | ${ }^{8,107}$ (16.4\%) | -0.23 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 10,686 (4.6\%) | 24,376 (8.2\%) | -0.15 |
| ..2019; n (\%) | 6,025 (15.2\%) | 18,766 (22.0\%) | $-0.27$ | 3,160 (7.5\%) | 8,794 (17.8\%) | -0.31 | 0 0(0.0\%) | 0 0(0.0\%) | 0.00 | 9,185(4.0\%) | 27,560(9.2\%) | -0.21 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| ...White: n (\%) | 30,226 (77.4\%) | ${ }^{54,845}$ (75.9\%) | 0.01 | ${ }^{0} 0(0.0 \%)$ | ${ }^{0}(0.0 \%)$ | 0.00 0.00 | 135,426 (90.9\%) | 162,189 (91.9\%) | $-0.04$ | 165,652 (71.9\%) | 217,034 (72.8\%) | $-0.02$ |
| $\ldots$ | $1,106(2.8 \%)$ $3,074(7.8 \%)$ | $\left.1.674(2.3)^{\circ} \%\right)$ 6,306 (8.7\%) | -0.03 | $\left.\begin{array}{l}0(0.0 \%) \\ 0 \\ 0\end{array} 0.0 \%\right)$ | $0(0.0 \%)$ $0(0.0 \%)$ | 0.00 0.00 | 2,255 (1.5\%) <br> 5,771 (3.9\%) | 2,276 (1.3\%) <br> 6,463 (3.7\%) | $\begin{aligned} & 0.02 \\ & 0.01 \end{aligned}$ | 3,361 (1.5\%) <br> 8,845 (3.8\%) | 3,950(1.3\%) <br> 12,769 (4.3\%) | ${ }^{0.02}$ |
| ...hispanic; n (\%) | 3,338 (8.4\%) | 5.831 (8.1\%) | 0.01 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 1,831 (1.2\%) | 1,723 (1.0\%) | 0.02 | 5,169 (2.2\%) | $7.554(2.5 \%)$ | ${ }_{-0.02}$ |
| ...North American Native; n (\%) | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 488 (0.3\%) | $394(0.2 \%)$ | 0.02 | 488 (0.2\%) | 39440.1\%) | 0.03 |
| ...Other; n (\%) | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 0 0(0.0\%) | 0 (0.0\%) | 0.00 | 1,695 (1.1\%) | 1.871 (1.1\%) | 0.00 | 1,6955(0.7\%) | 1,871 (0.6\%) | 0.01 |
| ..UnknownMMissing: n (\%) | 1,830 (4.6\%) | 3,600 (5.0\%) | -0.02 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 1,467 (1.0\%) | 1.630 (0.9\%) | 0.01 | 3,297(1.4\%) | 5,235 (1.8\%) | -0.03 |
| Gender |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 22,07(5.5\%\%) | 35,930 (51.1\%) | ${ }_{-0.13}^{0.13}$ | 15,951 (38.0\%) | ${ }^{281,4050}(57.52 \%)$ | -0.09 -0.09 |  | 101,891(57.7\%) | 0.08 -0.08 | 113,339 (49.2\%) | 159,874 (53.6\%) | -0.09 |
| Region |  |  |  |  |  |  |  |  |  |  |  |  |
| ...Northeast n (\%) | 5,135 (13.0\%) | 8,428 (11.7\%) | 0.04 | 9,129 (21.8\%) | 10,796 (21.8\%) | 0.00 | 28.936 (19.4\%) | 33,847 (19.2\%) | 0.01 | 43,200 (18.7\%) | 53,071 (17.8\%) | 0.02 |
| ...south; (\%) | 15,708 (39.7\%) | 31,239 (4.2\%) | -0.07 | 15,396 (36.7\%) | 19,405 (39.2\%) | -0.05 | 58.960 (39.6\%) | 75.52 (42.8\%) | -0.07 | 90,064 (39.1\%) | 126,196 (42.3\%) | -0.07 |
| ...Midwestn n (\%) | $8,152(20.6 \%)$ | 14,311 (19.8\%) | 0.02 | $11.112(26.5 \%)$ | 12,993 (26.2\%) | 0.01 | 33,349 (22.4\%) | 37,469 (21.2\%) | 0.03 | $52.613(22.8 \%)$ | 64,73 (21.7\%) | 0.03 |
| ...Westit n (\%) | 10,532 (26.6\%) | 18,224 (25.2\%) | 0.03 | 5,984(14.3\%) | 6,136 (12.4\%) | 0.06 | 27.511 (18.5\%) | 29.543 (16.7\%) | 0.05 | 44,027 (19.1\%) | $53,903(18.1 \%)$ | 0.03 |
| ..Unknown+missing; n (\%) | $47(0.1 \%)$ | 59 (0.1\%) | 0.00 | 311(0.7\%) | 1733(0.3\%) | 0.06 | 177 (0.1\%) | 135(0.1\%) | 0.00 | $535(0.2 \%)$ | 367 (0.1\%) | 0.03 |
| Combined comorbididty score, 180 days |  |  |  |  |  |  |  |  |  |  |  |  |
| ...mean (sd) | 2.18 (2.11) | 2.63 (2.37) | -0.20 | 1.53 (1.58) | 1.80 (1.80) | -0.16 | 1.83 (1.81) | 2.04 (1.95) | -0.11 | 1.84 (1.83) | 2.14 (2.04) | -0.15 |
| ..median [IQR] | 2.000 [1.00, 3.00] | 2.00 [1.00, 4.00) | 0.00 | $1.0000 .000,2.00]$ | 1.000 [0.00, 3.00] | 0.00 | $1.0000 .000,3.00]$ | $2.0001 .000 .3 .00]$ | $-0.53$ | 1.17 (1.83) | 1.83 (2.04) | -0.34 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lifestye - Smoking: n (\%) Lifestye - Drug ause ordependence: n (\%) | ${ }_{635(1.26)}^{7,264(18.4 \%)}$ |  | ${ }_{-0.02}^{-0.13}$ | ${ }^{3} \begin{aligned} & 3.833(9.1 \%) \\ & 3010.7 \%)\end{aligned}$ | 5,125(10.4\%) $479(1.0 \%)$ | ${ }_{-0.04}^{-0.04}$ | $\underbrace{31,110(20.9 \%)}$ | ${ }^{40,944(23.2 \%)}$ | ${ }^{-0.06}$ | 42,207(18.3\%) | ${ }^{63,982}$ 202(1.0\%) ${ }^{\text {a }}$ | ${ }_{-0.02}^{-0.07}$ |
| Lifestye - Alconol abuse or dependence; n (\%) | 942 (2.4\%) | 1,620 (2.2\%) | 0.01 | 789 (1.9\%) | 879 (1.8\%) | 0.01 | 1,437 (1.0\%) | 1.907 (1.1\%) | -0.01 | 3,168(1.4\%) | 4,406 (1.5\%) | -0.01 |
| Comorbidities |  |  |  |  |  |  |  |  |  |  |  |  |
| DM - Diabetic Retinopathy $n$ (\%) | 605 (1.5\%) | 1,277 (1.8\%) | -0.02 | 338 (0.8\%) | 493 (1.0\%) | -0.02 | 1,490 (1.0\%) | 1,758 (1.0\%) | 0.00 | 2,433 (1.1\%) | 3,528 (1.2\%) | -0.01 |
| DM - Diabetic Neuropathy n (\%) | 2,112 (5.3\%) | 4.428 (6.1\%) | -0.03 | 1,314(3.1\%) | 1,911 (3.9\%) | -0.04 | 5,262 (3.5\%) | 6,754 (3.8\%) | -0.02 | 8,688(3.8\%) | 13,093 (4.4\%) | -0.03 |
| DM - Diabeicic Nephropathy; n (\%) | 1,839 (4.6\%) | 4,384 (6.1\%) | -0.07 | 658 (1.6\%) | 1,260 (2.5\%) | $-0.06$ | 2.798 (1.9\%) | 4,613 (2.6\%) | -0.05 | 5,295(2.3\%) | 10,257 (3.4\%) | -0.07 |
| DM - Diabetes with peripheral circulatory disorders, n (\%) | 237 (0.6\%) | 219 (0.3\%) | 0.04 | $246(0.6 \%)$ | 217 (0.4\%) | ${ }^{0.03}$ | 1.080 (0.7\%) | ${ }^{971}(0.5 \%)$ | 0.03 | ${ }^{1,5633(0.7 \%)}$ | 1,4077(0.5\%) | 0.03 |
| DM - Diabetes with peripheral icrulatory disorders and owere extemity amputaion; n (\%) | 400 (1.0\%) | $55990.8 \%)$ | 0.02 | 317 (0.8\%) | 311 (0.6\%) | 0.02 | 1,507 (1.0\%) | 1.501 (0.\%) | 0.01 | 2,224(1.0\%) | 2,371 (0.8\%) | 0.02 |
| DM - Diabeetes with unspeeified complications; n (\%) | 613 (1.5\%) | 1,427(2.0\%) | -0.04 | 489 (1.2\%) | $804(1.6 \%)$ | ${ }^{-0.03}$ | ${ }_{1}^{1,383}$ (0.9\%) | 2,009 (1.1\%) | -0.02 | 2,485(1.1.\%) | 4,240(1.4\%) | -0.03 |
| DM - Diabetes mellius without mention of complications; n (\%) | 9,234(23.3\%) | 17,107 (23.7\%) | -0.01 | 8,582 (20.5\%) | 10,171 (20.5\%) | 0.00 | 36,047 (24.2\%) | $41.609(23.6 \%)$ | 0.01 | $53.863(23.4 \%)$ | 68.877 (23.1\%) | 0.01 |
| CV- Hypertension: $(\%)$ | 30,179 (7.3\%\%) | 58,264 (80.0\%) | -0.10 | ${ }^{27,872(66.5 \%)}$ | 35,203 (71.1\%) | -0.10 | ${ }^{125.533(84.3 \%)}$ | 151.441(85.5\%) | ${ }^{-0.04}$ | 183.583 (79.7\%) | 244,908 (82.1\%) | ${ }^{-0.06}$ |
| CV-Hyperifidemian ${ }^{\text {a }}$ (\%) CV-Aute Min n (\%) | $22.249(56.2 \%)$ <br> $867(2.2 \%)$ | 42.515 (5.8\%) 2.489 (3.4\%) 2, | -0.05 -0.07 -0.0 | $19,838(47.3 \%)$ $789(1.9 \%)$ |  | -0.06 -0.05 -0.05 |  | $94.591(5.3 .6 \%)$ <br> 5.0068 <br> $(2.8 \%)$ | -0.03 -0.05 -0. | $\begin{aligned} & 119,427(51.8 \%) \\ & 4,851(2.1 \%) \end{aligned}$ | 162,104 (54.3\%) 8,839 (3.0\%) | -0.05 |
| CV - ACSUnssable angina; n (\%) | ${ }_{879}(2.2 \%)$ | ${ }_{2,265}(3,1 \%)$ | -0.06 | 767 (1.8\%) | 1,230 (2.5\%) | -0.05 | ${ }_{3,023}(2.0 \%)$ | ${ }_{4,5988}$ (2.6\%) | -0.04 | 4.669 (2.0\%) | ${ }_{8,193}(2.7 \%)$ | ${ }^{-0.05}$ |
| CV-OId Mi; n (\%) | 1,608 (4.1\%) | 3,799 (5.3\%) | $-0.06$ | 756 (1.8\%) | 1,138 (23\%) | -0.04 | 5.844 (3.9\%) | 7.866 (4.5\%) | -0.03 | $8,208(3.6 \%)$ | $12.803(4.3 \%)$ | -0.04 |
| CV- Stable angina; n (\%) | 1,611 (4.1\%) | 3.872 (5.4\%) | -0.06 | 1,167 (2.8\%) | 1,781 (3.6\%) | -0.05 | 4,421 (3.0\%) | 6,189 (3.5\%) | ${ }_{-0.03}$ | 7,199 (3.1\%) | 11,842 (4.0\%) | ${ }^{-0.05}$ |
| CV - Coronary atherosclerosis and othe forms of chronic ischemic heart disease; n \%) | 9,721 (24.6\%) | 20,300 (28.1\%) | -0.08 | 8,115 (19.4\%) | 10,947 (22.1\%) | -0.07 | 36,938(24.8\%) | 47,627 (27.0\%) | -0.05 | 54,774(23.8\%) | $78.874(26.4 \%)$ | -0.06 |
| CV - Other atherosclerosis, n (\%) | 401 (1.0\%) | 694 (1.0\%) | 0.00 | 361 (0.9\%) | $35990.7 \%)$ | 0.02 | 1.575 (1.1\%) | 1,739 (1.0\%) | 0.01 | 2,337 (1.0\%) | 2,792(0.9\%) | 0.01 |
| CV- Previus cardiac procedure (CABG or PTCA or Stent) + History of CABG or PTCA; n (\%) | 2,438 (6.2\%) | 5.874 (8.1\%) | -0.07 | 1,003 (2.4\%) | 1,429 (2.9\%) | ${ }^{-0.03}$ | 10,355 (7.0\%) | 14,101 (8.0\%) | -0.04 | 13,799 (6.0\%) | 21,404 (7.2\%) | -0.05 |
| CV- Ischemic stroke; n (\%) | ${ }^{3,999}$ (10.1\%) | 10,074 (13.9\%) | -0.12 | ${ }^{3,344(8.0 \%)}$ | $5,5013(10.1 \%)$ | $-0.07$ | 16,170(10.9\%) | $23,377(13.2 \%)$ | -0.07 | ${ }^{23,513(10.2 \%)}$ | 38,434(12.9\%) | -0.08 |
| CV- Hemorragic stroke; n (\%) | ${ }^{82(0.2 \%)} 1$ |  | -0.04 |  |  |  |  |  |  |  |  |  |
|  | $1,4799(3.7 \%)$ 1,318 (3.3\%) | $3,5883(5.0 \%)$ 3,880 (5.4\%) | --0.06 |  | $1.972(4.0 \%)$ $1,671(3.4 \%)$ | -0.03 -0.07 | 5,7600 (3.9\%) $4.627(3.1 \%)$ |  | -0.04 -0.06 | $8.647(3.8 \%)$ $6,868(3.0 \%)$ | $13,947(4.7 \%)$ $13,164(4.4 \%)$ | ${ }^{-0.04}$ |
| CV - Late effects of cerebrovascular disease; $\mathrm{n} \%$ ) | 1,121 (2.8\%) | 3,137 (4.3\%) | -0.08 | 630 (1.5\%) | 1,071 (2.2\%) | -0.05 | 3,807 (2.6\%) | 5.928 (3.4\%) | -0.05 | 5,558(2.4\%) | 10,136 (3.4\%) | -0.06 |
| CV- Heat tailure (CHF); n (\%) | $8.081(20.4 \%)$ | 18,051 (25.0\%) | -0.11 | 6,103(14.6\%) | 8,903 (18.0\%) | $-0.09$ | $27.605(18.5 \%)$ | 37,843 (21.4\%) | -0.07 | 41,789 (18.1\%) | 64,797 (21.7\%) | -0.09 |
| CV - Perinheral Vascular Disease (PVV) or PVD Surgeny; n (\%) | 2,975 (7.5\%) | 6,179 (8.6\%) | -0.04 | 1,711 (4.1\%) | 2,377 (4.8\%) | -0.03 | 9,848(6.6\%) | 12,738(7.2\%) | -0.02 | 14,534 (6.3\%) | 21,294(7.1\%) | -0.03 |
| CV- Other cardiac dystylhmia; n (\%) | 31,139 (78.7\%) | 67,495 (9, 4\%) | -0.43 | 25,355(60.6\%) | 40,703 (82.2\%) | -0.49 | 90,828(61.0\%) | 135,567 77.8\%) | -0.35 | 147,362 (63.9\%) | 243,765 (81.7\%) | -0.41 |
| CV-Cardiac conduction disorders; $n$ \%) | 3,467 (8.8\%) | $8.478(1.7 \%)$ | -0.10 | 2,711 (6.5\%) | 4,261 (8.6\%) | $-0.08$ | 10,666 (7.2\%) | 15,813(9.0\%) | $-0.07$ | 16,844 (7.3\%) | 28,552 (9.6\%) | -0.08 |
| CV- Other CVD; n (\%) | 13,558 (34.3\%) | 28.521 (39.5\%) | -0.11 | 12.470 (29.7\%) | 16,958 (34.3\%) | -0.10 | $42.634(28.6 \%)$ | 57.463 (32.5\%) | -0.08 | 68,662 (29.8\%) | 102,942(34.5\%) | -0.10 |
| CV Medications - ACE inhibitors $n(\%)$ CVMedications ARBs O | $12.072(30.5 \%)$ 8.626 (21.8) |  | 0.00 -0.04 | ${ }_{\substack{12,189 \\ 9,120(29.17 \%)}}$ | $14.397(29.1 \%)$ 11.351 $122.9 \%)$ | 0.00 -0.03 | $47.585(32.0 \%)$ $\left.\begin{array}{l}35775 \\ \hline\end{array}\right)$ | 56,121 (31.8\%) 43.883 (24.9\%) | 0.00 -0.02 | 71,846 (31.2\%) 53,521 (23.2\%) | 92,566 (31.0\%) | 0.00 |
| CV Mediciations - Alpha blockers; n (\%) | 4,439 (11.2\%) | ${ }_{8,629}(1.9 .9 \%)$ | -0.02 | 3,771 (9.0\%) | 4,739 (9.6\%) | -0.02 | 18,034 (12.1\%) | 20.399 (11.9\%) | 0.01 | 26,244(11.4\%) | $34,307(11.5 \%)$ | 0.00 |
| CV Medicaions - Beta blockers; n (\%) | 25,750(65.1\%) | 49,038 (67.9\%) | $-0.06$ | 27,693(6.0\%) | 33,905 (6.5\%) | -0.05 | 101,223(68.0\%) | 123,946 (7.2\%) | $-0.05$ | 154,666 (67.1\%) | 206,889 (69.4\%) | -0.05 |
| CV Medications - Loop Diuretics; n (\%) | 7,758 (19.6\%) | 16,454 (22.8\%) | -0.08 | 6,412 (15.3\%) | 8,884 (17.9\%) | -0.07 | 34,111 (22.9\%) | 44.427 (25.2\%) | -0.05 | 48,281 (21.0\%) | 69,765(23.4\%) | -0.06 |
| CV Medications - Other diuretics: n (\%) | 1,689 (4.3\%) | 3.660 (5.1\%) | $-0.04$ | 1,526 (3.3\%) | 2,269 (4.6\%) | $-0.05$ | 6,693 (4.5\%) | 8,786 (5.0\%) | -0.02 | 9,908 (4.3\%) | 14,745(4.9\%) | -0.03 |
| CV Medications - Use of itratas, n (\%) | 1,781 (4.5\%) | 3,976 (5.5\%) | -0.05 | 1,561 (3.7\%) | 2,176 (4.4\%) | -0.04 | 9,111 (6.1\%) | 12,068(6.8\%) | -0.03 | 12,453 (5.4\%) | 18,220 (6.1\%) | -0.03 |
| CV Medications- Use of statins: n (\%) | 19,488 (49.2\%) | ${ }^{38,5774(53.4 \%)}$ | $-0.08$ | 18,597 (44.4\%) | ${ }^{23,729}$ (47.9\%) | -0.07 | 78,449 (52.7\%) | 96,679 (54.8\%) | -0.04 | 116,527(50.6\%) | $158,982(53.3 \%)$ | ${ }^{-0.05}$ |
| CV Medicaions - Use of other lipidowering drugs; n (\%) | ${ }^{1,491(3.8 \%)}$ | ${ }^{2,508(3.5 \%)}$ | 0.02 | 1,972 (4.7\%) | 2,064(4.2\%) | 0.02 | ${ }_{\text {c }}^{6.5877(4.4 \%)}$ | ${ }^{7,477(4.2 \%)}$ | 0.01 | 10,050(4.4\%) | ${ }^{12,049}(4.0 \%)$ | 0.02 |
| ${ }^{\text {CV M Medications- calcium channel lockers; } \mathrm{n} \text { (\%) }}$ | 14,755(37.3\%) | ${ }_{7}^{28.5557(39.5 \%)}$ | -0.05 | 15,341(36.6\%) |  | - ${ }_{-0.03}^{-0.03}$ | $58,925(39.6 \%)$ $13,78089.2 \%)$ | $70.935(40.2 \%)$ $178888(10.10)$ | -0.01 -0.03 | $89,021(38.6 \%)$ $18.485(8.0 \%)$ | $118.344(39.7 \%)$ 27.223 (9.1\%) | -0.02 -0.04 |
| Other Comortididy - Demenenia; n (\%) | ${ }_{2,747(6.9 \%)}$ | ${ }_{6.824}(9.44 \%)$ | -0.09 | ${ }_{1}^{1,496}$ (3.6\%) | ${ }_{2}^{2,445(4.9 \%)}$ | ${ }_{-0.06}$ | 10.660 (7.2\%) | 15,257 (8.6\%) | ${ }_{-0.05}$ | 14,903 (6.5\%) | 24,526 (8.2\%) | $\stackrel{-0.07}{-0.02}$ |
| Other Comorididy - Hyperthyroidism + Hypothyroidism + Other disorders of thyroid gland ; n | 8,900 (20.4\%) | 16,582 (22.9\%) | $-0.06$ | 6,361 (15.2\%) | 8,489 (17.1\%) | -0.05 | 20,911 (14.0\%) | 19,911 (11.3\%) | 0.08 | 35,362 (15.3\%) | 44,982 (15.1\%) | 0.01 |


| Other Comorididity Edema; п (\%) | 4,035 (10.2\%) | 8,491 (11.8\%) | -0.05 | 2.909 (6.9\%) | 3,989 (8.1\%) | -0.05 | 11,993 (7.9\%) | 14,969 (8.5\%) | $-0.02$ | 18,637 (8.1\%) | 27,449 (9.2\%) | -0.04 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Other Comorbidity - Depression; n (\%) | 3,332 (8.4\%) | 6,763 (9.4\%) | $-0.04$ | 2.627 (6.3\%) | ${ }^{3,222}$ (6.5\%) | $-0.01$ | 12,001 (8.1\%) | 14,544 (8.2\%) | 0.00 | 17,960 (7.8\%) | 24,529 (8.2\%) | $-0.01$ |
| Other Comorididit - Anxiety; n (\%) | 4,297 (10.9\%) | 9,395 (13.0\%) | -0.06 | 3,242 (7.7\%) | 4,742 (9.6\%) | $-.07$ | 12.2625 (8.5\%) | 16,289 (9.2\%) | ${ }_{-0.02}$ | 20,164 (8.8\%) | 30.426 (10.2\%) | -0.05 |
| Other Comorbidity - Pneumonia; (\%) | 2,458(6.2\%) | 6,015 (8.3\%) | $-0.08$ | 2.008 (4.8\%) | 2,892 (5.8\%) | $-0.04$ | 9,669 (6.5\%) | ${ }^{13,219}$ (7.5\%) | $-0.04$ | 14,135 (6.1\%) | 22,126 (7.4\%) | $-0.05$ |
| Other Comortidity - COPD; n (\%) | 5,572 (14.1\%) | 11,986 (16.6\%) | -0.07 | 3.710 (8.8\%) | 4,984 (10.1\%) | $-0.04$ | 20,527 (13.8\%) | 25,900 (14.7\%) | $-0.03$ | 29,809 (12.9\%) | 42,870 (14.4\%) | $-0.04$ |
| Other Comortidity - Asthma; n (\%) | 2,490 (6.3\%) | 4,912 (6.8\%) | -0.02 | 2,347 (5.\%) | 2,880 (5.8\%) | -0.01 | 9,009 (6.0\%) | 11.077 (6.3\%) | $-0.01$ | 13,846 (6.0\%) | 18.869 (6.3\%) | -0.01 |
| Other Comortidity- Acute renal disease; n (\%) | 1,850 (4.7\%) | 5.499 (7.6\%) | -0.12 | 1.224 (2.9\%) | 2.272 (4.6\%) | $-0.09$ | 6,220 (4.2\%) | 10.592 (6.0\%) | $-0.08$ | 9,294(4.0\%) | 18,360 (6.2\%) | -0.10 |
| Other Comortidity CKD Stage 1; n \% | 136 (0.3\%) | 265 (0.4\%) | -0.02 | 61 (0.1\%) | $84(0.2 \%)$ | $-0.03$ | 278 (0.2\%) | 319 (0.2\%) | 0.00 | $475(0.2 \%)$ | 668 (0.2\%) | 0.00 |
| Other Comotridity - CKD Stage 2; n (\%) | 887 (2.2\%) | 1,858(2.6\%) | -0.03 | 281 (0.7\%) | 485 (1.0\%) | $-0.03$ | 1,473 (1.0\%) | 2,126 (1.2\%) | $-0.02$ | 2.621 (1.1\%) | 4.469 (1.5\%) | $-0.04$ |
| Other Comorididy - CKD Stage 3; (\%) | 3,551 (9.0\%) | 8,834 (12.2\%) | -0.10 | 1,276 (3.0\%) | 2,358 (4.8\%) | $-0.09$ | 7,918 (5.3\%) | ${ }^{13,220}(7.5 \%)$ | $-0.09$ | 12,745 (5.5\%) | 24,412(8.2\%) | -0.11 |
| Other Comorididity - Occurrence of chronic renal insufficiency wo $\mathrm{CKD} ; \mathrm{n}$ (\%) | 1.824 (4.6\%) | 4.451 (6.2\%) | -0.07 | 863 (2.1\%) | 1,459 (2.9\%) | $-0.05$ | 5.890 (4.0\%) | 8.882 (5.0\%) | $-0.05$ | 8.577 (3.7\%) | 14,992 (5.0\%) | $-0.06$ |
| Other Comortidity - Ocurrence of miscellaneous renal insufficiency; (\%) | 2,103 (5.3\%) | 4,886 (6.8\%) | -0.06 | 1,364 (3.3\%) | 2,249 (4.5\%) | $-0.06$ | 6,344 (4.3\%) | 8.864 (5.0\%) | $-0.03$ | 9,811 (4.3\%) | 15,999 (5.4\%) | $-0.05$ |
| Other Comortidily - Hypertensive nephropathy; (\%) | 2.884 (7.3\%) | 7.839 (10.8\%) | -0.12 | 1,129 (2.7\%) | 2,361 (4.8\%) | -0.11 | 8.281 (5.6\%) | ${ }^{13,721}$ (7.8\%) | $-0.09$ | 12,294 (5.3\%) | 23.921 (8.0\%) | -0.11 |
| Other Comortidity - Obstructive sleep apnea; n (\%) | 4,313 (10.9\%) | 7.717 (10.7\%) | 0.01 | 5,200 (12.4\%) | 6,858 (13.9\%) | $-0.04$ | 9,174 (6,2\%) | 11,567 (6.6\%) | -0.02 | 18,687 (8.1\%) | 26,142 (8.8\%) | $-0.03$ |
| Other Comorbidity- Osteoathrritis, n (\%) | ${ }^{8,123}$ (20.5\%) | 16,520 (22.9\%) | -0.06 | $6.591(15.7 \%)$ | 7,983 (16.1\%) | -0.01 | 31.918 (21.4\%) | 38,031 (21.5\%) | 0.00 | 46,632 (20.2\%) | 62,534 (21.0\%) | $-0.02$ |
| Other Comortidity - Other arthritis, athropathies and musculoskeleal pain; $n$ (\%) | 15,178(38.4\%) | 29,550 (40.9\%) | -0.05 | 14.428(34.4\%) | 17,421 (35.2\%) | $-0.02$ | 54.846 (36.8\%) | 65.149 (36.9\%) | 0.00 | 84,452 (36.6\%) | 112,120 (37.6\%) | -0.02 |
| Other Comortidity - Dorsopathies; $n$ (\%) | ${ }_{8,826}(2.3 \%)$ | 17.719 (24.5\%) | -0.05 | 8,294(19.8\%) | 10,115 (20.4\%) | $-0.01$ | 30,828 (20.7\%) | 38,050 (21.6\%) | $-0.02$ | 47.948 (2.8\%) | 65,884 (22.1\%) | $-0.03$ |
| Other Comorididy - Fratures; n (\%) | 1,798 (4.5\%) | 3,589 (5.0\%) | -0.02 | 1,485 (3.5\%) | 1,806 (3.6\%) | -0.01 | 7,167 (4.8\%) | 8.538 (4.8\%) | 0.00 | 10,450 (4.5\%) | ${ }^{13,933}(4.7 \%)$ | -0.01 |
| Other Comortidity - Falls, n (\%) | 2,265 (5.7\%) | 5.681 (7.9\%) | -0.09 | 834(2.0\%) | 1,462 (3.0\%) | $-0.06$ | 2.974 (2.0\%) | 4.477 (2.5\%) | -0.03 | 6,073 (2.6\%) | 11,614(3.9\%) | -0.07 |
| Other Comortiditly - Sleep Disorder, n (\%) | 2,301 (5.8\%) | 2,499 (3.5\%) | 0.11 | 3,477 (8.3\%) | 2,600 (5.3\%) | 0.12 | 8.065 (5.4\%) | 7,074 (4.0\%) | 0.07 | 13,843(6.0\%) | 12,173 (4.1\%) | 0.09 |
| Other Comorididy - Deilirium; n (\%) | 953 (2.4\%) | 2.815 (3.9\%) | $-0.09$ | 596 (1.4\%) | 1,051 (2.1\%) | $-0.05$ | 3,460 (2.3\%) | 5.237 (3.0\%) | $-0.04$ | 5.009 (2.2\%) | 9,103 (3.1\%) | $-0.06$ |
| Other Comortidity-Psychosis; n (\%) | 468 (1.2\%) | 911 (1.3\%) | -0.01 | 352 (0.8\%) | 356 (0.7\%) | 0.01 | 2,692 (1.8\%) | 2,582 (1.5\%) | 0.02 | 3,512(1.5\%) | 3,849 (1.3\%) | 0.02 |
| Procedures |  |  |  |  |  |  |  |  |  |  |  |  |
| Procedure - Hip Surgey; $n$ (\%) | 258 (0.7\%) | 3270.5\%) | 0.03 | 272 (0.6\%) | 127(0.3\%) | 0.04 | 1.111 (0.7\%) | 668 (0.4\%) | 0.04 | 1,641 (0.7\%) | 1,122 (0.4\%) | 0.04 |
| Medications |  |  |  |  |  |  |  |  |  |  |  |  |
| DM Medications - Meglitinides; $n$ (\%) | ${ }^{82}(0.2 \%)$ | 127(0.2\%) | 0.00 | $105(0.3 \%)$ | 111(0.2\%) | ${ }^{0.02}$ | $437(0.3 \%)$ | ${ }^{536}(0.3 \%)$ | 0.00 | ${ }^{624(0.3 \%)}$ | $774(0.3 \%)$ | ${ }^{0.00}$ |
| DMMedications - AGIs; n (\%) | $24(0.1 \%)$ | $48(0.1 \%)$ | 0.00 | 19(0.0\%) | 27(0.1\%) | ${ }^{-0.04}$ | 119 (0.1\%) | ${ }^{131}(0.1 \%)$ | 0.00 | $162(0.1 \%)$ | 206(0.1\%) | 0.00 |
| DM Medications - Insulin; n (\%) | 1,672 (4.2\%) | 3,346(4.4\%) | -0.02 | 1,725(4.1\%) | 2,154(4.4\%) | -0.01 | 5,099 (3.4\%) | 6,366 (3.3\%) | -0.01 | 8,496(3.7\%) | 11,866 (4.0\%) | -0.02 |
| DM Medications - Gilizzones; n \%) | 427 (1.1\%) | 755 (1.0\%) | 0.01 | $491(1.2 \%)$ | 536 (1.1\%) | 0.01 | 1,616 (1.19\%) | 1,879 (1.1\%) | 0.00 | 2,534(1.19\%) | 3,170 (1.1\%) | 0.00 |
| DM Medications - Ist and 2nd Generation SUs ; n (\%) | 2,450 (6.2\%) | ${ }^{4,4966}(6.28 \%)$ | 0.00 | 2,195 (5.2\%) | 2,581 (5.2\%) | 0.00 | ${ }^{9,651(6.5 \%)}$ | ${ }^{11,098(6.3 \%)}$ | 0.01 | 14,298(6.2\%) | 18.175 (6.1\%) | ${ }^{0.00}$ |
| DM Medications - DPP-4 4lmibitioss, n (\%) | 1,017 (2.6\%) | 1,789 (2.5\%) | 0.01 | ${ }^{1,3226(3.2 \%)}$ | 1,571 (3.2\%) | 0.00 | 4,342 (2.9\%) | 5.080 (2.9\%) | 0.00 | 6,685(2.9\%) | 8,440 (2.8\%) | ${ }^{0.01}$ |
| DM Medications - GLP-1 RA; n (\%) | 380 (1.0\%) | 667 (0.9\%) | 0.01 | 561 (1.3\%) | 713 (1.4\%) | -0.01 | 937 (0.6\%) | 1,146 (0.6\%) | 0.00 | 1.878 (0.8\%) | 2.526 (0.8\%) | 0.00 |
| DM Medicaioions -SGLT-2 Inhibiors ; n (\%) | 337 (0.9\%) | 636 (0.9\%) | 0.00 | 417 (1.0\%) | 604 (1.2\%) | $-0.02$ | $5611(0.4 \%)$ | 719 (0.4\%) | 0.00 | 1,315(0.6\%) | 1,959 (0.7\%) | -0.01 |
| DM Medications - Metiormin; n (\%) | 5,305 (13.4\%) | 9,656 (13.4\%) | 0.00 | 5,176 (12.3\%) | ${ }^{6,296}(12.7 \%)$ | -0.01 | 18,756 (12.6\%) | $21,308(12.1 \%)$ | 0.02 | 29,237 (12.7\%) | 37,260 (12.5\%) | ${ }^{0.01}$ |
| DM Medciaition - All antidiabetic medications except Insulin; n (\%) | 6,751 (17.1\%) | 12,368 (17.1\%) | 0.00 | 6,546 (15.6\%) | 7,917 (16.0\%) | -0.01 | 24.529 (16.5\%) | 28.633 (16.2\%) | 0.01 | 37,826 (16.4\%) | 48,918 (16.4\%) | 0.00 |
| Other Meiciations - Use of NSAIDs; n (\%) | 4,868 (12.3\%) | 8,492 (11.8\%) | 0.02 | 5,670 (13.5\%) | 6,544 (13.2\%) | 0.01 | 20,367 (13.7\%) | 22,723 (12.9\%) | 0.02 | 30,905 (13.4\%) | 37,759 (12.7\%) | 0.02 |
| Other Medications - Use of other hypertension druss; n (\%) | ${ }^{2,5633}(6.5 \%)$ | 5,347 (7.4\%) | $-0.04$ | 2,190 (5.2\%) | 2,886 (5.5\%) | ${ }^{-0.03}$ | ${ }^{11,0881(7.4 \%)}$ | 13,753 (7.8\%) | -0.02 | 15.834 (6.9\%) | 21,986 (7.4\%) | -0.02 |
| Other Medications - Digoxin: n (\%) | 2,782 (7.0\%) | 4,295 (5.9\%) | 0.04 | 3,135 (7.5\%) | 3,139 (6.3\%) | 0.05 | 13,993 (9.4\%) | 14,506 (8.2\%) | 0.04 | 19,910 (8.6\%) | 21,940 (7.4\%) | 0.04 |
| Other Mediciations - Use of Anti-arthytmics; n (\%) | 6,439 (16.3\%) | 12,185 (16.9\%) | -0.02 | 8,417 (20.1\%) | 9,802 (19.8\%) | 0.01 | 26,511 (17.8\%) | $33,196(18.8 \%)$ | $-0.03$ | 41,367 (18.0\%) | 55,183 (18.5\%) | -0.01 |
| Other Medications Use of antipsychtics; $n$ (\%) | $711(1.8 \%)$ | 1,467 (2.0\%) | -0.01 | 540 (1.3\%) | $716(1.4 \%)$ | -0.01 | 3,972 (2.7\%) | 4,311 (2.4\%) | 0.02 | 5,223(2.3\%) | 6,494 (2.2\%) | 0.01 |
| Other Medications - Use of dementia meds; n (\%) | 1,201 (3.0\%) | ${ }^{2,716163.8 \%)}$ | -0.04 | 805 (1.9\%) | 1,121 (2.3\%) | ${ }^{-0.03}$ | 6.454 (4.3\%) | ${ }^{8,240(4.7 \%)}$ | ${ }^{-0.02}$ | 8.460 (3.7\%) | 12,077 (4.0\%) | -0.02 |
| Other Medications Use of antiparkinsonian meds; n (\%) | 938 (2.4\%) | 1,975 (2.7\%) | -0.02 | ${ }^{806}$ (1.9\%) | ${ }^{1,036}(2,1 \%)$ | $-0.01$ | 4,637 (3.1\%) | 5,777 (3.3\%) | -0.01 | 6,381 (2.8\%) | 8,788 (2.9\%) | -0.01 |
| Other Medications - Use of anxiolyticshypooicics n (\%) | 1,964 (5.0\%) | 3,281 (4.5\%) | 0.02 | 2,493 (5.9\%) | 2,780 (5.6\%) | 0.01 | 9,800 (6.6\%) | 10,633 (6.0\%) | 0.02 | 14,257 (6.2\%) | 16,694 (5.6\%) | ${ }^{0.03}$ |
| Other Medications - Use of anticonvulsants; n (\%) | 4,777 (10.5\%) | ${ }^{8.5787(11.9 \%)}$ | -0.04 | ${ }^{3,272(7.8 \%)}$ | 4,291 (8.7\%) | ${ }^{-0.03}$ | 16,973 (11.4\%) | ${ }^{21,290}(12.1 \%)$ | ${ }^{-0.02}$ | 24.419 (10.6\%) | $34,159(11.5 \%)$ | -0.03 |
| Other Medications - Use of antidepressants $n$ (\%) | 7,779 (19.7\%) | 15,737 (21.8\%) | -0.05 | 7,164 (17.1\%) | 9,240 (18.7\%) | -0.04 | $32.504(21.8 \%)$ | ${ }^{39,863}$ (22.6\%) | -0.02 | 47,447 (20.6\%) | 64,840 (21.7\%) | -0.03 |
| Other Mediciations - Use of lititum; $\mathrm{n}^{\text {\% }}$ ) | 40 (0.1\%) | $62(0.1 \%)$ | 0.00 | 35 (0.1\%) | 42 (0.1\%) | 0.00 | 1566 (0.1\%) | 176 (0.1\%) | 0.00 | 231 (0.1\%) | $2800.01 \%)$ | 0.00 |
| Other Mediciations Use of Benzos; n (\%) | 4,562 (11.5\%) | 8.618 (11.9\%) | -0.01 | 4,763 (11.4\%) | 5.528(11.2\%) | 0.01 | 20,836 (14.0\%) | 25.436 (14.4\%) | $-0.01$ | 30,161 (13.1\%) | 39,582 (13.3\%) | -0.01 |
| Other Medication Use of CNS stimulants; n (\%) | 118 (0.3\%) | $209(0.3 \%)$ | 0.00 | 218 (0.5\%) | $2510.5 \%)$ | 0.00 | 404(0.3\%) | 585 (0.3\%) | 0.00 | $740(0.3 \%)$ | $1,045(0.4 \%)$ | -0.02 |
| Other Mediciations - Use of opioids; n (\%) | 8,286 (20.9\%) | 14,637 (20.3\%) | 0.01 | 9.023 (21.5\%) | 9,723 (19.6\%) | 0.05 | 37,183 (25.0\%) | $41.507(23.5 \%)$ | 0.04 | 54.492 (23.6\%) | 65.867 (22.1\%) | 0.04 |
| Other Medications - Use of Copplasthma meds; n (\%) | 6,602 (16.7\%) | 13,136 (18.2\%) | -0.04 | $6,715(16.0 \%)$ | ${ }^{8,410}$ (17.0\%) | ${ }^{-0.03}$ | 28.575 (19.2\%) | ${ }^{35,038}$ (19.8\%) | -0.02 | 41,892 (18.2\%) | 56,544(19.0\%) | -0.02 |
| Other Medications - Use of oral coricosteriots, n (\%) | 7,388 (18.7\%) | 14,755 (20.4\%) | -0.04 | 7,541 (18.0\%) | 9,394 (19.0\%) | ${ }^{-0.03}$ | 31,608 (21.2\%) | 38,499 (21.8\%) | -0.01 | 46,537 (20.2\%) | 62,228 (21.0\%) | $-0.02$ |
| Other Medications - Use of Sympatomimeitic agents; n (\%) | 207 (0.5\%) | $292(0.4 \%)$ | 0.01 | 375 (0.9\%) | 426 (0.9\%) | 0.00 | 483 (0.3\%) | 490 (0.3\%) | 0.00 | 1,065 (0.5\%) | 1,208 (0.4\%) | 0.01 |
| Other Medications - Use of bisphosphonates; $n$ (\%) | 1,255(3.2\%) | 2,648(3.7\%) | -0.03 | 768 (1.8\%) | 1,035 (2.1\%) | ${ }^{-0.02}$ | 5,308 (3.6\%) | 6,235(3.5\%) | 0.01 | 7,331 (3.2\%) | 9,9918(3.3\%) | -0.01 |
| Other Medications - Use of thizide; n (\%) | 4,300 (10.9\%) | 8,543(11.8\%) | -0.03 | 4,137 (9.9\%) | 5,433(11.0\%) | -0.04 | 18,800 (12.6\%) | 22,881 (13.0\%) | -0.01 | 27,237(1.8\%) | 36,857 (12.4\%) | $-0.02$ |
| Other Mediciaions - Use of estrogens, progestins, androgens; n (\%) | 1,333 (3.4\%) | 2,276 (3.1\%) | 0.02 | 2,202 (5.3\%) | 2.415 (4.9\%) | 0.02 | 5.873 (3.9\%) | 6,737(3.8\%) | 0.01 | 9,408 (4.1\%) | 11.428 (3.8\%) | 0.02 |
| Healthcare Utilization |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| HU - Occurrence of creatinine tests ordered ; n (\%) | 1,968 (5.0\%) | 3,659 (5.1\%) | 0.00 | 1,800(4.3\%) | 2,056 (4.2\%) | 0.00 | 10,228(6.9\%) | 12,445 (7.0\%) | 0.00 | 13,996 (6.1\%) | 18,160 (6.1\%) | 0.00 |
| HU-Numberof -dimertests order |  |  |  |  |  |  |  |  |  |  |  |  |
| $\cdots$.-.mean (sdian (IQR] | 0.04 (0.21) $0.00[0.00,0.00]$ | 0.04 (0.22) $0.00[0.00,0.00]$ | $\begin{aligned} & 0.00 \\ & 0.00 \end{aligned}$ | 0.04 (0.23) $0.00[0.00,0.00]$ | 0.04 (0.23) <br> 0.00 [0.00, 0.00] | $\begin{aligned} & 0.00 \\ & 0.00 \\ & 0.0 \end{aligned}$ | 0.04 (0.21) 0.00 [0.00, 0.00] | 0.04 (0.21) $0.00[0.00,0.00]$ | $\begin{aligned} & 0.00 \\ & 0.00 \end{aligned}$ | $0.04(0.21)$ $0.00(0.21)$ | $0.04(0.22)$ $0.00(0.22)$ | $\begin{aligned} & 0.00 \\ & 0.00 \\ & 0.0 \end{aligned}$ |
| HU-Number of CRP, high-sensitivity CRP tests |  |  |  |  |  |  |  |  |  |  |  |  |
| ...mean (sd) | 0.07 (0.38) | 0.07 (0.39) | 0.00 | 0.05 (0.29) | 0.05 (0.30) | 0.00 | 0.09 (0.43) | 0.09 (0.42) | 0.00 | 0.08 (0.40) | 0.08 (0.40) | 0.00 |
| ..-median [IQR] | $0.000[0.00,0.00]$ | 0.00 [0.00, 0.00] | 0.00 | 0.000 [0.00, 0.00] | 0.000 [0.00, 0.00] | 0.00 | 0.000 [0.00, 0.00] | $0.000[0.00,0.00]$ | 0.00 | 0.00 (0.40) | 0.00 (0.40) | 0.00 |
| HU-Colonoscopy: n (\%) | 1,530 (3.9\%) | 2.615 (3.6\%) | 0.02 | 1,806(4.3\%) | 2,083(4.2\%) | 0.00 | 6,130(4.1\%) | 6,707 (3.8\%) | 0.02 | 9,466 (4.1\%) | 11,405 (3.8\%) | 0.02 |
| HU-Flu vacine; 0 (\%) | 7,287 (18.4\%) | 12,910 (17.9\%) | 0.01 | 5,148(12.3\%) | 6,004 (12.1\%) | 0.01 | 48,520 (32.6\%) | 58,029 (32.9\%) | -0.01 | 60.955 (26.5\%) | 76,943 (25.8\%) | 0.02 |
| HU-Mammogram; n \%) | ${ }^{3.466(8.8 \%)}$ | 6,563 (9.1\%) | -0.01 | ${ }^{2,525(6.0 \%)}$ | 3,114(6.3\%) | -0.01 | 15.435 (10.4\%) | 18,530 (10.5\%) | 0.00 | 21.426 (9.3\%) | 28,207(9.5\%) | -0.01 |
| HU -PSA test or Prostate exam for DRE; n (\%) | 5.667 (14.3\%) | ${ }^{8,448(11.7 \%)}$ | 0.08 | $5.233(12.5 \%)$ | 5,439 (11.0\%) | 0.05 | 19,077 (12.8\%) | 19,785 (11.2\%) | 0.05 | 29,977 (13.0\%) | 33,672 (11.3\%) | ${ }^{0.05}$ |
| HU-Pap smear, n \%) | 647 (1.6\%) | 1,135 (1.6\%) | 0.00 | 1,022 (2.4\%) | 1,180 (2.4\%) | 0.00 | ${ }^{3,636}$ (2.4\%) | 4,177 (2.4\%) | 0.00 | 5,305(2.3\%) | ${ }_{6}^{6,492}$ (2.2\%) | 0.01 |
| Fraily Score: Empirical version 365 days (ICD-9 and ICD-10) v2 |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| ...median [IQR] | 0.17 [0.14, 0.20] | 0.18 [0.15, 0.22] | -0.17 | 0.16 [0.13, 0.19] | 0.16 [0.14, 0.19] | 0.00 | 0.17 [0.14, 0.21] | 0.18 [0.15,0.22] | -0.02 | 0.17 (0.06) | 0.18 (0.06) | -0.17 |
| CHAD22 score, 180 days |  |  |  |  |  |  |  |  |  |  |  |  |
| ..-mean (sd) | 1.41 (1.24) | 1.53 (1.29) | -0.09 | 1.23 (1.19) | 1.23 (1.24) | 0.00 | 1.37 (1.22) | 1.19 (1.12) | 0.15 | ${ }^{1.35(1.22)}$ | 1.28 (1.18) | ${ }^{0.06}$ |
|  | 1.00 [0.00, 2.00] | 1.00 [1.00, 2.00) | 0.00 | 1.00 [0.00, 2.00] | 1.00 [0.00, 2.00] | 0.00 | 1.00 [1.00, 2.00] | 1.000 [0.00, 2.00] | 0.00 | 1.00 (1.22) | 1.00 (1.18) | 0.00 |
|  | 0.27 (0.54) | 0.36 (0.62) | -0.15 | 0.29 (0.50) | 0.31 (0.51) | -0.04 | 0.37 (0.62) | 0.42 (0.66) | -0.08 | 0.34 (0.59) | 0.39 (0.63) | -0.08 |
| ...median IIQR] | 0.00 [0.00, 0.00$]$ | 0.000 [0.00, 1.00] | 0.00 | $0.000[0.00,1.00]$ | $0.000[0.00,1.00]$ | 0.00 | $0.000[0.00,1.00]$ | $0.0000 .00,1.00]$ | 0.00 | 0.00 (0.59) | 0.00 (0.63) | 0.00 |
| HU- Number of hospital days |  |  |  |  |  |  |  |  |  |  |  |  |
| ...mean (sd) | 1.40 (4.22) | $2.11(5.65)$ | -0.14 | 1.25 (3.19) | 1.47 (3.68) | -0.06 | 1.97 (5.34) | 2.29 (5.31) | $-.06$ | 1.74 (4.83) | 2.11 (5.16) | -0.07 |
| HU-Number of Emergency Department (ED) visis |  |  |  |  |  |  |  |  |  |  |  | 0.00 |
|  |  |  |  |  |  |  |  |  |  |  |  | -0.05 |
| ..median IIQR] | $0.0000 .0001 .00]$ | $0.000[0.00,2.00]$ | 0.00 | $0.000[0.00,0.00]$ | $0.000[0.00,0.00]$ | 0.00 | $0.000[0.00,2.00]$ | $0.000[0.00,2.00]$ | 0.00 | 0.00 (1.74) | 0.00 (1.79) | 0.00 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  | -0.06 |


| .median [IQR] | 5.00 [2.00, 11.00] | 6.00 [2.00, 13.00$]$ | $-.08$ | 4.00 [1.00, 8.00] | 4.00 [1.00, 8.00] | 0.00 | $5.00[2.000,11.00]$ | 5.00 [2.00, 11.00$]$ |  | 4.82 (10.02) | 5.08 (10.70) | -0.03 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| HU - Number of differentdistinct medication prescriptions mean (sd) | 8.27 (4.49) | 8.80 (4.57) | -0.12 | 7.93 (4.40) | 8.28 (4.46) | -0.08 | 8.91 (4.39) | 9.11 (4.38) | -0.05 | 8.62 (4.41) | 8.90 (4.44) | -0.06 |
| ...median [IQR] | 8.00 [5.00, 11.00] | 8.00 [5.00, 11.00] | 0.00 | 7.00 [5.00, 10.00$]$ | 8.00 [5.00, 11.00] | -0.23 | $8.00[6.000,11.00]$ | $8.000[6.00,12.00]$ | 0.00 | 7.82 (4.41) | 8.00 (4.44) | -0.04 |
| HU Total N distinct $\mathrm{CCD9/CD} 10$ diagnoses at the 3rd digit level ...mean (sd) | 8.26 (9.64) | 11.99 (11.61) | $-0.35$ | 4.30 (6.67) | 6.85 (8.07) | -0.34 | 8.17 (9.90) | 11.04 (11.08) | $-0.27$ | 7.48 (9.35) | 10.57 (10.78) | -0.31 |
|  | $\left.{ }^{6} .00000000,12.00\right]$ | $9.0004 .000,17.00]$ | -0.28 | $1.0000000,6.00]$ | $4.00[0.00,10.00]$ | -0.41 | 5.00 [0.00, 13.00] | $9.0001 .00,17.00]$ | -0.38 | 4.44 (9.35) | 8.17 (10.78) | -0.3 |
| HU - Number of Office visits ..mean (sd) | 5.05 (3.75) | 5.15 (3.73) | $-0.03$ | 4.92 (3.80) | 5.05 (3.82) | -0.03 | 12.51 (11.50) | 12.74 (11.81) 10.00 (5.00, | -0.02 | 9.85 (9.51) | 9.63 (9.40) | 0.02 |
|  | 4.00 [2.00, 7.00] | 4.00 [3.00, 7.00] | 0.00 | $4.00[2.00,7.00]$ | 4.00 [2.00, 7.00] | 0.00 | 10.00 [5.00, 16.00] | $17.00]$ | 0.00 | 7.88 (9.51) | 7.55 (9.40) | 0.0 |
| HU- - Number of Cardiologist visits (sot) | 4.26 (5.03) | 4.91 (5.46) | -0.12 | 3.11 (4.31) | 3.40 (4.50) | -0.07 | 5.06 (6.08) | 5.35 (6.10) | -0.05 | 4.57 (5.62) | 4.92 (5.71) | -0.06 |
| ..median [IQR] | 3.00 [1.00, 6.00] | 3.00 [1.00, 7.00] | 0.00 | $2.0000 .00,4.00]$ | 2.00 [0.00, 5.00] | 0.00 | 3.00 [1.00, 7.00] | 4.00 [1.00, 7.00] | -0.16 | 2.82 (5.62) | 3.43 (5.71) | -0.11 |
| HU- Number flectrocardiograms |  |  |  |  |  |  |  |  |  |  |  |  |
| $\cdots$ | 2.14 (2.29) <br> 2.00 [1.00, 3.00] | 2.34 (2.41) <br> 2.00 [1.00, 3.00] | $\begin{aligned} & -0.09 \\ & 0.00 \\ & 0.09 \end{aligned}$ | $\begin{aligned} & 1.92(1.99) \\ & 1.00[1.00,3.00] \end{aligned}$ | $2.03(2.01)$ 2.0011 .00 .3 .001 | -0.05 -0.50 | 2.27 (2.06) <br> 2.00 [1.00, 3.00] | $2.44(2.15)$ $2.00[1.00,3.00]$ | -0.08 0.00 | 2.18 (2.09) 1.82 (2.9) | $\begin{aligned} & 2.35(2.19) \\ & 2.00(2.19) \end{aligned}$ | -0.08 <br> -0.08 |
| HU- Number of echocardiograms |  |  |  |  |  |  |  |  |  |  |  |  |
| $\cdots \mathrm{mean}(\mathrm{sd})$ | 1.15 (3.20) | $1.25(3.37)$ | -0.03 | $0.86{ }^{1.355)}$ | ${ }^{0.96 ¢^{(1.43)}} 1$ | $\stackrel{-0.07}{ }$ | ${ }^{0.900}{ }^{(1.24)}$ | $1.01(1.28)$ 1.001200 | -0.09 0.00 | $0.94(1.76)$ $0.65(176)$ | $1.06(2.01)$ 1000 (201) | ${ }^{-0.06}$ |
|  | 0.00 [0.00, 1.00] | $1.0000 .00,1.00]$ | -0.30 | $0.00[0.0001 .00]$ | 1.00 [0.00, 1.00] | -0.72 | 1.00 [0.00, 1.00] | 1.00 [0.00, 2.00] | 0.00 | 0.65 (1.76) | 1.00 (2.01) | -0.19 |
| ...mean (sd) | 0.32 (1.70) | 0.42 (1.85) | $-0.06$ | 0.18 (1.09) | 0.21 (1.16) | ${ }^{-0.03}$ | 0.36 (1.82) | 0.44 (1.86) | -0.04 | 0.32 (1.69) | 0.40 (1.76) | $-0.05$ |
| ..median [IQR] | $\left.{ }^{0.000} 10.0000 .0000\right]$ | ${ }^{0.000}(1.000$ 0.00] | 0.00 | ${ }^{0.000[0.000 ~ 0.00] ~}$ | $\left.{ }^{0.000} 10.000 .0 .00\right]$ | 0.00 | ${ }_{0}^{0.000}(0.000$ 0.00] |  | 0.00 0.01 | $0.00(1.69)$ $7.350(32 \%)$ | $0.00(1.76)$ $8.0909(30 \%)$ | 0.00 0.04 |
| HU - Fecal occult blood (FOB) test; $n$ (\%) <br> HU - Number of PT or aPTTt tests | 1,505 (3.8\%) | 2,236 (3.1\%) | 0.04 | 1.223 (2.9\%) | 1,327 (2.7\%) | 0.01 | 4,622 (3.1\%) | 5,346 (3.0\%) | 0.01 | 7,350 (3.2\%) | 8,909 (3.0\%) | 0.04 |
| ...mean (sd) | 0.41 (1.20) | 0.40 (1.14) | 0.01 | 0.39 (1.13) | 0.37 (1.10) | 0.02 | 0.34 (1.08) | 0.33 (0.99) | 0.01 | 0.36 (1.11) | 0.35 (1.05) | 0.01 |
|  | 0.00 [0.00, 0.00] | $0.000[0.00,0.00]$ | 0.00 | $0.000[0.00,0.00]$ | 0.00 [0.00, 0.00] | 0.00 | $0.000[0.00,0.00]$ | 0.00 [0.00, 0.00] | 0.00 | 0.00 (1.11) | 0.00 (1.05) | 0.00 |
| ...mean (sd) | 1,873.87 (1,373.15) | 1,997.86 (1,480.21) | -0.09 | $\begin{aligned} & 2,369.06 \\ & (1,488.04) \\ & 2,168.00 \end{aligned}$ | 2,555.93 (1,598.77) | -0.12 | 767.20 (508.76) | 789.93 (494.30) | -0.05 | 1248.74 (945.52) | 1375.59 (1048.5 |  |
| median [IQR] | 1,493.00 [717.00, 2,895.00] | $1,564.00$ [756.00, $3,051.00]$ | -0.05 | [1,048.00, 3,668.75] | $2,395.00[1,138.00$, $3,906.00]$ | -0.15 | 615.00 [465.00, 863.00] | 658.00 [497.00, $909.00]$ | -0.09 | 1048.37 (945.52) | 1165.71 (1048.5 |  |
| Socioeconomic Status Proxy Variables |  |  |  |  |  |  |  |  |  |  |  |  |
| SES - Mean Copay for per prescripition cost (charges in U.S. $\$$ ) -mean (sd) | 21.67 (29.08) | 20.24 (27.51) | 0.05 | 15.18 (20.95) <br> 10.21 (4.18, | 14.15 (20.04) | 0.05 | 115.27 (137.49) <br> 90.00 [63.00, | ${ }_{90}^{11.72([64.26,}$ | 0.01 | 80.98 (111.55) | 74.59 (88.74) | 0.06 |
| ...median [IOR] | ${ }^{14.146[6.000, ~ 27.52]}$ | $12.92[5.39,25.50]$ | 0.04 | ${ }^{19.95]}$ | ${ }^{9.688[3.97, ~ 18.31] ~}$ | ${ }^{0.03}$ |  | 131.13] | ${ }^{-0.01}$ | ${ }^{62.46(111.55)}$ | ${ }^{58.433(88.74)}$ | 0.04 |
| ...Missing; $n$ (\%) <br> SES - Copay: pharmacy cost | 1,788(4.5\%) | 2,434 (3.4\%) | 0.06 | 3,963 (9.5\%) | 6,979 (14.1\%) | -0.14 | 3,567 (2.4\%) | 3,282 (1.9\%) | 0.03 | 9,316 (4.0\%) | 12,695 (4.3\%) | -0.02 |
| ...mean (sd) | 203.92 (310.68) 105.00 (30.00, | 201.17 (313.71) 101.10 [30.00, | 0.01 | $\begin{aligned} & 129.33(193.24) \\ & 66.00[6.12 . \end{aligned}$ | 119.00 (205.46) | 0.05 | 159.63 (302.48) 51.43 [0.00, | 210.89 (354.92) 97.00 (18.07. | -0.16 | 161.72 (287.23) | 193.29 (324.65) | -0.10 |
| ...median [IQR] <br> SES - Business type: Commercial vs Medicare | 267.78] | 257.34] | 0.01 | 173.54] | $55.32[0.00,155.54]$ | . 05 | 194.68] | ${ }^{264.50]}$ | -0.14 | 63.28 (287.23) | 91.08 (324.65) | 0.09 |
| ...Commerical; n \%) | 10,520 (26.6\%) | 12.610 (17.5\%) | 0.22 | 20,919 (49.9\%) | 22,834 (46.1\%) | 0.08 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 31,439 (13.6\%) | 35,444 (11.9\%) | 0.05 |
| ...Medicare, $\mathrm{n}^{\text {(\%) }}$ | 29.054 (73.4\%) | 59,651 (82.5\%) | -0.22 | 21.013 (50.1\%) | 26,669 (5.9\%\%) | ${ }^{-0.08}$ | 0 00.0\%) | 0 (0.0\%) | 0.00 | 50,007 (21.7\%) | ${ }^{86,320}(28.9 \%)$ | -0.17 |
| SES - Low income indicatorn n (\%) | 4,702(11.9\%) | 9,719 (13.4\%) | $-0.05$ | $\left.{ }^{0} 0.00 \%\right)$ | 0 00.0\%) | 0.00 | 0 (0.0\%) | 0 (0.0\%) | 0.00 0.00 | 4,702 (2.0\%) | 9,719 (3.3\%) | -0.08 |
|  | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 29,285 (69.8\%) | 30,344(61.3\%) | 0.18 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 29,285 (12.7\%) | 30,344(10.2\%) |  |
| ...Rura; ( \%) | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 2,577 (6.1\%) | 5,127(10.4\%) | -0.16 | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 2.571 (1.1\%) | 5,127 (1.7\%) | -0.05 |
| ..UnknownMMissing: n (\%) | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 10,076 (24.0\%) | 14,032 (28.3\%) | $-0.10$ | 0 00.0\%) | 0 (0.0\%) | 0.00 | 10,076 (4.4\%) | 14,032 (4.7\%) | -0.01 |
| SES. Dual Staus; $n$ (\%) | 0 (0.0\%) | 0 (0.0\%) | 0.00 | 0 00.0\%) | 0 00.0\%) | 0.00 | 24,143 (16.2\%) | $25,715(14.6 \%)$ | 0.04 | 24,143 (10.5\%) | $25,715(8.6 \%)$ | 0.06 |
|  | 8.27 (4.49) | 8.80 (4.57) | -0.12 | 7.93 (4.40) | 8.28 (4.46) | -0.08 | 8.91 (4.39) | 9.11 (4.38) | -0.05 | 8.62 (4.41) | 8.90 (4.44) | -0.06 |
| ...median [IQR] <br> SES - Brand name prescription - unique value | 8.00 [5.00, 11.00] | 8.00 [5.00, 11.00] | -0.18 | 7.00 [5.00, 10.00$]$ | 8.00 [5.00, 11.00] | -0.23 | $8.00[6.00,11.00]$ | 8.00 [6.00, 12.00] |  | 7.82 (4.41) | 8.00 (4.44) | -0.04 |
| ...mean (sd) | 8.35 (4.58) | 8.89 (4.66) | -0.12 | 8.04 (4.50) | 8.39 (4.55) | -0.08 | 9.02 (4.48) | 9.22 (4.47) | -0.04 | 8.73 (4.50) | 9.00 (4.53) | -0.06 |
| ...median [IQR] | 8.00 [5.00, 11.00] | 8.00 [6.00, 11.00$]$ | 0.00 | 7.00 [5.0, 10.00$]$ | 8.00 [5.00, 11.00] | -0.22 | $8.00[6.00,11.00)$ | $9.00[6.00,12.00]$ | -0.22 | 7.82 (4.50) | 8.59 (4.53) | -0.17 |



| ${ }_{\text {Procedurs }}^{\text {Proceure-Hip Surger; } \mathrm{n} \text { (\%) }}$ | 198 (0.6\%) | $209(0.6 \%)$ | 0 | 22(0.3\%) | 16 (0.4\%) | 0.01693335 | 607 (0.5\%) | 400 (0.5\%) | 0 | 70.0.\%) | 5(0.5\%) | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $72(0.2 \%)$ | $77(0.2 \%)$ | 0 | 74402\%) | $75(0.2 \%)$ |  | $3450.03 \%)$ | ${ }^{347}(0.3 \%)$ |  | 491 (0.3\%) | $499\left(0.33^{*}\right)$ |  |
| DMMedicisions -Alsis n (\%) | $2000.100)$ | $\left.{ }^{24} 40.018\right)$ |  | $1400.008)$ | $17(0.129)$ | $-0.044743737$ | $94(0.1096)$ | $95(0.190)$ |  | ${ }^{128(00.19 \%)}$ | 136(0.19\%) |  |
|  |  | ${ }_{\text {l }}^{1}$ | ${ }_{-0.009810761}$ |  |  |  |  | ${ }_{1}^{4,2098(13,4 \%)}$ | 005479185 |  |  | ${ }_{0}^{0.0052683632}$ |
| DMM Mediciations -1 stand 2 2nd eneneation SUs; n (\%) | $2: 1781(2629)$ | $2.081(16.10)^{(0)}$ | 0.004162423 | $1.622(52 \%)$ | 1.634(5.38) | -0.0044836 |  | $7.5899(6.4 \%)$ | .00410072 | 11,282( (6.19) | 11.304 (6.196) |  |
|  | ${ }^{880} 0$ (25\%) | $88882.28 \%)$ | $-0.008343679$ |  | $9799(3.276)$ |  | ${ }_{3}^{3,422(298 \%)}$ | ${ }^{3} \mathbf{3}, 455$ (29\%) |  | $5.2800^{(2,9 \%)}$ | $5.3272(2,9 \%)$ |  |
|  | ${ }_{317}^{345(10.95 \%)}$ | ( ${ }^{3479(10.09 \%)}$ | $\bigcirc$ | $\underbrace{452(1.35 \%)}_{388}$ | ${ }_{384}^{454(1.25 \%)}$ | ${ }_{0} 0.00900$ |  | (174 (0.06) | ${ }^{0.012444223}$ | ${ }_{\text {l }}$ |  | $\bigcirc$ |
| DMMediciations - Metiommin in (\%) | 4.637 (13.8\%) | 4.625 (136\%) | 0 | 397212128\% | ${ }_{3,996(12.9 \%)}$ | -0.002988238 | 15.077 (126\%) | $15.014(126 \%)$ |  | ${ }^{23,262612888^{(12)}}$ | 23.635 (128\%) |  |
|  | 4,700 (122\%) | 4.141 (12.2\%) | 0 | 4,177 (13.5\%) | 4,205 (13.3\%) | ${ }^{0.002921785}$ | 15.933 (13.4\%) | 15.588 (13.3\%) | 0.002940 | 24,280 (132\%) | $24,234(132 \%)$ |  |
| Othere Mediciaions USse ofother hypertension duys; 0 (\%) | ${ }^{2} 2584$ (6.6\%) | 2.224 (6.5\%) | 4041947 | 1,6688(54\%) | 1,691 (5.5\%) | -0.004402265 | 8.8855 (7.5\%) | ${ }_{8} 8.941(7.5 \%)$ |  | ${ }^{12,8807}$ | 12,853 (7.0\%) |  |
|  |  |  | $\bigcirc$ |  | (2,078 | ${ }_{0}^{0.002516669}$ |  |  | 0.00267177 |  |  | ${ }_{0}^{0.0 .0036666247178}$ |
| Other Mediciaions - Use of intipsycholics: $\mathrm{C} \%$ (\%) | 632 (1.9\%) | $603(1.8 \%)$ | 0.007421163 | $409\left(1.33^{\circ}\right)$ | $407(1.3 \%)$ |  | 3,208 (2.55\%) | 3,074 (26\%) | -0.0068343679 | 4,069 (22\%) | 4,084 (22\%) |  |
|  | ${ }^{1.0938(32 \%)}$ | ${ }^{1.099}$ (132\%) | 0 | ${ }^{625}(2.20 \%)$ | $6342(21 \%)$ | -0.007057056 |  | ${ }_{5} 5.287$ (4.4\%) | $\bigcirc$ | ${ }^{6} .9 .977(388 \%)$ | $6.992(3.8 \%)$ | 0 |
|  |  |  | : |  |  | ${ }_{-0.0004331176}$ |  |  |  |  |  | : |
|  | ${ }^{3,799}$ (11.15) | ${ }^{3,820}(112 \%)$ | .003177126 | ${ }_{2} 2.559(8389 \%)$ |  | 0.003634718 | ${ }^{13,8855(11.6 \%)}$ | ${ }^{13,931}$ | $-0.003116982$ | 20.225 (11.0\%) | 20.7275 | 0 |
|  | ${ }^{6} 8.889(202.28)$ | ${ }^{6} 8.906$ (203.3\%) | $-0.002488413$ | ${ }_{5}^{5} 5.413$ (17.5\%) | ${ }_{5}^{5,378}$ (17.4\%) | 0.00263479 | ${ }^{26,364}$ (22.1\%) | ${ }^{26,349}$ (22, $\left.2.1 \%\right)$ |  | ${ }^{38,668(2109}$ |  |  |
|  |  | ${ }_{4}^{4.0188(11.8 \%)}$ | ${ }_{-0.006222413}$ |  |  | $\bigcirc$ |  |  | - |  |  | ${ }^{-0.002959053}$ |
| Other Mediciation- Useof (CNs simuluansin (\%) | $103030.38)$ | 1060 (03\%) | $\bigcirc$ | 1660.0 .550 | $172(10.089)$ | -0.013521541 | ${ }^{357}(0.35 \%)$ | 360 | 0 | $6220(0.35)$ | $6388(0.35)$ |  |
| - |  |  | ${ }_{-0.002665298}$ | comen |  |  | ${ }_{22,985}^{20.924}$ |  | ${ }^{0.002536376}$ | 33,753 (18.3\%) |  |  |
|  |  | ${ }^{6}$ 6,450 (18.9\%) | ${ }^{0.005508144}$ |  |  | ${ }^{-0.007750476}$ |  |  |  |  |  |  |
|  | 1,107 (32\%) | ${ }^{1,123} 3(3,3 \%)$ | ${ }^{-0.005639422}$ | 588 (1.9\%) | $568\left(1.866^{6}\right)$ | 0.007421163 | 4,155 (1.5\%) | $4.0968(3.48)$ | 0.005479185 | ${ }_{5} 58.845(32 \%)$ | 5.7878 | 0.005725279 |
|  |  |  | - 0.0 .003989875 |  | ${ }^{3} 1.560$ (10.0.0\%) | 0.003297019 |  |  | : |  |  | $\bigcirc$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1.687 (4.49\%) | ${ }^{\text {1,6,69 (4.4.8) }}$ | 0 | ${ }_{1,31212(42 \%)}$ | ${ }_{1} 1,307(4.28 \%)$ | $\bigcirc$ | ${ }_{8,63}^{4,6,96 \%)}$ | ${ }_{8,199}^{4.9 .9 \%)}$ | $0_{0}^{0.005013955}$ | ${ }^{11,1,48}(6,1 \%)$ | ${ }_{7} 7,909(4.35)$ | 0.081137899 |
|  | ${ }^{0.040 .027)}$ | 0.0.00020 | $\bigcirc$ | ${ }^{0.0040 .24)}$ | 0.04(0.23) | $\bigcirc$ | 0.04(0.21) | 0.0.040.21) | $\bigcirc$ | 0.04(0.22) | 0.040 (0.21) | $\bigcirc$ |
|  |  |  |  | 0.000 [0.00, 0.00] | $0.000[0.000,0.00]$ |  | $0.000[0.000,0.00]$ | $0.00010 .000,000]$ |  |  |  |  |
| $\cdots$ | ${ }^{0.0 .0700 .0 .09)} 0$ | ${ }^{0.0 .070 .0 .00)} 0$ | $\bigcirc$ | ${ }^{0.0050 .08)} 0$ | ${ }^{0.0 .050 .029)}{ }_{0}^{0.000000 .0 .001}$ | : | ${ }^{0.00900 .43)} 0$ | ${ }^{0.00900 .0 .42)} 0$ | 0 | (0.08 0.0 .68$)$ | ${ }^{0.008(0.40)}$ | \% |
| HU Colonossopy: n \%) | ${ }^{1,320013.95 \%)}$ | ${ }^{1,259990.78 \%)}$ | 0.01046006 | ${ }^{1,3368(4,380)}$ |  | ${ }^{-0.004992461}$ | $4.8088 .408 \%)$ | $4.900(4.1090)$ | -0.005072843 | 7.4664 .4 .189 | $7.50554 .1880)$ | 0 |
| HU- Fiumamocine, (\%)(\%) |  |  | ${ }_{0}^{0} 0.003520876$ |  |  |  |  |  | $\bigcirc$ |  |  | : |
| Hu-PsA esestor Prostatie | ${ }_{4}^{4.669(137.7 \%)}$ | ${ }_{4}^{4} 7006$ (1388\%) | ${ }^{-0.00202038889}$ | ${ }^{3,774}$ (122\%) | (3,742 (12.18) | 0.0030060846 | -14,54 (1248) | ${ }^{14.8215}$ (124*) | 0 | 23,1977(126\%\%) | ${ }^{23,2638(126.6 \%)}$ | 0 |
| Hu-Papsuer: |  |  | 0.008095242 |  |  | ${ }^{-0.003152559}$ |  |  | $\bigcirc$ | ${ }_{41,56}^{4.12(1228 \% \%)}$ | ${ }_{4}^{41,54} 4$ | : |
| $\ldots$ | 0.18 (0.06) | 0.18 (0.06) | 0 | 0.17 (0.05) | 0.17 (0.05) | 0 | 0.19 (0.06) |  | 0 | 0.18 (0.06) |  | 0 |
|  | $0.170^{0.14,0.20]}$ | $0.17{ }^{\text {P }}$ (0.4, 0.21] | 0 | 0.16 [0.14, 0.19$]$ | $0.160^{(0.14, ~ 0.19]}$ | 0 | $0.17{ }^{\text {P }}$ [0.4, 0.21$]$ | $0.17{ }^{\text {a }}$ (0.14, 0211 | 0 | 0.17 (0.06) | $0.17(0.06)$ | 0 |
| $\ldots$ mear (s) | $1.388^{(1,24)}$ | $1.37(1.24)$ | $0^{0.008065516}$ | $1.19{ }^{(1.21)}$ | $1.19{ }^{(1.20)}$ | 0 | $1.24(1.18)$ | $1.25(1.18)$ | -0.08 | 1.26 (1.20) | 1.26 (1.19) | 0 |
|  | $1.0000 .000,2001$ | 1.000 (10.0, 2.00] | 0 | 1.0000.00, 200] | 1.00 (10.00, 200] | 0 | 1.00 (0.00, 200] | 1.000 (10.0, 2.00$]$ | 0 | 1.00 (1.20) | 1.00 (1.19) | 0 |
| $\cdots$ | $\left.{ }^{0} 0.270 .0 .55\right)$ | $\left.{ }^{0} 0.260 .0 .52\right)$ | ${ }_{0}^{0.018888246}$ | ${ }_{\substack{0}}^{0.28(.50)}$ | $0.28(0.49)$ 0.00000 0.0001 | $\bigcirc$ | ${ }^{0.37(0.63)}$ |  | 0 | 0.3.34.0.0) | (0.33 (0.58) | ${ }_{0}^{0.0169}$ |
| Hu-Mumber othospplad days |  |  |  |  |  |  |  |  |  |  |  |  |
| $\cdots$ | ${ }^{1.4 .44 .4 .8)} 0$ | ${ }^{1.4 .41(4.3)} 0$ | 0.006880662 | 1.26 (3.31) <br> $0.00[0.00,1.00$ $\qquad$ | $1.266^{13.39)}$ $0.000(0.00,1.00]$ | : | 1.98 (5.21) <br> 0.00 [0.00, 3.00] | 1.98 (5.14) <br> $0.00[0.00,3.00]$ | \% | $\begin{aligned} & 1.76(4,79) \\ & 0.00(4,7) \end{aligned}$ | $1.75(4.74)$ $0.00(4.74)$ | ${ }_{0}^{0.002}$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| -mmenisor | $0.9(1.90)$ $0.00000,1.09$ | ${ }^{0.099(1.42)} 0$ | $\bigcirc$ | ${ }^{0.600(2.29]} 0$ | . $0.0002(2.9)$ 0.000000 .000 | : | ${ }^{0} 0.98(1.60)$ | $0.98(1.50)$ <br> $0.00000,200]$ <br> 0.0 | \% | $0.88(2.55)$ 0.00 (2.95) | $0.88(1.99)$ $0.00(1.69)$ | \% |
| -mmen ssd | ${ }^{9.030} \mathbf{( 1 2 . 3 1 )}$ | ${ }_{8}^{8.977(12.19)}$ | 0.0048979 | ${ }_{6}^{6.280923)}$ | ${ }^{6.349 .957)}$ | ${ }^{0.000681935}$ | ${ }_{7}^{78890.988)}$ | ${ }_{7}^{7.866 .933)}$ | 0.002882 | ${ }^{7} 782(16.98)$ | ${ }_{7}^{781}(10.14)$ | ${ }^{0.000715071}$ |
|  | 5.00 [2.00, 12.00] | 5.0002 .20011 .001 |  | $4.0011 .00,8.00]$ | $4.0001 .00,8.00]$ |  | $5.0002 .200,11.001$ | 5.00 [2.00, 11.00] 0 |  | 4.83 (16.98) | 4.83 (10.14) |  |
| $\cdots$ |  |  | $\bigcirc$ | ${ }^{8.001(4.42)}$ (5.0. 10.001 |  | ${ }_{0}^{-0.004540269}$ |  |  | 0.00285 |  | ${ }_{7}^{8.87(4.39)}$ | : |
| Hu--umberiofificev vils |  |  |  |  |  |  |  |  |  |  |  |  |
| ${ }^{\text {.mean (s) }}$-meation Iorl |  |  | $0^{-0.00539787}$ |  | ${ }_{4.00}^{4.95(3,73)}{ }^{4.00,7.09}$ | : |  | ${ }^{12.47(11.44)}{ }_{10.000}^{1500,} 16.00 \mid$ | 0.00773311 |  | ${ }^{9.884} 7 \times(9.46)$ |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| -medion IIRR | ${ }_{3}^{4.000}(1.00,6.00]$ | $\left.{ }^{4.000} 1.000,6.00\right)$ | -0.01261357 | ${ }^{2} 2.00$ (0.00, 5.00] | $2.00{ }^{\text {a }}$ | -0.022 | ${ }^{5.000}(1.00,7.001$ | ${ }_{\substack{5.000 \\ 3.00 .1500,7.00]}}$ |  | ${ }_{2.83}^{4.9 .67)}$ | ${ }^{4.880}(5.530)$ | ${ }^{-0.0008877436}$ |
| ...nean (sid) | 2.15 (2.34) | 2.14 (2.4) | 0.004459844 | 1.97 (2.07) | 1.98 (1.94) | -0.009894912 | 2.29 (2.09) | 2.29 (2.2) | 0 | 2.21 (3.59) | 2.21 (2.03) | 0 |
| Hu-Mudinberifechocaraliograms | $2.0011 .00,3.00$ | $2.00{ }^{11.00, ~ 3.001}$ | 0 | $1.0001 .100,3.00]$ | 1.00 (1.00, 3.00) | 0 | 2.001 1.00, 3.00] | $2.00{ }^{1+1.00, ~ 3.001}$ | 0 | 1.83 (3.59) | 1.83 (2.03) | 0 |
| ..mean (ssd) | ${ }^{1.10(3) .38)}$ | 1.09 (2.86) | 0.00336496 | ${ }^{0.890} 1(1.40)$ | ${ }^{0.000(1.34)}$ | ${ }^{-0.007297521}$ | ${ }^{0.92(1.26)}$ | 0.92 ${ }^{(1.20)}$ | 0 | ${ }^{0.95(297)}$ | $0.95(1.66)$ | $\bigcirc$ |
| Hu-Mumberorinuurologis visis |  |  |  |  |  |  |  |  |  |  |  |  |
| ...menealsid (s) | ${ }_{0}^{0.3500}(1.74)$ |  |  | ${ }^{0.909(1.06)} 0$ | ${ }^{0.00000000, ~(1.5), ~ .00] ~}$ |  | ${ }^{0.370000000,0.00]}$ | ${ }^{0}$ |  | ${ }^{0.303(2.266)}$ | ${ }^{0.30} 00(1.52)$ |  |
|  | 1.205 (3,5\%) | ${ }^{1,1922(355 \%)}$ | -0.2652667 | $881(2.29 \%)$ | ${ }^{873} 3(288 \%)$ | ${ }^{0.006009774}$ | ${ }^{3.0033(30 \%)}$ | 3.648 (3.15) | -0.00581579 | 5,699 (3,1\%) | $5.7813(3.17 \%)$ | 0.030052126 |
| $\cdots \mathrm{mea}$ (ss) ${ }^{\text {a }}$ |  |  | ${ }^{-0.008729}$ |  |  | -0.008803656 |  |  | 0 |  |  | 0 |
|  | 0.000 (0.00, 0.00) | 0.000 (0.00, 0.00) | 0 | $0.00000000,0.001$ | 0.000 (0.00, 0.00) | $\bigcirc$ | $0.00000000,0.001$ | $0.00000000,0.001$ | 。 | 0.00 (1.76) | 0.00 (1.10) | 0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\cdots$ | ${ }_{13,65[5[7.74,26.67]}^{21.77}$ |  | ${ }^{-0.004435198} 0$ |  |  | ${ }_{0}^{0.00019337734}$ |  | ${ }^{\text {a }}$ | ${ }^{0.0006811361}$ |  |  | ${ }_{0}^{0.0001977705}$ |
|  | ${ }_{1,440}(4.2 \%)$ | $\left.{ }_{1} 1.4154 .42 \%\right)$ |  | ${ }_{3,265(10.505 \%)}$ | 3.25 (10.4\%) | 0.00326896 |  | $2.654(2.276)$ | 0 | 7,311 (4.005) | 7,294 (4,0\%) |  |
| ..mean (sd) | ${ }^{200.4 .4308 .17)}$ | $202343820.10)$ | ${ }^{-0.006142788}$ | ${ }^{123.97}$ (196.24) | ${ }^{123.88(197.22)}$ | .004774097 | ${ }^{1888.85(3237.76)}$ | 35 | 0.0015 | ${ }_{7}^{178.80}(5150.13)$ | 17943(31740) | ${ }^{-0.0014882917}$ |
|  | $101.98129 .10,261.82$ | 101.76 [29.70, 260.02$]$ |  | ${ }^{60.00} 1.51 .516162 .30$ | 165.0] |  | 78.74 [9.00, 234.35$]$ | $75.0015 .00,231.62$ |  | 79.89 (510.13) |  |  |
| -.comeneicial (\%) |  |  | $\bigcirc$ |  | (15.482(50.19\%) | 0.0.0800008 0.0080008 |  | ${ }_{0}^{0}$ | : |  |  | 0 |
| SESS.Lowin iome indicalor n (\%) | 4,200 (1248) | 4.250 (12.5\%) | -0.00302982 | $0(0.0 \% \%)$ | $0(0.0 \%)$ | $\bigcirc$ | 0 (0.0\%) | 0 (10.0\%) | 0 | 4.230 (230\%) | $4.250\left(2.33^{3}\right)$ | 。 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| ...fural: n (6) | $\left.{ }_{0} 0.0 .00 \%\right)$ |  | 0 | ${ }_{2,5959}^{20,363 \%)}$ |  | ${ }_{0}^{-0.00368687718}$ | $\left.{ }_{0}^{0} 0.00 \%\right)$ | ${ }_{0}^{0} 0$ | : | ${ }_{2,599}^{20.459(114.40)}$ |  |  |
|  |  | ${ }^{0}$ |  |  |  | ${ }_{0}^{0.00459457}$ |  |  | 0 |  |  | -0.00957212 |
| SES. - emeneicionmeperescripion -unique value |  |  |  |  |  |  |  |  |  |  |  |  |
| $\cdots$ | $\left.{ }_{8}^{8.306(45.500)} 811.00\right]$ |  | 0 |  |  |  | ${ }_{8}^{8.9390} 8(4.380,0.11 .00]$ | ${ }_{8}^{8.9200(10.30, ~} 11.0010$ |  | $8.87(7,42)$ <br> $7.83(7,4)$ | ${ }_{8}^{8.878(4.39)}$ | : |
|  | $8.45(4.59)$ | 8.45 (4.56) | 0 | .12 14.527 | 8.14(4.49) | ${ }^{0.004439887}$ | ${ }^{9.03(4.47)}$ | ${ }^{9.038(46)}$ | 0 | ${ }^{8.777 .58)}$ | ${ }^{8.77(48)}$ | - |
|  | (4.9) |  |  |  |  |  |  |  |  | (1. | 8.7(4.48) |  |



The c-statistics for the propensity score model, pre-matching was 0.687 . The post-matching c -statistic was 0.514


The c-statistics for the propensity score model, pre-matching was 0.707 . The post-matching c-statistic was 0.513


The c-statistics for the propensity score model, pre-matching was 0.668 . The post-matching c-statistic was 0.506

