Replication of the DAPA-CKD (Chronic Kidney Disease) Trial in Healthcare Claims Data

DUPLICATE DAPA-CKD

September 14, 2021

NCT04882813

1. RCT Details

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

1.1 Title

Dapagliflozin in Patients with Chronic Kidney Disease (DAPA-CKD trial)

1.2 Intended aim(s)

The objective of the study is to assess the long-term efficacy and safety of dapagliflozin, a sodium-glucose cotransporter 2 (SGLT2) inhibitor in patients with chronic kidney disease, with or without type 2 diabetes

1.3 Primary endpoint for replication and RCT finding

Composite of a sustained decline in the estimated glomerular filtration rate (GFR) of at least 50%, end-stage kidney disease, or death from renal or cardiovascular causes.

1.4 Required power for primary endpoint and noninferiority margin (if applicable)

With the recruitment of at least 4000 patients, the trial will have 90% power to detect a relative risk reduction of 22% in the primary endpoint based on primary events being observed in 681 patients and a two-sided P-value of 0.05.

1.5 Trial estimate

HR = 0.64 (95% CI 0.52–0.79) comparing dapagliflozin to placebo among patients with Type 2 DM and HR = 0.61 (95% CI 0.51-0.75) among patients with and without Type 2 DM (Heerspink et al., 2020, NEJM)

2. Person responsible for implementation of replication in Aetion

Helen Tesfaye, Pharm.D, ScM implemented the study design in the Aetion Evidence Platform. She is not responsible for the validity of design and analytic choices. All implementation steps are recorded, and implementation history is archived in the platform.

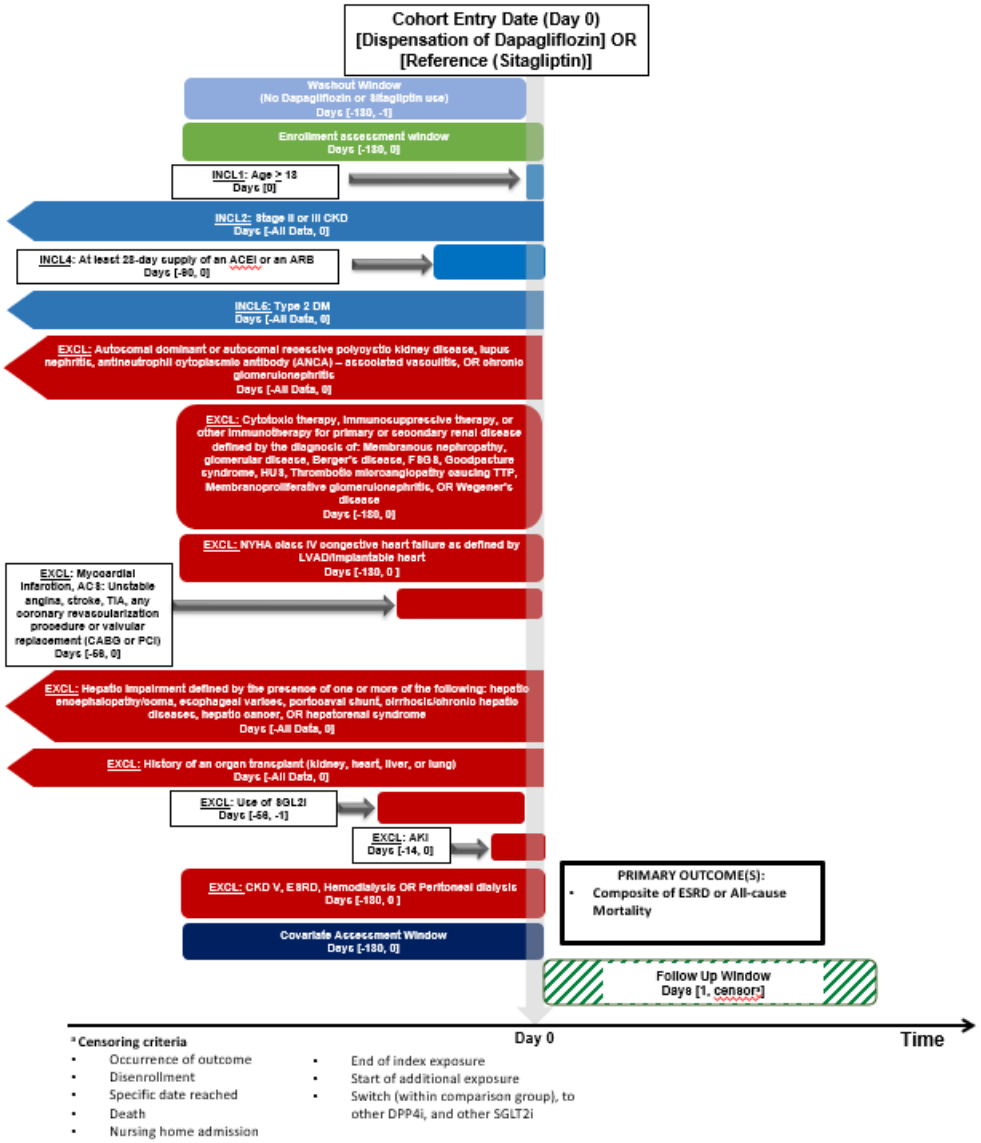
3. Data Source(s)

Optum Cliniformatics Data Mart, IBM MarketScan, Medicare

4. Study Design Diagram

The study design diagram visualizes key aspects of the longitudinal study design for expediated review.

Design Diagram – DAPA-CKD TRIAL REPLICATION



5. Cohort Identification

5.1 Cohort Summary

This study will involve a new user, parallel group retrospective cohort study design comparing dapagliflozin to sitagliptin. Although the trial compared dapagliflozin to placebo, for the current emulation we used an active comparator, sitagliptin, which is a dipeptidyl peptidase-4 (DPP-4) inhibitor. This is because both dapagliflozin and sitagliptin are guideline recommended as second to third line therapies used for the treatment of type 2 diabetes at the same stage of the disease and sitagliptin is not expected to have an effect on the primary outcome.

The patients will be required to have continuous enrollment during baseline period of 180 days before initiation of dapagliflozin or sitagliptin (cohort entry).

5.2 Important steps for cohort formation

New users (defined as no use in 180 days prior to index date) of an exposure, dapagliflozin and a comparator, sitagliptin, will be identified.

5.2.1 Eligible cohort entry date

Dapagliflozin was approved by FDA for market availability on January 8, 2014.

- Optum: January 8, 2014 – March 31, 2020 (end of data availability)
- Marketscan: January 8, 2014 – December 31, 2018 (end of data availability)
- Medicare: January 8, 2014 – December 31, 2017 (end of data availability)

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 A** and are summarized in the flowcharts below.

5.3 Flowchart of the study cohort assembly

	Optum		Marketscan		Medicare	
	Less Excluded Patients	**Remaining Patients**	**Less Excluded Patients**	**Remaining Patients**	**Less Excluded Patients**	**Remaining Patients**
All patients		78,202,636		200,203,908		23,466,175
Did not meet cohort entry criteria	-77,797,182	405,454	-199,563,302	640,606	-22,268,953	1,197,222
Excluded due to insufficient enrollment	-66,483	338,971	-58,936	581,670	-333,159	864,063
Excluded due to prior use of referent	-245,915	93,056	-397,135	184,535	-679,548	184,515
Excluded due to prior use of exposure	-21,695	71,361	-95,936	88,599	-27,223	157,292
Excluded because patient qualified in >1 exposure category	-36	71,325	-346	88,253	-108	157,184
Excluded based on Age	0	71,325	0	88,253	-28	157,156
Excluded based on Gender	-7	71,318	0	88,253	0	157,156
Excluded based on Inclusion #1 - Age ≥ 18 years or older	-7	71,311	-54	88,199	-692	156,464
Excluded based on Inclusion #2 - eGFR ≥30 and ≤75 mL/min/1.73 m2 (CKD-EPI formula)_ONLY STAGE II & III	-41,866	29,445	-73,659	14,540	-82,143	74,321
Excluded based on Inclusion #4 - Treatment with ACEi or ARB for at least 4 weeks, if not medically contraindicated	-4,797	24,648	-2,385	12,155	-12,272	62,049
Excluded based on Inclusion #5 - Type 2 DM	-32	24,616	-29	12,126	-45	62,004
Excluded based on Exclusion #2 - Autosomal dominant or autosomal recessive polycystic kidney disease, lupus nephritis or Antineutrophil cytoplasmic antibody (ANCA)	-1,060	23,556	-650	11,476	-3,273	58,731
Excluded based on Exclusion #3 - Receiving cytotoxic therapy, immunosuppresive therapy or other immunotherapy	-65	23,491	-15	11,461	-97	58,634
Excluded based on Exclusion #4 - NYHA class IV CHF - measured as LVAD/Implantable heart	-1	23,490	-1	11,460	-14	58,620
Excluded based on Exclusion #5 - MI, Unstable angina, Stroke, Transient Ischemic Attack	-248	23,242	-151	11,309	-1,427	57,193
Excluded based on Exclusion # 6-Coronary revascularization (PCI or CABG) or valvular repair/replacement	-18	23,224	-7	11,302	-58	57,135
Excluded based on Exclusion #8 - Presence of hepatic impairment	-195	23,029	-65	11,237	-472	56,663

Excluded based on Exclusion #9 - History of Organ Transplant	-33	22,996	-14	11,223	-98	56,565
Excluded based on Exclusion #10 - Receiving therapy with SGLT2 inhibitor	-170	22,826	-83	11,140	-219	56,346
Excluded based on Exclusion #11a - Acute kidney injury (AKI)	-327	22,499	-82	11,058	-798	55,548
Excluded based on Exclusion #11b - Baseline CKD IV & V, ESRD, HD/PD	-360	22,139	-118	10,940	-949	54,599
Final cohort		**22,139**		**10,940**		**54,599**

6 Variables

6.1 Exposure-related variables:

Study drug:

The study exposure of interest is initiation of dapagliflozin (SGLT2i at any dose and frequency. Initiation will be defined by no use of dapagliflozin during the prior 180 days before treatment initiation (washout period). Patients are required to be incident users with respect both exposure groups.

Comparator agents:

Initiators of sitagliptin, any dose and frequency.

6.2 Preliminary Covariates:

- Age
- Sex
- Combined Comorbidity Index (CCI), measured over the default baseline covariate assessment period of 180 days prior to and including the index prescription date

Covariates listed above are a small subset of covariates that will ultimately be controlled in the design and analysis phase of the study. They are included in the preliminary assessment to determine the presence of adequate overlap between the two population of patients to proceed to the next phase of the study. Remaining covariates are defined only after the study has passed the initial feasibility analysis and initial power assessment and are listed in Table 1 (**Appendix B**).

6.3 Outcome variables and study follow-up:

6.3.1 Outcome variables

Effectiveness outcome variables of interest (definitions provided in **Appendix A**):

- **Primary outcome:** Composite of end stage renal disease (ESRD) or all-cause mortality
- Secondary outcomes:
  - ESRD
  - All-cause death

Control outcomes of interest (control outcomes only serve to assess aspects of study validity but are not further interpreted):

Control outcome definitions

- Genital infections

6.3.2 Study follow-up

Both as-treated (AT) and intention-to-treat (ITT) analysis will be conducted with treatment defined as the index drug on the day of cohort entry. Because adherence in the real-world databases is expected to be much worse than in the trial, the AT analysis is the **primary** analysis, as it targets the relative hazard of outcomes on treatment.

For the AT analysis, the follow-up will start the day after the initiation of dapagliflozin or sitagliptin and will continue until the earliest date of the following events:

- The first occurrence of the outcome of interest,
- The date of end of continue registration in the database,
- End of the study period,
- Death (for ESRD outcome only),
- Nursing home admission
  - Nursing home admissions are considered a censoring event because the data sources utilized typically provide little to no data on a patient, particularly on drug utilization, after admission. We will utilize this as an exclusion reason for cohorts for the same reason.

- The date of drug discontinuation, defined as the date of the last continuous treatment episode of the index drug (dapagliflozin or sitagliptin) + a 30-day grace period,
- The date of switching from an exposure to comparator and vice versa,
- The date of switching to or initiation of other SGLT2i (excluding dapagliflozin) and other DPP4i (excluding sitagliptin).

For the ITT analyses, the censoring based on the switching and treatment discontinuation will be replaced with a maximum allowed follow-up time of 365 days.

7 Initial Feasibility Analysis

Aetion report name:
Optum- https://bwh-dope.aetion.com/projects/details/1379/results/66309/result/0
Marketscan- https://bwh-dope.aetion.com/projects/details/1400/results/66311/result/0
Medicare - https://bwh-dope.aetion.com/projects/details/1377/results/66055/result/0

Date conducted: 2/25/2021

8 Initial Power Assessment

Aetion report name:
Optum- https://bwh-dope.aetion.com/projects/details/1379/results/66310/result/0
Marketscan- https://bwh-dope.aetion.com/projects/details/1400/results/66312/result/0
Medicare- https://bwh-dope.aetion.com/projects/details/1377/results/66056/result/0

Date conducted: 2/25/2021

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

Reviewed by PI:	Shirley Wang	Date reviewed:	2/26/2021
Reviewed by FDA:	Kenneth Quinto	Date reviewed:	3/16/2021
Reasons for stopping analysis (if required):			

9. Balance Assessment

Optum- https://bwh-dope.aetion.com/projects/details/1379/rwrs/68008
Marketscan- https://bwh-dope.aetion.com/projects/details/1400/rwrs/68510
Medicare- https://bwh-dope.aetion.com/projects/details/1377/rwrs/68010

Date conducted: 4/02/2021, 4/16/2021 (Enrollment corrected for Marketscan)

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.

- Provide plot of PS distributions stratified by treatment group.

  Note- Please refer to **Appendix B**.

- Report covariate balance after matching.

  Note- For Table 1, please refer to **Appendix B**.

- Report reasons for censoring by treatment group.

	Overall	Referent	Exposure
Dummy outcome	0 (0%)	0 (0%)	0 (0%)
Death	64 (0.62%)	44 (0.86%)	20 (0.39%)
Start of an additional exposure	638 (6.20%)	41 (0.80%)	597 (11.60%)
End of Index Exposure	4,738 (46.04%)	2,567 (49.89%)	2,171 (42.20%)
Specified date reached	2,374 (23.07%)	1,323 (25.71%)	1,051 (20.43%)
End of patient enrollment	913 (8.87%)	479 (9.31%)	434 (8.44%)
Switch to other SGLT-2i + Switch to other DPP-4i + Nursing Home admission occurred	1,563 (15.19%)	691 (13.43%)	872 (16.95%)

- Report follow-up time by treatment group.

Patient Group	Optum Median Follow-Up Time (Days) [IQR]	Marketscan Median Follow-Up Time (Days) [IQR]	Medicare Median Follow-Up Time (Days) [IQR]
Overall Patient Population	113 [58, 221]	118 [58, 267]	118 [58, 220]
Referent - Sitagliptin	118 [58, 254]	127 [69, 285]	118 [58, 257]
Exposure - Dapagliflozin	79 [52, 183]	118 [58, 240]	88 [55, 181]

- Report overall risk of the primary outcome.

	Optum	MarketScan	Medicare	Pooled
Risk per 1,000 patients	15.6	3.3	25.5	20.2

10. Final Power Assessment

Date conducted: 4/02/2021, 4/16/2021 (Marketscan only)

- 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.

Superiority Analysis (Pooled)	
Number of patients matched	
Reference	5145.0
Exposed	5145.0
Risk per 1,000 patients	20.22
Desired HR from RCT	0.64
Alpha (2-sided)	0.05
Number of events expected	208.0638
Power	0.90

Superiority Analysis (Optum)	
Number of patients matched	
Reference	828
Exposed	828
Risk per 1,000 patients	15.60
Desired HR from RCT	0.64
Alpha (2-sided)	0.05
Number of events expected	25.8336
Power	0.205446437

Superiority Analysis (Marketscan)	
Number of patients matched	
Reference	1,687
Exposed	1,687
Risk per 1,000 patients	3.30
Desired HR from RCT	0.64
Alpha (2-sided)	0.05
Number of events expected	11.1342
Power	0.115530515

Superiority Analysis (Medicare)	
Number of patients matched	
Reference	2,630
Exposed	2,630
Risk per 1,000 patients	25.50
Desired HR from RCT	0.64
Alpha (2-sided)	0.05
Number of events expected	134.13
Power	0.733807835

- 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 analysis (if required):			

Appendix A: Composite of ESRD or all-cause mortality

Measured 1 day after drug initiation in diagnosis position specified below and inpatient and outpatient care setting -

Composite of ESRD or All-Cause Mortality

ESRD
ICD-9 diagnosis: 585.5, 585.6
ICD-10 diagnosis: N18.5, N18.6

AND

Dialysis
ICD-9 diagnosis: V45.1x, V56.0x, V56.1, V56.8x
ICD-10 diagnosis: Z49.01, Z49.31, Z49.32, Z99.2
ICD-9 procedure: 39.95, 54.98
ICD-10 procedure: 3E1M39z, 5A1D00z, 5A1D60Z
CPT: S9339, 90945, 90947, 90999

OR

CV death
Inpatient mortality - renal or CV causes --

Mortality- Dependent on data source.
1. CV mortality
Information on CV mortality through data linkage with the National Death Index (NDI) will be available for Medicare and Optum Clinformatics.

2. All-cause inpatient mortality
Identified using the discharge status codes-
Optum-
- 20 = EXPIRED
- 21 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 22 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 23 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 24 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 25 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 26 = EXPIRED TO BE DEFINED AT STATE LEVEL

- 27 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 28 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 29 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 40 = EXPIRED AT HOME (HOSPICE)
- 41 = EXPIRED IN A MEDICAL FACILITY (HOSPICE)
- 42 = EXPIRED - PLACE UNKNOWN (HOSPICE)

Truven-

- 20 - Died
- 22 - Died
- 23 - Died
- 24 - Died
- 25 - Died
- 26 - Died
- 27 - Died
- 28 - Died
- 29 - Died
- 40 - Other died status or Expired at home (Hospice claims only) (depends on year)
- 41 - Other died status or Expired in medical facility (Hospice claims only) (depends on year)
- 42 - Other died status or Expired - place unknown (Hospice claims only) (depends on year)
- 21 - Died or Disch./Transf. to court/law enforcement (depends on year)

Appendix A

#	DAPA-CKD trial definitions	Implementation in routine care	References/Rationale	Color coding
	Trial details - Intended S with label change - 2 weeks run-in		**Please see the following Google Drive for further details or any missing information:** https://drive.google.com/open?id=1WD618wrywYjEaXzfLTcuK-VCcnb6b-gV	Criteria
	EXPOSURE vs. COMPARISON		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: https://www.nber.org/data/icd9-icd-10-cm-and-pcs-crosswalk-general-equivalence-mapping.html	Adequate mapping in claims
	Dapagliflozin 10 mg or 5 mg tablets once daily vs. placebo matching dapagliflozin 10 mg or 5 mg Aim: To evaluate the effect of dapagliflozin on renal outcomes and CV mortality in patients with CKD	Dapagliflozin 10 mg or 5 mg vs.Sitagliptin (any dose) Exposure: new-use dapagliflozin Reference: Sitagliptin		Intermediate mapping in claims
	PRIMARY OUTCOME			Poor mapping or cannot be measured in claims
	Primary endpoint: A composite of sustained decline in eGFR of >= 50%, ESRD, renal death or CV death 1) time to >=50% eGFR decline from baseline (confirmed by >=28-day SCr) 2) time to ESRD defined as eGFR <15 ml/min/1.73 m2, need for chronic dialysis (both confirmed after >= 28 days) and renal transplantation 3) time to renal or CV death	**Measured 1 day after drug initiation in any diagnosis position in inpatient and outpatient care setting:** Composite of ESRD or All-Cause Mortality ESRD ICD-9 diagnosis: 585.5, 585.6 ICD-10 diagnosis: N18.5, N18.6 **AND** Dialysis ICD-9 diagnosis: V45.1x, V56.0x, V56.1, V56.8x ICD-10 diagnosis: Z49.01, Z49.31, Z49.32, Z99.2 ICD-9 procedure: 39.95, 54.98 ICD-10 procedure: 3E1M39z, 5A1D00z, 5A1D60Z CPT: S9339, 90945, 90947, 90999 **OR** CV death Inpatient mortality - renal or CV causes -- Mortality- Dependent on data source.		Can't be measured in claims but not important for the analysis
	Dapagliflozin 10 mg or 5 mg tablets once daily vs. placebo matching dapagliflozin 10 mg or 5 mg **Aim: To evaluate the effect of dapagliflozin on renal outcomes and CV mortality in patients with CKD**			
1	18 years of age	**Measured on the day of drug initiation** Age >= 18		

Appendix A

2	eGFR ≥25 and ≤75 mL/min/1.73 m2 (CKD-EPI formula) at visit 1	**Measured any time prior to and including the day of drug initiation in any diagnosis position and inpatient and outpatient care setting:** CKD Stage II (eGFR 60 - 89 mL/min/1.73 m2) ICD-9 diagnosis: 585.2 ICD-10 diagnosis: N18.2 CKD Stage IIIa&b (eGFR 30 - 59 mL/min/1.73 m2) ICD-9 diagnosis: 585.3 ICD-10 diagnosis: N18.3 CKD Stage IV (eGFR 15 - 29 mL/min/1.73 m2) ICD-9 diagnosis: 585.4 ICD-10 diagnosis: N18.4	
3	Evidence of increased albuminuria for 3 months or more before visit 1 and UACR ≥200 and ≤5000 mg/g at visit 1	**Measured from the start of all available data until 90 days prior to the date of drug initiation in any diagnosis position and inpatient and outpatient care setting:** Proteinuria ICD-9 diagnosis: 791.0 ICD-10 diagnosis: R80.x	
4	Stable, and for the patient maximum tolerated labelled daily dose, **treatment with ACEi or ARB for at least 4 weeks before visit 1, if not medically contraindicated**	**Measured 45 days prior to index drug initiation in prescription claims requiring 28 days supply of ACEi or ARB:** ACE inibitors' generic names for prescription claims: Enalapril, Captopril, Cilazapril, Fosinopril, Lisinopril, Moexipril, Perindopril, Quinapril, Ramipril, Trandolapril, Zofenopril, Benazepril **OR** ARBs generic names for prescription claims: Candesartan, Eprosartan, Irbesartan, Losartan, Olmesartan, Telmisartan, Valsartan, Azilsartan	
	EXCLUSION CRITERIA		
1	Type I diabetes mellitus	**Measured from the start of all available data to and including the day of drug initaition in any diagnosis position and inpatient and outpatient care setting:** Type I DM ICD-9 diagnosis: 250.01, 250.03, 250.11, 250.13, 250.21, 250.23, 250.31, 250.33, 250.41, 250.43, 250.51, 250.53, 250.61, 250.63, 250.71, 250.73, 250.91, 250.93 ICD-10 diagnosis: E10.x	
2	**Autosomal dominant or autosomal recessive polycystic kidney disease**, **lupus nephritis** or **Antineutrophil cytoplasmic antibody (ANCA) -associated vasculitis**	**Measured from the start of all available data to and including the day of drug initiation in any diagnosis position and inpatient and outpatient care setting:** Autosomal dominant or recessive PKD ICD-9 diagnosis: 753.12, 753.13, 753.14 ICD-10 diagnosis: Q61.3, Q61.2, Q61.19 Lupus nephritis ICD-9 diagnosis: 710.0, 583.x ICD-10 diagnosis: N05.2, N05.5, N05.9 ANCA-associated vasculitis ICD-9 diagnosis: 446.0, 446.4, 447.6, 446.7 ICD-10 diagnosis: M30.3, M31.30, M31.4, I77.6	Sreih AG, Annapureddy N, Springer J, et al. Development and validation of case-finding algorithms for the identification of patients with anti-neutrophil cytoplasmic antibody-associated vasculitis in large healthcare administrative databases. *Pharmacoepidemiol Drug Saf*. 2016;25(12):1368–1374. doi:10.1002/pds.4116 Chibnik LB, Massarotti EM, Costenbader KH. Identification and validation of lupus nephritis cases using administrative data. *Lupus* . 2010;19(6):741–743. doi:10.1177/0961203309356289

Appendix A

3	Receiving cytotoxic therapy, immunosuppressive therapy or other immunotherapy for primary or secondary renal disease within 6 months prior to enrollment	**Measured 180 days prior to and including the day of drug initiation in prescription claims:** Membranous nephropathy ICD-9 diagnosis: 583.1, 583.2 ICD-10 diagnosis: N05.2, N05.5 Glomerular disease (except chronic glomerulonephritis) ICD-9 diagnosis: 580.x ICD-10 diagnosis: N00.x, N01.x, N02.x, N03.x, N04.x, N05.x, N06.x, N07.x, N08.x Immunoglobulin A nephropathy (Berger's disease) ICD-9 diagnosis: 583.9 ICD-10 diagnosis: N02.8 Focal segmental glomerulosclerosis (FSGS) ICD-9 diagnosis: 581.1 ICD-10 diagnosis: N02.2 Goodpasture syndrome ICD-9 diagnosis: 446.2x ICD-10 diagnosis: M31.0 Hemolytic uremic syndrome (HUS) ICD-9 diagnosis: 283.11 ICD-10 diagnosis: D59.3	
4	**NYHA class IV congestive heart failure** at the time of enrollment	**Measured 180 days prior to and including the day of drug initiation in any diagnosis position and inpatient and outpatient care setting:** LVAD/Implantable Heart ICD-9 diagnosis: V43.2x ICD-10 diagnosis: Z95.811, Z95.812 ICD-9 procedure: 37.60, 37.66 ICD-10 procedure: 02HA0RS, 02HA3RS, 02HA4RS, 5A02116, 5A02216, 02HA0QZ, 02HA3QZ, 02HA4QZ CPT-4 code: 33975, 33976, 33979, 33981 - 33983, 33977, 33978, 33980	
5	**MI**, **unstable angina**, **stroke**, **transient ischemic attack** within 8 weeks prior to enrollment	**Measured 56 days prior to including the day of drug initiation in any diagnosis position and inpatient and ED care setting:** Myocardial Infarction/STEMI ICD-9 diagnosis: 410.xx (exclude 410.x2), 411.0 ICD-10 diagnosis: I21.xx, I22.xx, I23.xx ACS: Unstable Angina ICD-9 diagnosis: 413.xx (exclude 413.1), 411.1, 411.8, 411.81, 411.89 ICD-10 diagnosis: I20.xx (exclude I20.1), I24.xx (exclude 124.1) Stroke ICD-9 diagnosis: 430.xx, 431.xx, 433.x1, 434.xx (excluding 434.x0), 436.x, 997.02 ICD-10 diagnosis: G97.3x, I60.xx, I61.xx I62.xx, I63.xx, I97.81x, I97.82x TIA ICD-9 diagnosis: 435.xx ICD-10 diagnosis: G45.xx	

Appendix A

6	Coronary revascularization (percutaneous coronary intervention or coronary artery bypass grafting) or valvular repair/replacement within 8 weeks prior to enrolment	**Measured 56 days prior to including the day of drug initiation in any diagnosis position and inpatient care setting:** CABG/ Transmyocardial Revascularization ICD-9 procedure: 36.1x, 36.2, 36.3x ICD-10 procedure: Refer to "CABG & Revascularization" tab within this spreadsheet for complete list of procedure codes CPT-4 code: 33140, 33141, 33510 – 33548, 33572, 92937, 92938 PCI (PTCA) ICD-9 procedure: 36.0x, 00.66 ICD-10 procedure: 02700ZZ, 02710ZZ, 02720ZZ, 02730ZZ, 02C00ZZ, 02C10ZZ, 02C20ZZ, 02C30ZZ, 3E07017, 3E070PZ, 3E07317, 3E073PZ, 02C03ZZ, 02C04ZZ, 02C13ZZ, 02C14ZZ, 02C23ZZ, 02C24ZZ, 02C33ZZ, 02C34ZZ CPT-4 code: 92920, 92921, 92924, 92925, 92928, 92929, 92933, 92934, 92980, 92981, 92982, 92984 Valvular repair/replacement ICD-9 procedure: 35.01, 35.02, 35.05, 35.06, 35.11, 35.12, 35.21, 35.22, 35.23, 35.24, 35.97 ICD-10 procedure: 02NF3ZZ, 02NF4ZZ, 02NG3ZZ, 02NG4ZZ, 02RF372, 02RF38Z, 02RF3JZ, 02RF3KZ, X2RF332, 02RF37H, 02RF38H, 02RF3JH, 02RF3KH, 027F04Z, 027F0DZ, 027F0ZZ, 02NF0ZZ, 02QF0ZZ, 027G04Z, 027G0DZ, 027G0ZZ, 02NG0ZZ, 02QG0ZZ, 02VG0ZZ, 02RF07Z, 02RF08Z, 02RF0KZ, 02RF47Z, 02RF48Z, 02RF4KZ, X2RF032, X2RF432, 02RF0JZ, 02RF4JZ, 02RG07Z, 02RG08Z, 02RG0KZ, 02RG37Z, 02RG38Z, 02RG3KZ, 02RG47Z, 02RG48Z, 02RG4KZ, 02RG0JZ, 02RG3JZ, 02RG4JZ 02UG3JZ CPT-4 codes: 33400, 33402, 33405, 33406, 33420, 33430, 0257T, 0258T, 0259T	
7	Any condition outside the renal and cardiovascular study area with a life expectancy of <2 years based on investigator's clinical judgement		
8	**Hepatic impairment** [aspartate transaminase or alanine transaminase >3 times the upper limit of normal (ULN) or total bilirubin >2 times the ULN at the time of enrolment]	**Measured from the start of all available data of drug initiation in any diagnosis position and inpatient and outpaient care setting:** Hepatic Encephalopathy/Coma ICD-9 diagnosis: 070.0, 070.2x, 070.4x, 070.6, 070.71, 572.2 ICD-10 diagnosis: B15.0, B16.0, B16.2, B17.11, B19.0, B19.11, B19.21, K72.90, K72.91 Esophageal Varicies ICD-9 diagnosis: 456.0, 456.1, 456.2x, 572.3 ICD-10 diagnosis: I85.xx, K76.6 Porto-Caval Shunt ICD-9 procedure: 39.1, 42.91 ICD-10 procedure: Refer to the 'PCShunt' sheet for list of procedures CPT-4 code: 37182, 37183, 37241 Cirrohosis/Chronic Hepatic Diseases ICD-9 diagnosis: 571.0, 571.2, 571.3, 571.4, 571.5, 571.6	
9	History of organ transplantation	**Measured from the start of all available data to and including the day of drug initiation in any diagnosis position and inpatient and outpatient care setting:** Kidney Transplant ICD-9 diagnosis: V42.0, 996.81 ICD-10 diagnosis: Z94.0, T86.10, T86.11, T86.12 ICD-9 procedure: 00.91, 00.92, 00.93, 55.53, 55.6, 55.61, 55.69 ICD-10 procedure: 0TT00ZZ, 0TT04ZZ, 0TT10ZZ, 0TT14ZZ, 0TS00ZZ, 0TS10ZZ, 0TY00Z0, 0TY00Z1, 0TY00Z2, 0TY10Z0, 0TY10Z1, 0TY10Z2 CPT-4 code: 00868, 50360, 50365, 50370, 50380 Heart transplantation ICD-9 diagnosis: V42.1, V49.83, 996.83 ICD-10 diagnosis: Z94.1, Z76.82, T86.20, T86.21, T86.22 ICD-9 procedure: 33.6, 37.51 ICD-10 procedure: 02YA0Z0, 02YA0Z1, 02YA0Z2 CPT-4 code: 33935, 33945	

Appendix A

10	**Receiving therapy with SGLT2 inhibitor** within 8 weeks prior to enrollment or previous intolerance of an SGLT2 inhibitor	**Measured from 56 days prior to 1 day prior to drug initiation in prescription claims:** <u>SGLT2 Inhibitors (including combination products containing any of the following)</u> - Canagliflozin (INVOKANA®) - Canagliflozin/metformin (INVOKAMET®, INVOKAMET® XR) - Empagliflozin (JARDIANCE®) - Empagliflozin/metformin (SYNJARDY®, SYNJARDY® XR) - Empagliflozin/ linagliptin/ metformin (TRIJARDY® XR) - Empagliflozin/linagliptin (GLYXAMBI®) - Dapagliflozin (FARXIGA®) - Dapagliflozin/metformin (XIGDUO® XR) - Dapagliflozin/saxagliptin (QTERN®) - Dapagliflozin/saxagliptin/metformin (QTERNMET® XR) - Ertugliflozin (STEGLATRO®) - Ertugliflozin/metformin (SEGLUROMET®) - Ertugliflozin/sitagliptin (STEGLUJAN®)	
11a	Exclude patients that have **AKI** during the baseline period	**Measured from 14 days prior to and including the day of drug intiation in any diagnosis position and any care setting:** <u>Acute kidney injury (AKI)</u> ICD-9 diagnosis: 584.xx, 586 ICD-10 diagnosis: N17.x, N19	
11b	Exclude patients that have **CKD-V, ESRD and are on HD/PD** during the baseline period	**Measured from 180 days prior to and including the day of drug intiation in any diagnosis position and any care setting:** <u>Chronic Kidney Disease (CKD)-V</u> ICD-9 diagnosis: 585.5 ICD-10 diagnosis: N18.5 <u>ESRD</u> ICD-9 diagnosis: 403.01, 403.11, 403.91, 404.03, 404.13, 585.6 ICD-10 diagnosis: I12.0, N18.6 <u>Hemodialysis/Peritoneal Dialysis</u> ICD-9 diagnosis: V45.1x, V56.xx, 996.56, 996.68, 996.73 ICD-10 diagnosis: Z49.xx, Z91.15, Z99.2, T85.611x, T85.621x, T85.631x, T85.691x, T85.71x ICD-9 procedure: 39.95, 54.98 ICD-10 procedure: 5A1D70Z, 5A1D80Z, 5A1D90Z, 3E1M39Z CPT-4 code: 90935, 90937, 90939	

Appendix A

Mortality- Dependent on data source.

1. All-cause mortality / inpatient mortality
Identified using the vital status file-

Medicare
Identified using the discharge status codes-

Optum-
- 20 = EXPIRED
- 21 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 22 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 23 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 24 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 25 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 26 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 27 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 28 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 29 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 40 = EXPIRED AT HOME (HOSPICE)
- 41 = EXPIRED IN A MEDICAL FACILITY (HOSPICE)
- 42 = EXPIRED - PLACE UNKNOWN (HOSPICE)

Truven-
- 20 - Died
- 22 - Died
- 23 - Died
- 24 - Died
- 25 - Died
- 26 - Died
- 27 - Died
- 28 - Died
- 29 - Died
- 40 - Other died status or Expired at home (Hospice claims only) (depends on year)
- 41 - Other died status or Expired in medical facility (Hospice claims only) (depends on year)
- 42 - Other died status or Expired - place unknown (Hospice claims only) (depends on year)
- 21 - Died or Disch./Transf. to court/law enforcement (depends on year)

Appendix A

v	ICD10	ICD10 Optum Input	ICD9	ICD9 w/ decimals	LongDesICD10	LongDesICD9	condition	Match_Type	Approximate	No_Map	Combination	Scenario	Choice_List
Backward (ICD10 to ICD9)	0210083	02.10083	3619	36.19	Bypass Coronary Artery, One Artery from Coronary Artery with Zooplastic Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210088	02.10088	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Zooplastic Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210089	02.10089	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Zooplastic Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021008C	02.1008C	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Zooplastic Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021008F	02.1008F	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Zooplastic Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021008W	02.1008W	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Zooplastic Tissue, Open Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	0210093	02.10093	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Venous Tissue, Open Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210098	02.10098	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210099	02.10099	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021009C	02.1009C	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Venous Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021009F	02.1009F	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Venous Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021009W	02.1009W	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Autologous Venous Tissue, Open Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02100A3	02.100A3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Arterial Tissue, Open Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100A8	02.100A8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100A9	02.100A9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100AC	02.100AC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100AF	02.100AF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100AW	02.100AW	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Autologous Arterial Tissue, Open Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02100J3	02.100J3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Synthetic Substitute, Open Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100J8	02.100J8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Synthetic Substitute, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100J9	02.100J9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Synthetic Substitute, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100JC	02.100JC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Synthetic Substitute, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100JF	02.100JF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Synthetic Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100JW	02.100JW	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Synthetic Substitute, Open Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02100K3	02.100K3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100K8	02.100K8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100K9	02.100K9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100KC	02.100KC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100KF	02.100KF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	02100KW	02.100KW	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Nonautologous Tissue Substitute, Open Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02100Z3	02.100Z3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery, Open Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100Z8	02.100Z8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100Z9	02.100Z9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100ZC	02.100ZC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery, Open Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02100ZF	02.100ZF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210344	02.10344	3639	36.39	Bypass Coronary Artery, One Artery from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02103D4	02.103D4	3639	36.39	Bypass Coronary Artery, One Artery from Coronary Vein with Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210444	02.10444	3639	36.39	Bypass Coronary Artery, One Artery from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210483	02.10483	3619	36.19	Bypass Coronary Artery, One Artery from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210488	02.10488	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210489	02.10489	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021048C	02.1048C	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021048F	02.1048F	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021048W	02.1048W	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	0210493	02.10493	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210498	02.10498	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0210499	02.10499	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021049C	02.1049C	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021049F	02.1049F	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021049W	02.1049W	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02104A3	02.104A3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104A8	02.104A8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104A9	02.104A9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104AC	02.104AC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104AF	02.104AF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104AW	02.104AW	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104D4	02.104D4	3639	36.39	Bypass Coronary Artery, One Artery from Coronary Vein with Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Forward (ICD9 to ICD10)	02104J3	02.104J3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104J8	02.104J8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104J9	02.104J9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104JC	02.104JC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104JF	02.104JF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104JW	02.104JW	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02104K3	02.104K3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104K8	02.104K8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104K9	02.104K9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104KC	02.104KC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104KF	02.104KF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104KW	02.104KW	3611	36.11	Bypass Coronary Artery, One Artery from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of one coronary artery	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	02104Z3	02.104Z3	3610	36.10	Bypass Coronary Artery, One Artery from Coronary Artery, Percutaneous Endoscopic Approach	Aortocoronary bypass for heart revascularization, not	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104Z8	02.104Z8	3615	36.15	Bypass Coronary Artery, One Artery from Right Internal Mammary, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104Z9	02.104Z9	3615	36.15	Bypass Coronary Artery, One Artery from Left Internal Mammary, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104ZC	02.104ZC	3615	36.15	Bypass Coronary Artery, One Artery from Thoracic Artery, Percutaneous Endoscopic Approach	Single internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02104ZF	02.104ZF	3617	36.17	Bypass Coronary Artery, One Artery from Abdominal Artery, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211083	02.11083	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Zooplastic Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211088	02.11088	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211089	02.11089	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021108C	02.1108C	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021108F	02.1108F	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021108W	02.1108W	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Zooplastic Tissue, Open Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211093	02.11093	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Venous Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211098	02.11098	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211099	02.11099	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021109C	02.1109C	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021109F	02.1109F	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	021109W	02.1109W	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Venous Tissue, Open Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110A3	02.110A3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Arterial Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110A8	02.110A8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110A9	02.110A9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110AC	02.110AC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110AF	02.110AF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110AW	02.110AW	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Arterial Tissue, Open Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110J3	02.110J3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Synthetic Substitute, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110J8	02.110J8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110J9	02.110J9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110JC	02.110JC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110JF	02.110JF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110JW	02.110JW	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Synthetic Substitute, Open Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110K3	02.110K3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110K8	02.110K8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110K9	02.110K9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110KC	02.110KC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110KF	02.110KF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110KW	02.110KW	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Nonautologous Tissue Substitute, Open Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110Z3	02.110Z3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110Z8	02.110Z8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110Z9	02.110Z9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110ZC	02.110ZC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02110ZF	02.110ZF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211344	02.11344	3639	36.39	Bypass Coronary Artery, Two Arteries from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02113D4	02.113D4	3639	36.39	Bypass Coronary Artery, Two Arteries from Coronary Vein with Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211444	02.11444	3639	36.39	Bypass Coronary Artery, Two Arteries from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211483	02.11483	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211488	02.11488	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	0211489	02.11489	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021148C	02.1148C	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021148F	02.1148F	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021148W	02.1148W	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211493	02.11493	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211498	02.11498	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0211499	02.11499	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021149C	02.1149C	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021149F	02.1149F	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021149W	02.1149W	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114A3	02.114A3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114A8	02.114A8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114A9	02.114A9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114AC	02.114AC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114AF	02.114AF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114AW	02.114AW	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114D4	02.114D4	3639	36.39	Bypass Coronary Artery, Two Arteries from Coronary Vein with Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114J3	02.114J3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114J8	02.114J8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114J9	02.114J9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114JC	02.114JC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114JF	02.114JF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114JW	02.114JW	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114K3	02.114K3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114K8	02.114K8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114K9	02.114K9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	02114KC	02.114KC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114KF	02.114KF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114KW	02.114KW	3612	36.12	Bypass Coronary Artery, Two Arteries from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of two coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114Z3	02.114Z3	3619	36.19	Bypass Coronary Artery, Two Arteries from Coronary Artery, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114Z8	02.114Z8	3616	36.16	Bypass Coronary Artery, Two Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114Z9	02.114Z9	3616	36.16	Bypass Coronary Artery, Two Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114ZC	02.114ZC	3616	36.16	Bypass Coronary Artery, Two Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02114ZF	02.114ZF	3617	36.17	Bypass Coronary Artery, Two Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212083	02.12083	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Zooplastic Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212088	02.12088	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212089	02.12089	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021208C	02.1208C	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021208F	02.1208F	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021208W	02.1208W	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Zooplastic Tissue, Open Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212093	02.12093	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Venous Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212098	02.12098	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212099	02.12099	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021209C	02.1209C	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021209F	02.1209F	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021209W	02.1209W	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Venous Tissue, Open Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120A3	02.120A3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Arterial Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120A8	02.120A8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120A9	02.120A9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120AC	02.120AC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120AF	02.120AF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120AW	02.120AW	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Arterial Tissue, Open Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120J3	02.120J3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Synthetic Substitute, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120J8	02.120J8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	02120J9	02.120J9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120JC	02.120JC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120JF	02.120JF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120JW	02.120JW	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Synthetic Substitute, Open Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120K3	02.120K3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120K8	02.120K8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120K9	02.120K9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120KC	02.120KC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120KF	02.120KF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120KW	02.120KW	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Nonautologous Tissue Substitute, Open Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120Z3	02.120Z3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120Z8	02.120Z8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120Z9	02.120Z9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120ZC	02.120ZC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02120ZF	02.120ZF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212344	02.12344	3639	36.39	Bypass Coronary Artery, Three Arteries from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02123D4	02.123D4	3639	36.39	Bypass Coronary Artery, Three Arteries from Coronary Vein with Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212444	02.12444	3639	36.39	Bypass Coronary Artery, Three Arteries from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212483	02.12483	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212488	02.12488	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212489	02.12489	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021248C	02.1248C	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021248F	02.1248F	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021248W	02.1248W	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212493	02.12493	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212498	02.12498	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0212499	02.12499	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021249C	02.1249C	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	021249F	02.1249F	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021249W	02.1249W	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124A3	02.124A3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124A8	02.124A8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124A9	02.124A9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124AC	02.124AC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124AF	02.124AF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124AW	02.124AW	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124D4	02.124D4	3639	36.39	Bypass Coronary Artery, Three Arteries from Coronary Vein with Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124J3	02.124J3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124J8	02.124J8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124J9	02.124J9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124JC	02.124JC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124JF	02.124JF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124JW	02.124JW	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124K3	02.124K3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124K8	02.124K8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124K9	02.124K9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124KC	02.124KC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124KF	02.124KF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124KW	02.124KW	3613	36.13	Bypass Coronary Artery, Three Arteries from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of three coronary arteries	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124Z3	02.124Z3	3619	36.19	Bypass Coronary Artery, Three Arteries from Coronary Artery, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124Z8	02.124Z8	3616	36.16	Bypass Coronary Artery, Three Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124Z9	02.124Z9	3616	36.16	Bypass Coronary Artery, Three Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124ZC	02.124ZC	3616	36.16	Bypass Coronary Artery, Three Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02124ZF	02.124ZF	3617	36.17	Bypass Coronary Artery, Three Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	0213083	02.13083	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Zooplastic Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213088	02.13088	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213089	02.13089	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021308C	02.1308C	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Zooplastic Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021308F	02.1308F	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Zooplastic Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021308W	02.1308W	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Zooplastic Tissue, Open Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213093	02.13093	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Venous Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213098	02.13098	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213099	02.13099	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021309C	02.1309C	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Venous Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021309F	02.1309F	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Venous Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021309W	02.1309W	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Venous Tissue, Open Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130A3	02.130A3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Arterial Tissue, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130A8	02.130A8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130A9	02.130A9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130AC	02.130AC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Arterial Tissue, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130AF	02.130AF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Arterial Tissue, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130AW	02.130AW	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Arterial Tissue, Open Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130J3	02.130J3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Synthetic Substitute, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130J8	02.130J8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130J9	02.130J9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130JC	02.130JC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Synthetic Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130JF	02.130JF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Synthetic Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130JW	02.130JW	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Synthetic Substitute, Open Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130K3	02.130K3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Nonautologous Tissue Substitute, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130K8	02.130K8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130K9	02.130K9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	02130KC	02.130KC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130KF	02.130KF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130KW	02.130KW	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Nonautologous Tissue Substitute, Open Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130Z3	02.130Z3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery, Open Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130Z8	02.130Z8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130Z9	02.130Z9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130ZC	02.130ZC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery, Open Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02130ZF	02.130ZF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery, Open Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213344	02.13344	3639	36.39	Bypass Coronary Artery, Four or More Arteries from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02133D4	02.133D4	3639	36.39	Bypass Coronary Artery, Four or More Arteries from Coronary Vein with Intraluminal Device, Percutaneous Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213444	02.13444	3639	36.39	Bypass Coronary Artery, Four or More Arteries from Coronary Vein with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213483	02.13483	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213488	02.13488	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213489	02.13489	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021348C	02.1348C	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021348F	02.1348F	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021348W	02.1348W	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Zooplastic Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213493	02.13493	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213498	02.13498	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0213499	02.13499	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021349C	02.1349C	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021349F	02.1349F	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021349W	02.1349W	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Venous Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134A3	02.134A3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134A8	02.134A8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134A9	02.134A9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134AC	02.134AC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134AF	02.134AF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	02134AW	02.134AW	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134D4	02.134D4	3639	36.39	Bypass Coronary Artery, Four or More Arteries from Coronary Vein with Intraluminal Device, Percutaneous Endoscopic Approach	Other heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134J3	02.134J3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134J8	02.134J8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134J9	02.134J9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134JC	02.134JC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134JF	02.134JF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134JW	02.134JW	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Synthetic Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134K3	02.134K3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134K8	02.134K8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134K9	02.134K9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134KC	02.134KC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134KF	02.134KF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134KW	02.134KW	3614	36.14	Bypass Coronary Artery, Four or More Arteries from Aorta with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	(Aorto)coronary bypass of four or more coronary arter	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134Z3	02.134Z3	3619	36.19	Bypass Coronary Artery, Four or More Arteries from Coronary Artery, Percutaneous Endoscopic Approach	Other bypass anastomosis for heart revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134Z8	02.134Z8	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Right Internal Mammary, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134Z9	02.134Z9	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Left Internal Mammary, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134ZC	02.134ZC	3616	36.16	Bypass Coronary Artery, Four or More Arteries from Thoracic Artery, Percutaneous Endoscopic Approach	Double internal mammary-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	02134ZF	02.134ZF	3617	36.17	Bypass Coronary Artery, Four or More Arteries from Abdominal Artery, Percutaneous Endoscopic Approach	Abdominal-coronary artery bypass	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K0Z5	02.1K0Z5	3631	36.31	Bypass Right Ventricle to Coronary Circulation, Open Approach	Open chest transmyocardial revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K0Z8	02.1K0Z8	362	36.2	Bypass Right Ventricle to Right Internal Mammary, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K0Z9	02.1K0Z9	362	36.2	Bypass Right Ventricle to Left Internal Mammary, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K0ZC	02.1K0ZC	362	36.2	Bypass Right Ventricle to Thoracic Artery, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K0ZF	02.1K0ZF	362	36.2	Bypass Right Ventricle to Abdominal Artery, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K0ZW	02.1K0ZW	362	36.2	Bypass Right Ventricle to Aorta, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K4Z5	02.1K4Z5	3632	36.32	Bypass Right Ventricle to Coronary Circulation, Percutaneous Endoscopic Approach	Other transmyocardial revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K4Z8	02.1K4Z8	362	36.2	Bypass Right Ventricle to Right Internal Mammary, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K4Z9	02.1K4Z9	362	36.2	Bypass Right Ventricle to Left Internal Mammary, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K4ZC	02.1K4ZC	362	36.2	Bypass Right Ventricle to Thoracic Artery, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021K4ZF	02.1K4ZF	362	36.2	Bypass Right Ventricle to Abdominal Artery, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	021K4ZW	02.1K4ZW	362	36.2	Bypass Right Ventricle to Aorta, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L08P	02.1L08P	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Zooplastic Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L08Q	02.1L08Q	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Zooplastic Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L08R	02.1L08R	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Zooplastic Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L09P	02.1L09P	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Autologous Venous Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L09Q	02.1L09Q	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Venous Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L09R	02.1L09R	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Venous Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0AP	02.1L0AP	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Autologous Arterial Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0AQ	02.1L0AQ	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Arterial Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0AR	02.1L0AR	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Arterial Tissue, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0JP	02.1L0JP	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Synthetic Substitute, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0JQ	02.1L0JQ	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Synthetic Substitute, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0JR	02.1L0JR	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Synthetic Substitute, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0KP	02.1L0KP	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Nonautologous Tissue Substitute, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0KQ	02.1L0KQ	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Nonautologous Tissue Substitute, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0KR	02.1L0KR	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Nonautologous Tissue Substitute, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0Z5	02.1L0Z5	3631	36.31	Bypass Left Ventricle to Coronary Circulation, Open Approach	Open chest transmyocardial revascularization	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0Z8	02.1L0Z8	362	36.2	Bypass Left Ventricle to Right Internal Mammary, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0Z9	02.1L0Z9	362	36.2	Bypass Left Ventricle to Left Internal Mammary, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0ZC	02.1L0ZC	362	36.2	Bypass Left Ventricle to Thoracic Artery, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0ZF	02.1L0ZF	362	36.2	Bypass Left Ventricle to Abdominal Artery, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0ZP	02.1L0ZP	362	36.2	Bypass Left Ventricle to Pulmonary Trunk, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0ZQ	02.1L0ZQ	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L0ZR	02.1L0ZR	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery, Open Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L48P	02.1L48P	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Zooplastic Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L48Q	02.1L48Q	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L48R	02.1L48R	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Zooplastic Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L49P	02.1L49P	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L49Q	02.1L49Q	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L49R	02.1L49R	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L4AP	02.1L4AP	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L4AQ	02.1L4AQ	362	36.2	Bypass Left Ventricle to Right Pulmonary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L4AR	02.1L4AR	362	36.2	Bypass Left Ventricle to Left Pulmonary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	021L4JP	02.1L4JP	362	36.2	Bypass Left Ventricle to Pulmonary Trunk with Synthetic Substitute, Percutaneous Endoscopic Approach	Heart revascularization by arterial implant	Coronary artery bypass surgery Px	2_Approx 1:1	1	0	0	0	0

Appendix A

mapping	ICD10	ICD10 Optum Input	ICD9	ICD9 w/ decimals	LongDesICD10	LongDesICD9	ICD10_version	ICD9_version	condition	Match_Type	Approximate	No_Map	Combination	Scenario	Choice_List
Backward (ICD10 to ICD9)	0610075	06.10075	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610076	06.10076	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061007P	06.1007P	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061007Q	06.1007Q	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061007R	06.1007R	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061007Y	06.1007Y	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610095	06.10095	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610096	06.10096	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061009P	06.1009P	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061009Q	06.1009Q	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061009R	06.1009R	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061009Y	06.1009Y	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100A5	06.100A5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100A6	06.100A6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100AP	06.100AP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100AQ	06.100AQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100AR	06.100AR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100AY	06.100AY	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100J5	06.100J5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100J6	06.100J6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100JP	06.100JP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Syr	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100JQ	06.100JQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100JR	06.100JR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100JY	06.100JY	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Synthetic	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100K5	06.100K5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100K6	06.100K6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100KP	06.100KP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with No	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100KQ	06.100KQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100KR	06.100KR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100KY	06.100KY	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Nonauto	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100Z5	06.100Z5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein,	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100Z6	06.100Z6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein, C	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100ZP	06.100ZP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk, Open A	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100ZQ	06.100ZQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery, C	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100ZR	06.100ZR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery, Op	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06100ZY	06.100ZY	391	39.1	Bypass Inferior Vena Cava to Lower Vein, Open Approac	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610475	06.10475	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610476	06.10476	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061047P	06.1047P	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061047Q	06.1047Q	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061047R	06.1047R	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061047Y	06.1047Y	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610495	06.10495	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0610496	06.10496	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061049P	06.1049P	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061049Q	06.1049Q	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061049R	06.1049R	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061049Y	06.1049Y	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104A5	06.104A5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104A6	06.104A6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104AP	06.104AP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104AQ	06.104AQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104AR	06.104AR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104AY	06.104AY	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104J5	06.104J5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104J6	06.104J6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104JP	06.104JP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with Syr	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104JQ	06.104JQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104JR	06.104JR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104JY	06.104JY	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Synthetic	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104K5	06.104K5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104K6	06.104K6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104KP	06.104KP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk with No	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104KQ	06.104KQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery w	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104KR	06.104KR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery wit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104KY	06.104KY	391	39.1	Bypass Inferior Vena Cava to Lower Vein with Nonauto	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104Z5	06.104Z5	391	39.1	Bypass Inferior Vena Cava to Superior Mesenteric Vein,	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104Z6	06.104Z6	391	39.1	Bypass Inferior Vena Cava to Inferior Mesenteric Vein, I	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104ZP	06.104ZP	391	39.1	Bypass Inferior Vena Cava to Pulmonary Trunk, Percuta	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104ZQ	06.104ZQ	391	39.1	Bypass Inferior Vena Cava to Right Pulmonary Artery, P	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104ZR	06.104ZR	391	39.1	Bypass Inferior Vena Cava to Left Pulmonary Artery, Pe	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06104ZY	06.104ZY	391	39.1	Bypass Inferior Vena Cava to Lower Vein, Percutaneous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061107B	06.1107B	391	39.1	Bypass Splenic Vein to Left Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061107Y	06.1107Y	391	39.1	Bypass Splenic Vein to Lower Vein with Autologous Tis	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0611099	06.11099	391	39.1	Bypass Splenic Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061109B	06.1109B	391	39.1	Bypass Splenic Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061109Y	06.1109Y	391	39.1	Bypass Splenic Vein to Lower Vein with Autologous Ve	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110A9	06.110A9	391	39.1	Bypass Splenic Vein to Right Renal Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110AB	06.110AB	391	39.1	Bypass Splenic Vein to Left Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110AY	06.110AY	391	39.1	Bypass Splenic Vein to Lower Vein with Autologous Art	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110J9	06.110J9	391	39.1	Bypass Splenic Vein to Right Renal Vein with Synthetic	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110JB	06.110JB	391	39.1	Bypass Splenic Vein to Left Renal Vein with Synthetic S	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110JY	06.110JY	391	39.1	Bypass Splenic Vein to Lower Vein with Synthetic Subs	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110K9	06.110K9	391	39.1	Bypass Splenic Vein to Right Renal Vein with Nonautol	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110KB	06.110KB	391	39.1	Bypass Splenic Vein to Left Renal Vein with Nonautolog	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110KY	06.110KY	391	39.1	Bypass Splenic Vein to Lower Vein with Nonautologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110Z9	06.110Z9	391	39.1	Bypass Splenic Vein to Right Renal Vein, Open Approac	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110ZB	06.110ZB	391	39.1	Bypass Splenic Vein to Left Renal Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06110ZY	06.110ZY	391	39.1	Bypass Splenic Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0611479	06.11479	391	39.1	Bypass Splenic Vein to Right Renal Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061147B	06.1147B	391	39.1	Bypass Splenic Vein to Left Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061147Y	06.1147Y	391	39.1	Bypass Splenic Vein to Lower Vein with Autologous Tis	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0611499	06.11499	391	39.1	Bypass Splenic Vein to Right Renal Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061149B	06.1149B	391	39.1	Bypass Splenic Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0

Appendix A

Backward (ICD10 to ICD9)	061149Y	06.1149Y	391	39.1	Bypass Splenic Vein to Lower Vein with Autologous Ve	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114A9	06.114A9	391	39.1	Bypass Splenic Vein to Right Renal Vein with Autologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114AB	06.114AB	391	39.1	Bypass Splenic Vein to Left Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114AY	06.114AY	391	39.1	Bypass Splenic Vein to Lower Vein with Autologous Art	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114J9	06.114J9	391	39.1	Bypass Splenic Vein to Right Renal Vein with Synthetic	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114JB	06.114JB	391	39.1	Bypass Splenic Vein to Left Renal Vein with Synthetic S	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114JY	06.114JY	391	39.1	Bypass Splenic Vein to Lower Vein with Synthetic Subs	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114K9	06.114K9	391	39.1	Bypass Splenic Vein to Right Renal Vein with Nonautol	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114KB	06.114KB	391	39.1	Bypass Splenic Vein to Left Renal Vein with Nonautolo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114KY	06.114KY	391	39.1	Bypass Splenic Vein to Lower Vein with Nonautologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114Z9	06.114Z9	391	39.1	Bypass Splenic Vein to Right Renal Vein, Percutaneous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114ZB	06.114ZB	391	39.1	Bypass Splenic Vein to Left Renal Vein, Percutaneous E	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06114ZY	06.114ZY	391	39.1	Bypass Splenic Vein to Lower Vein, Percutaneous Endo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061207Y	06.1207Y	391	39.1	Bypass Gastric Vein to Lower Vein with Autologous Tis	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061209Y	06.1209Y	391	39.1	Bypass Gastric Vein to Lower Vein with Autologous Ven	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06120AY	06.120AY	391	39.1	Bypass Gastric Vein to Lower Vein with Autologous Art	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06120JY	06.120JY	391	39.1	Bypass Gastric Vein to Lower Vein with Synthetic Subst	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06120KY	06.120KY	391	39.1	Bypass Gastric Vein to Lower Vein with Nonautologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06120ZY	06.120ZY	391	39.1	Bypass Gastric Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061247Y	06.1247Y	391	39.1	Bypass Gastric Vein to Lower Vein with Autologous Tis	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061249Y	06.1249Y	391	39.1	Bypass Gastric Vein to Lower Vein with Autologous Ven	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06124AY	06.124AY	391	39.1	Bypass Gastric Vein to Lower Vein with Autologous Art	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06124JY	06.124JY	391	39.1	Bypass Gastric Vein to Lower Vein with Synthetic Subst	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06124KY	06.124KY	391	39.1	Bypass Gastric Vein to Lower Vein with Nonautologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06124ZY	06.124ZY	391	39.1	Bypass Gastric Vein to Lower Vein, Percutaneous Endo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061407Y	06.1407Y	391	39.1	Bypass Hepatic Vein to Lower Vein with Autologous Tis	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061409Y	06.1409Y	391	39.1	Bypass Hepatic Vein to Lower Vein with Autologous Ve	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06140AY	06.140AY	391	39.1	Bypass Hepatic Vein to Lower Vein with Autologous Ar	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06140JY	06.140JY	391	39.1	Bypass Hepatic Vein to Lower Vein with Synthetic Subs	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06140KY	06.140KY	391	39.1	Bypass Hepatic Vein to Lower Vein with Nonautologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06140ZY	06.140ZY	391	39.1	Bypass Hepatic Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061447Y	06.1447Y	391	39.1	Bypass Hepatic Vein to Lower Vein with Autologous Tis	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061449Y	06.1449Y	391	39.1	Bypass Hepatic Vein to Lower Vein with Autologous Ve	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06144AY	06.144AY	391	39.1	Bypass Hepatic Vein to Lower Vein with Autologous Ar	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06144JY	06.144JY	391	39.1	Bypass Hepatic Vein to Lower Vein with Synthetic Subs	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06144KY	06.144KY	391	39.1	Bypass Hepatic Vein to Lower Vein with Nonautologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06144ZY	06.144ZY	391	39.1	Bypass Hepatic Vein to Lower Vein, Percutaneous Endo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061507Y	06.1507Y	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061509Y	06.1509Y	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06150AY	06.150AY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06150JY	06.150JY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Sy	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06150KY	06.150KY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with No	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06150ZY	06.150ZY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein, Open A	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061547Y	06.1547Y	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061549Y	06.1549Y	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06154AY	06.154AY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06154JY	06.154JY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with Sy	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06154KY	06.154KY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein with No	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06154ZY	06.154ZY	391	39.1	Bypass Superior Mesenteric Vein to Lower Vein, Percut	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06160ZY	06.160ZY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06160Y	06.160Y	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06160AY	06.160AY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06160JY	06.160JY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Syr	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06160KY	06.160KY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with No	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06160ZY	06.160ZY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein, Open A	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061647Y	06.1647Y	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061649Y	06.1649Y	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06164AY	06.164AY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Au	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06164JY	06.164JY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with Syr	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06164KY	06.164KY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein with No	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06164ZY	06.164ZY	391	39.1	Bypass Inferior Mesenteric Vein to Lower Vein, Percuta	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061707Y	06.1707Y	391	39.1	Bypass Colic Vein to Lower Vein with Autologous Tissu	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061709Y	06.1709Y	391	39.1	Bypass Colic Vein to Lower Vein with Autologous Veno	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06170AY	06.170AY	391	39.1	Bypass Colic Vein to Lower Vein with Autologous Arter	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06170JY	06.170JY	391	39.1	Bypass Colic Vein to Lower Vein with Synthetic Substit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06170KY	06.170KY	391	39.1	Bypass Colic Vein to Lower Vein with Nonautologous T	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06170ZY	06.170ZY	391	39.1	Bypass Colic Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061747Y	06.1747Y	391	39.1	Bypass Colic Vein to Lower Vein with Autologous Tissu	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061749Y	06.1749Y	391	39.1	Bypass Colic Vein to Lower Vein with Autologous Veno	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06174AY	06.174AY	391	39.1	Bypass Colic Vein to Lower Vein with Autologous Arter	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06174JY	06.174JY	391	39.1	Bypass Colic Vein to Lower Vein with Synthetic Substit	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06174KY	06.174KY	391	39.1	Bypass Colic Vein to Lower Vein with Nonautologous T	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06174ZY	06.174ZY	391	39.1	Bypass Colic Vein to Lower Vein, Percutaneous Endosc	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061807Y	06.1807Y	391	39.1	Bypass Portal Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061807B	06.1807B	391	39.1	Bypass Portal Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061807Y	06.1807Y	391	39.1	Bypass Portal Vein to Lower Vein with Autologous Tissu	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0618099	06.18099	391	39.1	Bypass Portal Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061809B	06.1809B	391	39.1	Bypass Portal Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061809Y	06.1809Y	391	39.1	Bypass Portal Vein to Lower Vein with Autologous Ven	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180A9	06.180A9	391	39.1	Bypass Portal Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180AB	06.180AB	391	39.1	Bypass Portal Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180AY	06.180AY	391	39.1	Bypass Portal Vein to Lower Vein with Autologous Arte	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180J9	06.180J9	391	39.1	Bypass Portal Vein to Right Renal Vein with Synthetic S	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180JB	06.180JB	391	39.1	Bypass Portal Vein to Left Renal Vein with Synthetic Su	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180JY	06.180JY	391	39.1	Bypass Portal Vein to Lower Vein with Synthetic Subst	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180K9	06.180K9	391	39.1	Bypass Portal Vein to Right Renal Vein with Nonautolo	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180KB	06.180KB	391	39.1	Bypass Portal Vein to Left Renal Vein with Nonautolog	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180KY	06.180KY	391	39.1	Bypass Portal Vein to Lower Vein with Nonautologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180Z9	06.180Z9	391	39.1	Bypass Portal Vein to Right Renal Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180ZB	06.180ZB	391	39.1	Bypass Portal Vein to Left Renal Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06180ZY	06.180ZY	391	39.1	Bypass Portal Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06183J4	06.183J4	391	39.1	Bypass Portal Vein to Hepatic Vein with Synthetic Subs	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06183JY	06.183JY	391	39.1	Bypass Portal Vein to Lower Vein with Synthetic Subst	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	0618479	06.18479	391	39.1	Bypass Portal Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061847B	06.1847B	391	39.1	Bypass Portal Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061847Y	06.1847Y	391	39.1	Bypass Portal Vein to Lower Vein with Autologous Tissu	Intra-abdominal venous shunt	FY2018 (10/01/2017 -9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0

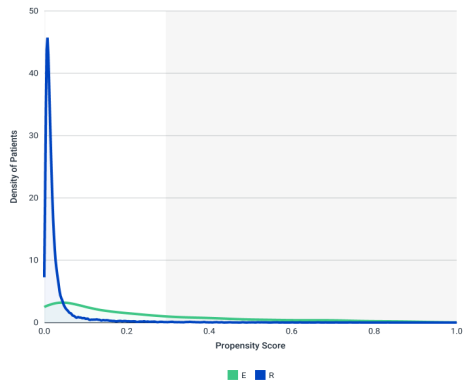
Appendix A

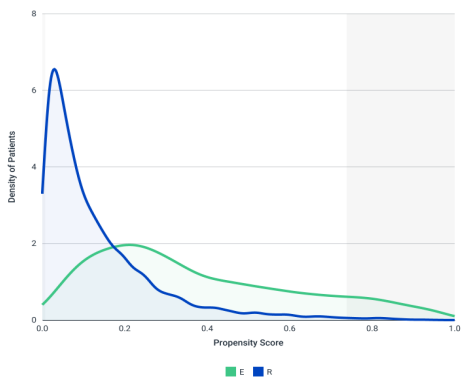
Backward (ICD10 to ICD9)	0618499	06.18499	391	39.1	Bypass Portal Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061849B	06.1849B	391	39.1	Bypass Portal Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061849Y	06.1849Y	391	39.1	Bypass Portal Vein to Lower Vein with Autologous Ven	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184A9	06.184A9	391	39.1	Bypass Portal Vein to Right Renal Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184AB	06.184AB	391	39.1	Bypass Portal Vein to Left Renal Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184AY	06.184AY	391	39.1	Bypass Portal Vein to Lower Vein with Autologous Arte	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184J4	06.184J4	391	39.1	Bypass Portal Vein to Hepatic Vein with Synthetic Subs	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184J9	06.184J9	391	39.1	Bypass Portal Vein to Right Renal Vein with Synthetic S	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184JB	06.184JB	391	39.1	Bypass Portal Vein to Left Renal Vein with Synthetic Su	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184JY	06.184JY	391	39.1	Bypass Portal Vein to Lower Vein with Synthetic Substi	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184K9	06.184K9	391	39.1	Bypass Portal Vein to Right Renal Vein with Nonautolo	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184KB	06.184KB	391	39.1	Bypass Portal Vein to Left Renal Vein with Nonautologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184KY	06.184KY	391	39.1	Bypass Portal Vein to Lower Vein with Nonautologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184Z9	06.184Z9	391	39.1	Bypass Portal Vein to Right Renal Vein, Percutaneous E	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184ZB	06.184ZB	391	39.1	Bypass Portal Vein to Left Renal Vein, Percutaneous En	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06184ZY	06.184ZY	391	39.1	Bypass Portal Vein to Lower Vein, Percutaneous Endos	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06190JY	06.190JY	391	39.1	Bypass Right Renal Vein to Lower Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06190KY	06.190KY	391	39.1	Bypass Right Renal Vein to Lower Vein with Nonautolo	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06190ZY	06.190ZY	391	39.1	Bypass Right Renal Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06194JY	06.194JY	391	39.1	Bypass Right Renal Vein to Lower Vein with Autologou	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06194KY	06.194KY	391	39.1	Bypass Right Renal Vein to Lower Vein with Nonautolo	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06194ZY	06.194ZY	391	39.1	Bypass Right Renal Vein to Lower Vein, Percutaneous E	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B07Y	06.1B07Y	391	39.1	Bypass Left Renal Vein to Lower Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B09Y	06.1B09Y	391	39.1	Bypass Left Renal Vein to Lower Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B0AY	06.1B0AY	391	39.1	Bypass Left Renal Vein to Lower Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B0JY	06.1B0JY	391	39.1	Bypass Left Renal Vein to Lower Vein with Synthetic Su	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B0KY	06.1B0KY	391	39.1	Bypass Left Renal Vein to Lower Vein with Nonautologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B0ZY	06.1B0ZY	391	39.1	Bypass Left Renal Vein to Lower Vein, Open Approach	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B47Y	06.1B47Y	391	39.1	Bypass Left Renal Vein to Lower Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B49Y	06.1B49Y	391	39.1	Bypass Left Renal Vein to Lower Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B4AY	06.1B4AY	391	39.1	Bypass Left Renal Vein to Lower Vein with Autologous	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B4JY	06.1B4JY	391	39.1	Bypass Left Renal Vein to Lower Vein with Synthetic Su	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B4KY	06.1B4KY	391	39.1	Bypass Left Renal Vein to Lower Vein with Nonautologo	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061B4ZY	06.1B4ZY	391	39.1	Bypass Left Renal Vein to Lower Vein, Percutaneous En	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J07Y	06.1J07Y	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Autol	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J09Y	06.1J09Y	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Autol	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J0AY	06.1J0AY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Autol	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J0JY	06.1J0JY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Synth	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J0KY	06.1J0KY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Nonaı	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J0ZY	06.1J0ZY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein, Open Appr	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J47Y	06.1J47Y	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Autol	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J49Y	06.1J49Y	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Autol	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J4AY	06.1J4AY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Autol	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J4JY	06.1J4JY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Synth	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J4KY	06.1J4KY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein with Nonaı	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	061J4ZY	06.1J4ZY	391	39.1	Bypass Left Hypogastric Vein to Lower Vein, Percutane	Intra-abdominal venous shunt	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L30CZ	06.L30CZ	4291	42.91	Occlusion of Esophageal Vein with Extraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L30DZ	06.L30DZ	4291	42.91	Occlusion of Esophageal Vein with Intraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	06L30ZZ	06.L30ZZ	4291	42.91	Occlusion of Esophageal Vein, Open Approach	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	06L33CZ	06.L33CZ	4291	42.91	Occlusion of Esophageal Vein with Extraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	06L33DZ	06.L33DZ	4291	42.91	Occlusion of Esophageal Vein with Intraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	06L33ZZ	06.L33ZZ	4291	42.91	Occlusion of Esophageal Vein, Percutaneous Approach	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	06L34CZ	06.L34CZ	4291	42.91	Occlusion of Esophageal Vein with Extraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Forward (ICD9 to ICD10)	06L34DZ	06.L34DZ	4291	42.91	Occlusion of Esophageal Vein with Intraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L34ZZ	06.L34ZZ	4291	42.91	Occlusion of Esophageal Vein, Percutaneous Endoscop	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L37CZ	06.L37CZ	4291	42.91	Occlusion of Esophageal Vein with Extraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L37DZ	06.L37DZ	4291	42.91	Occlusion of Esophageal Vein with Intraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L37ZZ	06.L37ZZ	4291	42.91	Occlusion of Esophageal Vein, Via Natural or Artificial	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L38CZ	06.L38CZ	4291	42.91	Occlusion of Esophageal Vein with Extraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L38DZ	06.L38DZ	4291	42.91	Occlusion of Esophageal Vein with Intraluminal Device	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0
Backward (ICD10 to ICD9)	06L38ZZ	06.L38ZZ	4291	42.91	Occlusion of Esophageal Vein, Via Natural or Artificial	Ligation of esophageal varices	FY2018 (10/01/2017 - 9/30/2018)	32	Porto-caval shunt Px	2_Approx 1:1	1	0	0	0	0

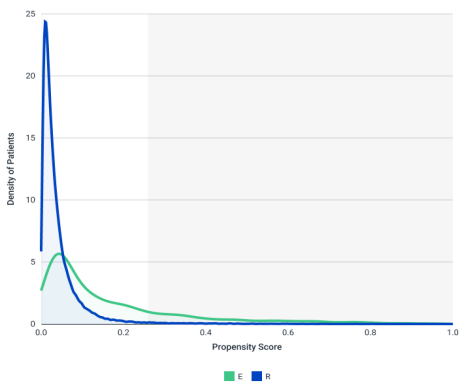
Appendix B: Dapagliflozin vs. Sitagliptin

Optum	MarketScan	CMS Diabetes

BEFORE PS MATCHING

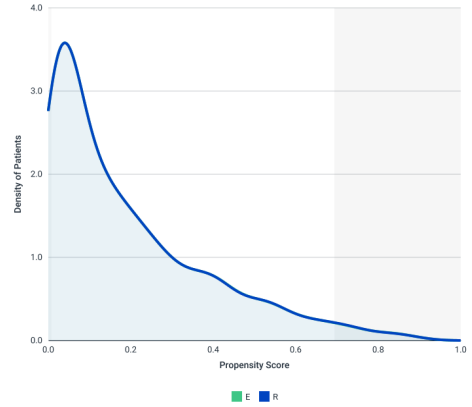


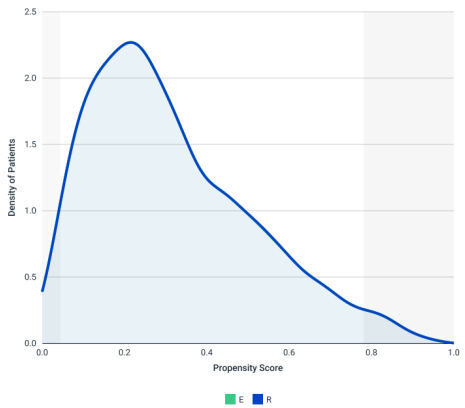


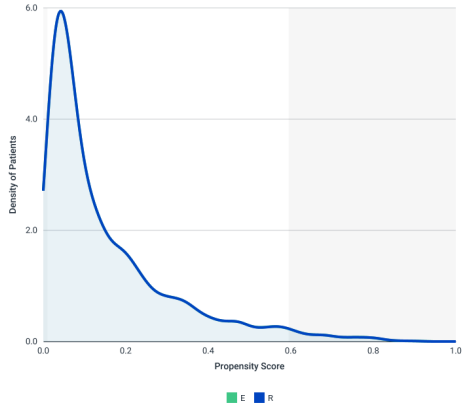


The c-statistics for the propensity score model, pre-matching was 0.86. The postmatching c-statistic was 0.606.	The c-statistics for the propensity score model, pre-matching was 0.828. The postmatching c-statistic was 0.561.	The c-statistics for the propensity score model, pre-matching was 0.802. The postmatching c-statistic was 0.548.

AFTER PS MATCHING







Appendix B: Dapagliflozin vs. Sitagliptin

	BEFORE MATCHING											
	OPTUM			MARKETSCAN			MEDICARE			POOLED		
Variable	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff
Number of patients	21,224	871		9,009	1,931		51,898	2,701		82,131	5,503	
Age - Continuous ...mean (sd)	73.04 (8.33)	64.74 (10.17)	0.8929	66.93 (11.32)	59.00 (8.67)	0.7865	76.27 (7.02)	73.23 (6.25)	0.4574	74.41 (7.95)	66.89 (7.87)	0.9507
Age Categories												
...18 - 54; n (%)	564 (2.7%)	155 (17.8%)	-0.5140	1,146 (12.7%)	508 (26.3%)	-0.3484	0 (0.0%)	0 (0.0%)	#DIV/0!	1,710 (2.1%)	663 (12.0%)	-0.3942
...55 - 64; n (%)	1,973 (9.3%)	238 (27.3%)	-0.4787	3,167 (35.2%)	1,093 (56.6%)	-0.4397	0 (0.0%)	0 (0.0%)	#DIV/0!	5,140 (6.3%)	1,331 (24.2%)	-0.5141
...65 - 74; n (%)	9,500 (44.8%)	339 (38.9%)	0.1198	2,238 (24.8%)	241 (12.5%)	0.3198	23,338 (45.0%)	1,723 (63.8%)	-0.3844	32,838 (40.0%)	2,062 (37.5%)	0.0513
...>= 75; n (%)	9,187 (43.3%)	139 (16.0%)	0.6264	2,458 (27.3%)	89 (4.6%)	0.6521	28,560 (55.0%)	978 (36.2%)	0.3844	37,747 (46.0%)	1,117 (20.3%)	0.5675
Gender												
...Male; n (%)	10,060 (47.4%)	487 (55.9%)	-0.1707	5,120 (56.8%)	1,212 (62.8%)	-0.1226	24,233 (46.7%)	1,385 (51.3%)	-0.0921	34,293 (41.8%)	1,872 (34.0%)	0.1613
...Female; n (%)	11,164 (52.6%)	384 (44.1%)	0.1707	3,889 (43.2%)	719 (37.2%)	0.1226	27,665 (53.3%)	1,316 (48.7%)	0.0921	38,829 (47.3%)	1,700 (30.9%)	0.3409
Geographic Region												
...Northeast; n (%)	1,916 (9.0%)	71 (8.2%)	0.0285	1,605 (17.8%)	214 (11.1%)	0.1914	9,276 (17.9%)	422 (15.6%)	0.0616	11,192 (13.6%)	493 (9.0%)	0.1457
...South; n (%)	10,975 (51.7%)	486 (55.8%)	-0.0823	4,157 (46.1%)	1,168 (60.5%)	-0.2917	22,230 (42.8%)	1,231 (45.6%)	-0.0564	33,205 (40.4%)	1,717 (31.2%)	0.1928
...Midwest; n (%)	2,594 (12.2%)	129 (14.8%)	-0.0761	2,159 (24.0%)	288 (14.9%)	0.2314	10,763 (20.7%)	389 (14.4%)	0.1662	13,357 (16.3%)	518 (9.4%)	0.2073
...West; n (%)	5,730 (27.0%)	185 (21.2%)	0.1359	1,039 (11.5%)	254 (13.2%)	-0.0517	9,502 (18.3%)	655 (24.3%)	-0.1469	15,232 (18.5%)	840 (15.3%)	0.0855
...Unknown+missing; n (%)	9 (0.0%)	0 (0.0%)	#DIV/0!	49 (0.5%)	7 (0.4%)	0.0149	127 (0.2%)	**	-	136 (0.2%)	-	#VALUE!
Calendar Time - Year of Initiation (2014/15 - 2020)												
...2014-2015; n (%)	4,202 (19.8%)	294 (33.8%)	-0.3201	3,943 (43.8%)	576 (29.8%)	0.2934	24,357 (46.9%)	799 (29.6%)	0.3617	28,559 (34.8%)	1,093 (19.9%)	0.3390
...2016; n (%)	2,845 (13.4%)	78 (9.0%)	0.1399	2,048 (22.7%)	473 (24.5%)	-0.0424	13,886 (26.8%)	673 (24.9%)	0.0434			
...2017; n (%)	3,840 (18.1%)	135 (15.5%)	0.0696	1,743 (19.3%)	375 (19.4%)	-0.0025	13,655 (26.3%)	1,229 (45.5%)	-0.4085	17,495 (21.3%)	1,364 (24.8%)	-0.0832
...2018; n (%)	4,202 (19.8%)	130 (14.9%)	0.1297	1,275 (14.2%)	507 (26.3%)	-0.3046	0 (0.0%)	0 (0.0%)	#DIV/0!	4,202 (5.1%)	130 (2.4%)	0.1425
...2019 - March 2020; n (%)	6,135 (28.9%)	234 (26.9%)	0.0446	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	6,135 (7.5%)	234 (4.3%)	0.1361
Combined comorbidity score, 180 days ...mean (sd)	3.29 (2.46)	2.52 (2.23)	0.3280	2.30 (2.23)	1.62 (1.81)	0.3348	2.47 (2.48)	2.02 (2.13)	0.1947	2.66 (2.45)	1.96 (2.04)	0.3105
Frailty Score: Empirical Version, 180 days ...mean (sd)	0.17 (0.05)	0.16 (0.04)	0.2209	0.16 (0.04)	0.15 (0.03)	0.2828	0.20 (0.06)	0.19 (0.05)	0.1811	0.19 (0.06)	0.17 (0.04)	0.3922
DiabRen - CKD II; n (%)	3,872 (18.2%)	191 (21.9%)	-0.0925	1,306 (14.5%)	391 (20.2%)	-0.1510	6,955 (13.4%)	497 (18.4%)	-0.1371	10,827 (13.2%)	688 (12.5%)	0.0209
DiabRen - CKD III; n (%)	11,801 (55.6%)	359 (41.2%)	0.2912	4,193 (46.5%)	563 (29.2%)	0.3625	27,504 (53.0%)	1,109 (41.1%)	0.2401	39,305 (47.9%)	1,468 (26.7%)	0.4493
DiabRen - Occurrence of Diabetic Nephropathy ; n (%)	11,450 (53.9%)	398 (45.7%)	0.1646	3,050 (33.9%)	669 (34.6%)	-0.0148	16,224 (31.3%)	906 (33.5%)	-0.0470	27,674 (33.7%)	1,304 (23.7%)	0.2224
DiabRen - Occurrence of Diabetic Neuropathy ; n (%)	6,254 (29.5%)	253 (29.0%)	0.0110	1,659 (18.4%)	392 (20.3%)	-0.0481	13,517 (26.0%)	847 (31.4%)	-0.1196	19,771 (24.1%)	1,100 (20.0%)	0.0990
DiabRen - Diabetic retinopathy ; n (%)	2,260 (10.6%)	95 (10.9%)	-0.0097	577 (6.4%)	113 (5.9%)	0.0208	4,571 (8.8%)	327 (12.1%)	-0.1080	6,831 (8.3%)	422 (7.7%)	0.0221
DiabRen - Diabetic foot ; n (%)	713 (3.4%)	27 (3.1%)	0.0169	274 (3.0%)	52 (2.7%)	0.0180	2,084 (4.0%)	94 (3.5%)	0.0263	2,797 (3.4%)	121 (2.2%)	0.0728
DiabRen - Diabetes with peripheral circulatory disorders ; n (%)	3,190 (15.0%)	90 (10.3%)	0.1417	617 (6.8%)	95 (4.9%)	0.0810	5,924 (11.4%)	343 (12.7%)	-0.0399	9,114 (11.1%)	433 (7.9%)	0.1093
DiabRen - Hypertensive nephropathy; n (%)	6,719 (31.7%)	227 (26.1%)	0.1238	1,940 (21.5%)	363 (18.8%)	0.0673	8,934 (17.2%)	477 (17.7%)	-0.0132	15,653 (19.1%)	704 (12.8%)	0.1727
DiabRen - Hypertension ; n (%)	19,413 (91.5%)	786 (90.2%)	0.0451	7,700 (85.5%)	1,635 (84.7%)	0.0225	48,556 (93.6%)	2,539 (94.0%)	-0.0166	67,969 (82.8%)	3,325 (60.4%)	0.5128
DiabRen - Hypotension ; n (%)	616 (2.9%)	20 (2.3%)	0.0377	181 (2.0%)	28 (1.5%)	0.0381	1,813 (3.5%)	72 (2.7%)	0.0462	2,429 (3.0%)	092 (1.7%)	0.0859
DiabRen - Gout (acute/chronic) ; n (%)	430 (2.0%)	15 (1.7%)	0.0223	237 (2.6%)	43 (2.2%)	0.0261	1,334 (2.6%)	44 (1.6%)	0.0698	1,764 (2.1%)	059 (1.1%)	0.0798
DiabRen - Nephrolithiasis; n (%)	362 (1.7%)	17 (2.0%)	-0.0223	223 (2.5%)	35 (1.8%)	0.0483	1,137 (2.2%)	49 (1.8%)	0.0286	1,499 (1.8%)	066 (1.2%)	0.0494
DiabRen - Proteinuria ; n (%)	1,863 (8.8%)	80 (9.2%)	-0.0140	328 (3.6%)	44 (2.3%)	0.0769	4,437 (8.5%)	253 (9.4%)	-0.0315	6,300 (7.7%)	333 (6.1%)	0.0632
DiabRen - Urinary tract infections (UTIs) ; n (%)	2,823 (13.3%)	80 (9.2%)	0.1300	705 (7.8%)	95 (4.9%)	0.1191	9,351 (18.0%)	408 (15.1%)	0.0781	12,174 (14.8%)	488 (8.9%)	0.1833
DiabRen - Genital infections; n (%)	302 (1.4%)	9 (1.0%)	0.0367	123 (1.4%)	28 (1.5%)	-0.0084	800 (1.5%)	47 (1.7%)	-0.0159	1,102 (1.3%)	056 (1.0%)	0.0281
DiabRen - Hypoglycemia v2 ; n (%)	3,543 (16.7%)	121 (13.9%)	0.0778	651 (7.2%)	175 (9.1%)	-0.0695	4,291 (8.3%)	292 (10.8%)	-0.0851	7,834 (9.5%)	413 (7.5%)	0.0718
DiabRen - Hyperglycemia; n (%)	1,039 (4.9%)	32 (3.7%)	0.0592	311 (3.5%)	70 (3.6%)	-0.0054	2,817 (5.4%)	148 (5.5%)	-0.0044	3,856 (4.7%)	180 (3.3%)	0.0715
DiabRen - Hyperkalemia; n (%)	975 (4.6%)	33 (3.8%)	0.0399	312 (3.5%)	41 (2.1%)	0.0849	2,589 (5.0%)	87 (3.2%)	0.0909	3,564 (4.3%)	120 (2.2%)	0.1186
DiabRen - Hypovolemia/volume depletion; n (%)	834 (3.9%)	28 (3.2%)	0.0378	263 (2.9%)	44 (2.3%)	0.0377	2,569 (5.0%)	90 (3.3%)	0.0853	3,403 (4.1%)	118 (2.1%)	0.1156
NephroTox - ACE inhibitors ; n (%)	11,816 (55.7%)	458 (52.6%)	0.0622	4,903 (54.4%)	1,056 (54.7%)	-0.0060	28,838 (55.6%)	1,361 (50.4%)	0.1043	40,654 (49.5%)	1,819 (33.1%)	0.3378
NephroTox - ARBs ; n (%)	10,050 (47.4%)	451 (51.8%)	-0.0881	4,429 (49.2%)	956 (49.5%)	-0.0060	24,917 (48.0%)	1,439 (53.3%)	-0.1062	34,967 (42.6%)	1,890 (34.3%)	0.1712
NephroTox - Loop Diuretics ; n (%)	4,691 (22.1%)	166 (19.1%)	0.0742	1,928 (21.4%)	272 (14.1%)	0.1919	15,531 (29.9%)	647 (24.0%)	0.1333	20,222 (24.6%)	813 (14.8%)	0.2483
NephroTox - Thiazide diuretics ; n (%)	4,144 (19.5%)	165 (18.9%)	0.0152	1,823 (20.2%)	333 (17.2%)	0.0770	10,001 (19.3%)	484 (17.9%)	0.0360	14,145 (17.2%)	649 (11.8%)	0.1538
NephroTox - Mineralocorticoid receptor antagonist ; n (%)	1,024 (4.8%)	50 (5.7%)	-0.0404	590 (6.5%)	97 (5.0%)	0.0645	2,969 (5.7%)	128 (4.7%)	0.0451	3,993 (4.9%)	178 (3.2%)	0.0863
NephroTox - NSAIDs; n (%)	2,651 (12.5%)	140 (16.1%)	-0.1030	1,182 (13.1%)	339 (17.6%)	-0.1251	5,826 (11.2%)	427 (15.8%)	-0.1349	8,477 (10.3%)	567 (10.3%)	0.0000
NephroTox - PPIs; n (%)	5,417 (25.5%)	201 (23.1%)	0.0560	1,895 (21.0%)	380 (19.7%)	0.0323	14,510 (28.0%)	688 (25.5%)	0.0565	19,927 (24.3%)	889 (16.2%)	0.2026
NephroTox - H2RAs; n (%)	1,622 (7.6%)	40 (4.6%)	0.1256	377 (4.2%)	67 (3.5%)	0.0364	3,801 (7.3%)	217 (8.0%)	-0.0263	5,423 (6.6%)	257 (4.7%)	0.0824
NephroTox - Antivirals/Antiretrovirals/Antimicrobials; n (%)	200 (0.9%)	14 (1.6%)	-0.0630	85 (0.9%)	19 (1.0%)	-0.0103	517 (1.0%)	33 (1.2%)	-0.0192	717 (0.9%)	047 (0.9%)	0.0000
DM Medications - 1st and 2nd Generation SUs ; n (%)	9,808 (46.2%)	380 (43.6%)	0.0523	3,893 (43.2%)	708 (36.7%)	0.1330	24,534 (47.3%)	1,180 (43.7%)	0.0723	34,342 (41.8%)	1,560 (28.3%)	0.2858
DM Medications - AGI & Meglinitides; n (%)	487 (2.3%)	17 (2.0%)	0.0207	246 (2.7%)	35 (1.8%)	0.0607	1,767 (3.4%)	136 (5.0%)	-0.0798	2,254 (2.7%)	153 (2.8%)	-0.0061
DM Medications - DPP-4 Inhibitors (excluding sitagliptin); n (%)	1,253 (5.9%)	134 (15.4%)	-0.3117	675 (7.5%)	172 (8.9%)	-0.0510	4,025 (7.8%)	426 (15.8%)	-0.2499	5,278 (6.4%)	560 (10.2%)	-0.1381
DM Medications - Glitazones ; n (%)	1,969 (9.3%)	106 (12.2%)	-0.0937	771 (8.6%)	242 (12.5%)	-0.1272	4,266 (8.2%)	320 (11.8%)	-0.1202	6,235 (7.6%)	426 (7.7%)	-0.0038
DM Medications - GLP-1 RA ; n (%)	888 (4.2%)	228 (26.2%)	-0.6437	469 (5.2%)	515 (26.7%)	-0.6143	1,519 (2.9%)	515 (19.1%)	-0.5360	2,407 (2.9%)	743 (13.5%)	-0.3938
DM Medications - Insulins; n (%)	4,954 (23.3%)	291 (33.4%)	-0.2255	1,997 (22.2%)	633 (32.8%)	-0.2391	12,291 (23.7%)	1,005 (37.2%)	-0.2966	17,245 (21.0%)	1,296 (23.6%)	-0.0625
DM Medications - Metformin ; n (%)	11,179 (52.7%)	529 (60.7%)	-0.1620	4,464 (49.6%)	1,188 (61.5%)	-0.2412	24,769 (47.7%)	1,510 (55.9%)	-0.1647	35,948 (43.8%)	2,039 (37.1%)	0.1368
DM Medications - SGLT-2 Inhibitors (excluding dapagliflozin); n (%)	443 (2.1%)	60 (6.9%)	-0.2331	181 (2.0%)	269 (13.9%)	-0.4509	473 (0.9%)	181 (6.7%)	-0.3069	916 (1.1%)	241 (4.4%)	-0.2028
DM Medications - Number of antiDM medications at index date ...mean (sd)	2.28 (0.84)	2.84 (0.97)	-0.6172	2.25 (0.84)	2.82 (0.99)	-0.6209	**	**	#VALUE!	#VALUE!	#VALUE!	#VALUE!
CV Comorbidity - Acute and Old MI ; n (%)	1,054 (5.0%)	29 (3.3%)	0.0853	215 (2.4%)	27 (1.4%)	0.0733	3,147 (6.1%)	127 (4.7%)	0.0620	4,201 (5.1%)	156 (2.8%)	0.1183
CV Comorbidity - Any Heart failure (HF) ; n (%)	3,264 (15.4%)	90 (10.3%)	0.1528	923 (10.2%)	98 (5.1%)	0.1928	10,227 (19.7%)	389 (14.4%)	0.1413	13,491 (16.4%)	479 (8.7%)	0.2340
CV Comorbidity - Hospitalization for CHF ; n (%)	715 (3.4%)	23 (2.6%)	0.0469	315 (3.5%)	25 (1.3%)	0.1441	3,249 (6.3%)	79 (2.9%)	0.1628	3,964 (4.8%)	102 (1.9%)	0.1617
CV Comorbidity - Atrial fibrillation; n (%)	2,489 (11.7%)	64 (7.3%)	0.1505	802 (8.9%)	82 (4.2%)	0.1908	8,791 (16.9%)	355 (13.1%)	0.1066	11,280 (13.7%)	419 (7.6%)	0.1987
CV Comorbidity - Other dysrythmias ; n (%)	3,047 (14.4%)	109 (12.5%)	0.0557	948 (10.5%)	124 (6.4%)	0.1478	8,990 (17.3%)	422 (15.6%)	0.0459	12,037 (14.7%)	531 (9.6%)	0.1566
CV Comorbidity - Valve disorder ; n (%)	720 (3.4%)	17 (2.0%)	0.0865	168 (1.9%)	20 (1.0%)	0.0753	2,387 (4.6%)	98 (3.6%)	0.0504	3,107 (3.8%)	115 (2.1%)	0.1006
CV Comorbidity - Implantable cardioverter defibrillator ; n (%)	416 (2.0%)	10 (1.1%)	0.0729	156 (1.7%)	12 (0.6%)	0.1033	1,521 (2.9%)	49 (1.8%)	0.0727	1,937 (2.4%)	059 (1.1%)	0.0993
CV Comorbidity - CABG/PCI ; n (%)	1,691 (8.0%)	60 (6.9%)	0.0419	305 (3.4%)	46 (2.4%)	0.0596	5,727 (11.0%)	268 (9.9%)	0.0360	7,418 (9.0%)	328 (6.0%)	0.1141
CV Comorbidity - Coronary atherosclerosis and other forms of chronic ischemic heart disease ; n (%)	5,339 (25.2%)	199 (22.8%)	0.0562	1,914 (21.2%)	295 (15.3%)	0.1532	18,111 (34.9%)	895 (33.1%)	0.0380	23,450 (28.6%)	1,094 (19.9%)	0.2040

Appendix B: Dapagliflozin vs. Sitagliptin

CV Comorbidity - Hyperlipidemia ; n (%)	16,913 (79.7%)	726 (83.4%)	-0.0955	6,345 (70.4%)	1,483 (76.8%)	-0.1456	41,955 (80.8%)	2,257 (83.6%)	-0.0732	58,868 (71.7%)	2,983 (54.2%)	0.3685
CV Comorbidity - Stable Angina ; n (%)	1,232 (5.8%)	33 (3.8%)	0.0937	216 (2.4%)	42 (2.2%)	0.0133	1,933 (3.7%)	137 (5.1%)	-0.0683	3,165 (3.9%)	170 (3.1%)	0.0435
CV Comorbidity - Unstable Angina ; n (%)	331 (1.6%)	18 (2.1%)	-0.0371	93 (1.0%)	15 (0.8%)	0.0212	846 (1.6%)	38 (1.4%)	0.0165	1,177 (1.4%)	056 (1.0%)	0.0367
CV Comorbidity - Peripheral Vascular Disease (PVD) or PVD Surgery ; n (%)	2,604 (12.3%)	91 (10.4%)	0.0599	651 (7.2%)	77 (4.0%)	0.1395	8,166 (15.7%)	421 (15.6%)	0.0028	10,770 (13.1%)	512 (9.3%)	0.1207
CV Comorbidity - Stroke/TIA ; n (%)	927 (4.4%)	25 (2.9%)	0.0801	183 (2.0%)	19 (1.0%)	0.0823	2,043 (3.9%)	84 (3.1%)	0.0435	2,970 (3.6%)	109 (2.0%)	0.0971
CV Comorbidity - Pulmonary hypertension/Other pulmonary heart disease ; n (%)	637 (3.0%)	19 (2.2%)	0.0503	179 (2.0%)	18 (0.9%)	0.0921	1,876 (3.6%)	64 (2.4%)	0.0704	2,513 (3.1%)	083 (1.5%)	0.1069
CV Medication - Beta blockers ; n (%)	10,748 (50.6%)	438 (50.3%)	0.0060	4,664 (51.8%)	823 (42.6%)	0.1851	29,658 (57.1%)	1,486 (55.0%)	0.0423	40,406 (49.2%)	1,924 (35.0%)	0.2906
CV Medication - CCB; n (%)	8,243 (38.8%)	274 (31.5%)	0.1533	3,256 (36.1%)	544 (28.2%)	0.1698	20,572 (39.6%)	987 (36.5%)	0.0639	28,815 (35.1%)	1,261 (22.9%)	0.2713
CV Medication - Digoxin ; n (%)	473 (2.2%)	15 (1.7%)	0.0362	198 (2.2%)	17 (0.9%)	0.1054	2,016 (3.9%)	87 (3.2%)	0.0378	2,489 (3.0%)	102 (1.9%)	0.0712
CV Medication - Nitrates ; n (%)	1,651 (7.8%)	74 (8.5%)	-0.0256	564 (6.3%)	74 (3.8%)	0.1144	5,317 (10.2%)	255 (9.4%)	0.0269	6,968 (8.5%)	329 (6.0%)	0.0965
CV Medication - Use of Statins ; n (%)	17,126 (80.7%)	717 (82.3%)	-0.0412	6,804 (75.5%)	1,470 (76.1%)	-0.0140	40,441 (77.9%)	2,195 (81.3%)	-0.0844	57,567 (70.1%)	2,912 (52.9%)	0.3591
CV Medication - Use of other lipid-lowering drugs ; n (%)	2,741 (12.9%)	161 (18.5%)	-0.1544	1,615 (17.9%)	398 (20.6%)	-0.0685	8,062 (15.5%)	497 (18.4%)	-0.0774	10,803 (13.2%)	658 (12.0%)	0.0362
CV Medication - Use of other hypertension drugs ; n (%)	2,587 (12.2%)	82 (9.4%)	0.0903	1,156 (12.8%)	181 (9.4%)	0.1084	6,811 (13.1%)	350 (13.0%)	0.0030	9,398 (11.4%)	432 (7.9%)	0.1187
Other Comorbidity - Anemia ; n (%)	4,602 (21.7%)	131 (15.0%)	0.1737	1,550 (17.2%)	240 (12.4%)	0.1355	16,274 (31.4%)	720 (26.7%)	0.1037	20,876 (25.4%)	851 (15.5%)	0.2473
Other Comorbidity - Cancer ; n (%)	2,602 (12.3%)	93 (10.7%)	0.0502	1,053 (11.7%)	128 (6.6%)	0.1776	8,190 (15.8%)	345 (12.8%)	0.0858	10,792 (13.1%)	438 (8.0%)	0.1666
Other Comorbidity - COPD ; n (%)	2,845 (13.4%)	87 (10.0%)	0.1059	667 (7.4%)	60 (3.1%)	0.1937	7,771 (15.0%)	364 (13.5%)	0.0429	10,616 (12.9%)	451 (8.2%)	0.1534
Other Comorbidity - Dementia ; n (%)	1,453 (6.8%)	28 (3.2%)	0.1657	314 (3.5%)	9 (0.5%)	0.2155	5,494 (10.6%)	167 (6.2%)	0.1591	6,947 (8.5%)	195 (3.5%)	0.2117
Other Comorbidity - Depression ; n (%)	3,072 (14.5%)	104 (11.9%)	0.0769	701 (7.8%)	137 (7.1%)	0.0267	6,957 (13.4%)	350 (13.0%)	0.0118	10,029 (12.2%)	454 (8.3%)	0.1289
Other Comorbidity - Fractures ; n (%)	772 (3.6%)	24 (2.8%)	0.0455	284 (3.2%)	36 (1.9%)	0.0825	2,685 (5.2%)	101 (3.7%)	0.0728	3,457 (4.2%)	125 (2.3%)	0.1073
Other Comorbidity - Hypothyroidism ; n (%)	1,505 (7.1%)	74 (8.5%)	-0.0522	711 (7.9%)	152 (7.9%)	0.0000	7,204 (13.9%)	330 (12.2%)	0.0505	8,709 (10.6%)	404 (7.3%)	0.1158
Other Comorbidity - Osteoporosis ; n (%)	1,618 (7.6%)	47 (5.4%)	0.0893	282 (3.1%)	29 (1.5%)	0.1069	4,961 (9.6%)	304 (11.3%)	-0.0556	6,579 (8.0%)	351 (6.4%)	0.0619
Other Comorbidity - Pneumonia ; n (%)	825 (3.9%)	21 (2.4%)	0.0860	315 (3.5%)	28 (1.5%)	0.1284	2,793 (5.4%)	96 (3.6%)	0.0869	3,618 (4.4%)	117 (2.1%)	0.1300
Other Comorbidity - Sleep apnea ; n (%)	2,555 (12.0%)	148 (17.0%)	-0.1424	1,255 (13.9%)	329 (17.0%)	-0.0859	5,931 (11.4%)	400 (14.8%)	-0.1009	8,486 (10.3%)	548 (10.0%)	0.0099
Other Medication - Use of anticonvulsants ; n (%)	4,685 (22.1%)	187 (21.5%)	0.0145	1,476 (16.4%)	312 (16.2%)	0.0054	11,018 (21.2%)	708 (26.2%)	-0.1178	15,703 (19.1%)	895 (16.3%)	0.0734
Other Medication - Use of antidepressants ; n (%)	5,538 (26.1%)	228 (26.2%)	-0.0023	2,124 (23.6%)	451 (23.4%)	0.0047	14,254 (27.5%)	799 (29.6%)	-0.0465	19,792 (24.1%)	1,027 (18.7%)	0.1320
Other Medication - Use of antiparkinsonian meds ; n (%)	668 (3.1%)	25 (2.9%)	0.0117	229 (2.5%)	40 (2.1%)	0.0267	2,031 (3.9%)	118 (4.4%)	-0.0251	2,699 (3.3%)	143 (2.6%)	0.0414
Other Medication - Use of dementia meds ; n (%)	924 (4.4%)	16 (1.8%)	0.1504	217 (2.4%)	3 (0.2%)	0.1951	3,463 (6.7%)	133 (4.9%)	0.0771	4,387 (5.3%)	149 (2.7%)	0.1330
Other Medication - Use of antipsychotics ; n (%)	672 (3.2%)	24 (2.8%)	0.0235	200 (2.2%)	25 (1.3%)	0.0687	2,140 (4.1%)	93 (3.4%)	0.0369	2,812 (3.4%)	117 (2.1%)	0.0796
Other Medication - Use of anxiolytics/hypnotics ; n (%)	1,093 (5.1%)	55 (6.3%)	-0.0518	534 (5.9%)	130 (6.7%)	-0.0329	3,233 (6.2%)	204 (7.6%)	-0.0553	4,326 (5.3%)	259 (4.7%)	0.0275
Other Medication - Use of Benzodiazepines ; n (%)	2,322 (10.9%)	100 (11.5%)	-0.0190	920 (10.2%)	197 (10.2%)	0.0000	6,616 (12.7%)	344 (12.7%)	0.0000	8,938 (10.9%)	444 (8.1%)	0.0956
Other Medication - Use of COPD/asthma meds; n (%)	4,164 (19.6%)	175 (20.1%)	-0.0125	1,578 (17.5%)	310 (16.1%)	0.0375	10,663 (20.5%)	601 (22.3%)	-0.0439	14,827 (18.1%)	776 (14.1%)	0.1090
Other Medication - Use of antiplatelet agents; n (%)	2,950 (13.9%)	108 (12.4%)	0.0444	1,478 (16.4%)	271 (14.0%)	0.0669	8,311 (16.0%)	447 (16.5%)	-0.0136	11,261 (13.7%)	555 (10.1%)	0.1114
Other Medication - Use of oral anticoagulants ; n (%)	2,259 (10.6%)	72 (8.3%)	0.0787	875 (9.7%)	101 (5.2%)	0.1720	7,187 (13.8%)	346 (12.8%)	0.0295	9,446 (11.5%)	418 (7.6%)	0.1330
Other Medication - Use of opioids ; n (%)	5,237 (24.7%)	194 (22.3%)	0.0566	2,318 (25.7%)	461 (23.9%)	0.0417	14,731 (28.4%)	737 (27.3%)	0.0245	19,968 (24.3%)	931 (16.9%)	0.1837
Lifestyle - Alcohol/Drug Abuse or Dependence ; n (%)	616 (2.9%)	16 (1.8%)	0.0727	110 (1.2%)	18 (0.9%)	0.0294	870 (1.7%)	45 (1.7%)	0.0000	1,486 (1.8%)	061 (1.1%)	0.0586
Lifestyle - Obesity; n (%)	4,620 (21.8%)	273 (31.3%)	-0.2164	1,702 (18.9%)	481 (24.9%)	-0.1455	10,685 (20.6%)	795 (29.4%)	-0.2043	15,305 (18.6%)	1,068 (19.4%)	-0.0204
Lifestyle - Smoking; n (%)	2,862 (13.5%)	94 (10.8%)	0.0827	508 (5.6%)	93 (4.8%)	0.0360	8,159 (15.7%)	395 (14.6%)	0.0307	11,021 (13.4%)	489 (8.9%)	0.1433
HU - Number of Cardiologist visits ...mean (sd)	1.78 (4.22)	1.67 (4.25)	0.0260	1.10 (3.36)	0.88 (2.46)	0.0747	2.45 (5.55)	2.07 (5.07)	0.0715	2.13 (5.03)	1.59 (4.20)	0.1165
HU - Number of Nephrologist visit ...mean (sd)	0.60 (2.24)	0.48 (1.72)	0.0601	0.49 (1.99)	0.38 (1.68)	0.0597	0.74 (2.77)	0.69 (3.95)	0.0147	0.68 (2.57)	0.55 (3.02)	0.0464
HU - Number of Endocrinologist visits ...mean (sd)	0.45 (2.10)	1.18 (3.73)	-0.2412	0.49 (2.28)	0.98 (2.96)	-0.1855	0.79 (3.61)	1.32 (4.52)	-0.1296	0.67 (3.15)	1.18 (3.91)	-0.1436
HU - Number of Internal Medicine/Family Medicine Visits ...mean (sd)	15.91 (18.92)	11.70 (15.83)	0.2413	9.07 (12.72)	7.67 (8.79)	0.1281	10.09 (12.96)	10.75 (14.87)	-0.0473	11.48 (14.71)	9.82 (13.24)	0.1186
HU - Number of Emergency Department (ED) visits ...mean (sd)	0.59 (1.60)	0.52 (1.83)	0.0407	0.27 (1.51)	0.18 (1.53)	0.0592	0.75 (2.06)	0.55 (1.36)	0.1146	0.66 (1.90)	0.42 (1.50)	0.1402
HU - Number of Distinct Medication Prescriptions (not generalized to generics) ...mean (sd)	28.51 (19.80)	33.44 (20.23)	-0.2463	25.94 (16.29)	27.51 (16.84)	-0.0948	31.26 (22.25)	36.01 (26.11)	-0.1958	29.97 (21.05)	32.62 (22.34)	-0.1221
HU - Number of Echocardiogram ...mean (sd)	0.28 (1.42)	0.30 (1.55)	-0.0135	0.22 (0.69)	0.13 (0.46)	0.1535	0.28 (0.70)	0.23 (0.65)	0.0740	0.27 (0.94)	0.21 (0.81)	0.0684
HU - Number of Electrocardiogram Performed ...mean (sd)	0.83 (1.83)	0.75 (1.82)	0.0438	0.68 (1.43)	0.47 (1.00)	0.1702	0.98 (1.80)	0.85 (1.58)	0.0768	0.91 (1.77)	0.70 (1.45)	0.1298
HU - Number of HbA1c tests ordered ...mean (sd)	1.50 (0.97)	1.52 (0.91)	-0.0213	0.96 (0.98)	1.39 (0.95)	-0.4455	1.53 (0.93)	1.72 (0.98)	-0.1989	1.46 (0.95)	1.57 (0.96)	-0.1152
HU - Number of Hospitalizations during CAP ...mean (sd)	0.15 (0.50)	0.12 (0.44)	0.0637	0.14 (0.44)	0.08 (0.31)	0.1576	0.25 (0.65)	0.13 (0.44)	0.2162	0.21 (0.59)	0.11 (0.40)	0.1984
HU - Recent hospitalization (-30 days to Index Rx date) ; n (%)	617 (2.9%)	13 (1.5%)	0.0956	254 (2.8%)	18 (0.9%)	0.1414	2,465 (4.7%)	36 (1.3%)	0.2003	3,082 (3.8%)	049 (0.9%)	0.1923
HU - Old hospitalizations (-180 to -31 days); n (%)	2,008 (9.5%)	76 (8.7%)	0.0278	841 (9.3%)	110 (5.7%)	0.1370	7,233 (13.9%)	245 (9.1%)	0.1509	9,241 (11.3%)	321 (5.8%)	0.1977
HU - Mammogram ; n (%)	2,561 (12.1%)	108 (12.4%)	-0.0092	754 (8.4%)	181 (9.4%)	-0.0351	5,207 (10.0%)	293 (10.8%)	-0.0262	7,768 (9.5%)	401 (7.3%)	0.0794
HU - Pap smear ; n (%)	380 (1.8%)	19 (2.2%)	-0.0286	261 (2.9%)	84 (4.4%)	-0.0801	916 (1.8%)	47 (1.7%)	0.0076	1,296 (1.6%)	066 (1.2%)	0.0341
HU - Prostate exam for DRE ; n (%)	1,007 (4.7%)	38 (4.4%)	0.0144	315 (3.5%)	88 (4.6%)	-0.0558	2,664 (5.1%)	182 (6.7%)	-0.0679	3,671 (4.5%)	220 (4.0%)	0.0248
HU - Flexible Sigmoidoscopy or colonoscopy or CT virtual colonoscopy; n (%)	987 (4.7%)	33 (3.8%)	0.0446	497 (5.5%)	104 (5.4%)	0.0044	2,514 (4.8%)	134 (5.0%)	-0.0093	3,501 (4.3%)	167 (3.0%)	0.0694
HU - Bone mineral density ; n (%)	1,026 (4.8%)	38 (4.4%)	0.0191	196 (2.2%)	39 (2.0%)	0.0139	2,214 (4.3%)	133 (4.9%)	-0.0286	3,240 (3.9%)	171 (3.1%)	0.0435
HU - Flu vaccine ; n (%)	4,955 (23.3%)	197 (22.6%)	0.0166	1,562 (17.3%)	355 (18.4%)	-0.0287	18,258 (35.2%)	935 (34.6%)	0.0126	23,213 (28.3%)	1,132 (20.6%)	0.1799
HU - Pneumococcal vaccine ; n (%)	5,388 (25.4%)	196 (22.5%)	0.0680	1,246 (13.8%)	289 (15.0%)	-0.0342	14,318 (27.6%)	856 (31.7%)	-0.0899	19,706 (24.0%)	1,052 (19.1%)	0.1194
Lab - Occurrence of 24-hour urine test; n (%)	8,939 (42.1%)	370 (42.5%)	-0.0081	2,455 (27.3%)	755 (39.1%)	-0.2526	19,220 (37.0%)	1,105 (40.9%)	-0.0800	28,159 (34.3%)	1,475 (26.8%)	0.1634
Lab - Occurrence of creatinine tests ordered; n (%)	1,202 (5.7%)	53 (6.1%)	-0.0170	466 (5.2%)	80 (4.1%)	0.0523	4,261 (8.2%)	195 (7.2%)	0.0375	5,463 (6.7%)	248 (4.5%)	0.0958
Lab - Occurrence of urine albumin test ordered; n (%)	11,639 (54.8%)	467 (53.6%)	0.0241	2,611 (29.0%)	862 (44.6%)	-0.3278	21,500 (41.4%)	1,277 (47.3%)	-0.1190	33,139 (40.3%)	1,744 (31.7%)	0.1799
Lab - Occurrence of HgA1c test; n (%)	11,207 (52.8%)	394 (45.2%)	0.1525	724 (8.0%)	149 (7.7%)	0.0112	46,435 (89.5%)	2,507 (92.8%)	-0.1164	57,642 (70.2%)	2,901 (52.7%)	0.3655
SES Proxy - Copay for pharmacy cost (charges in U.S. $) ...mean (sd)	28.11 (33.95)	33.64 (35.58)	-0.1590	20.33 (20.86)	24.65 (25.50)	-0.1854	28.06 (35.48)	31.18 (43.28)	-0.0788	27.23 (33.78)	29.28 (36.71)	-0.0581
SES Proxy - Low income indicator; n (%)	6,063 (28.6%)	194 (22.3%)	0.1450	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	6,063 (7.4%)	194 (3.5%)	0.1724
SES Proxy - Business type												
...Commercial; n (%)	1,284 (6.0%)	403 (46.3%)	-1.0319	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	1,284 (1.6%)	403 (7.3%)	-0.2791
...Medicare; n (%)	19,940 (94.0%)	468 (53.7%)	1.0319	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	19,940 (24.3%)	468 (8.5%)	0.4368
SES Proxy - Insurance Plan type												
...Comprehensive; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	2,315 (25.7%)	136 (7.0%)	0.5226	0 (0.0%)	0 (0.0%)	#DIV/0!	2,315 (2.8%)	136 (2.5%)	0.0187
...HMO; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	957 (10.6%)	192 (9.9%)	0.0231	0 (0.0%)	0 (0.0%)	#DIV/0!	957 (1.2%)	192 (3.5%)	-0.1523
...PPO; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	4,024 (44.7%)	1,069 (55.4%)	-0.2152	0 (0.0%)	0 (0.0%)	#DIV/0!	4,024 (4.9%)	1,069 (19.4%)	-0.4552
...Others; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	1,713 (19.0%)	534 (27.7%)	-0.2067	0 (0.0%)	0 (0.0%)	#DIV/0!	1,713 (2.1%)	534 (9.7%)	-0.3268
SES Proxy - Dual status code (with Medicaid); n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	12,694 (24.5%)	851 (31.5%)	-0.1564	12,694 (15.5%)	851 (15.5%)	0.0000

Due to CMS cell suppression policy, all values less than 11 are denoted with **

Appendix B: Dapagliflozin vs. Sitagliptin

	AFTER MATCHING											
	OPTUM			MARKETSCAN			MEDICARE			POOLED		
Variable	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff	Reference - Sitagliptin	Exposure - Dapagliflozin	St. Diff
Number of patients	828	828		1,687	1,687		2,630	2,630		5,145	5,145	
Age - Continuous ...mean (sd)	65.33 (9.96)	65.27 (9.97)	0.0060	59.19 (9.34)	59.52 (8.66)	-0.0366	73.17 (5.93)	73.25 (6.25)	-0.0131	67.32 (7.91)	67.46 (7.78)	-0.0178
Age Categories												
...18 - 54; n (%)	119 (14.4%)	130 (15.7%)	-0.0364	489 (29.0%)	413 (24.5%)	0.1018	0 (0.0%)	0 (0.0%)	#DIV/0!	608 (11.8%)	543 (10.6%)	0.0381
...55 - 64; n (%)	232 (28.0%)	224 (27.1%)	0.0201	836 (49.6%)	958 (56.8%)	-0.1447	0 (0.0%)	0 (0.0%)	#DIV/0!	1,068 (20.8%)	1,182 (23.0%)	-0.0532
...65 - 74; n (%)	327 (39.5%)	336 (40.6%)	-0.0225	262 (15.5%)	228 (13.5%)	0.0568	1,686 (64.1%)	1,674 (63.7%)	0.0083	2,013 (39.1%)	2,010 (39.1%)	0.0000
...>= 75; n (%)	150 (18.1%)	138 (16.7%)	0.0369	100 (5.9%)	88 (5.2%)	0.0306	944 (35.9%)	956 (36.3%)	-0.0083	1,094 (21.3%)	1,094 (21.3%)	0.0000
Gender												
...Male; n (%)	440 (53.1%)	452 (54.6%)	-0.0301	1,042 (61.8%)	1,051 (62.3%)	-0.0103	1,371 (52.1%)	1,349 (51.3%)	0.0160	1,811 (35.2%)	1,801 (35.0%)	0.0042
...Female; n (%)	388 (46.9%)	376 (45.4%)	0.0301	645 (38.2%)	636 (37.7%)	0.0103	1,259 (47.9%)	1,281 (48.7%)	-0.0160	1,647 (32.0%)	1,657 (32.2%)	-0.0043
Geographic Region												
...Northeast; n (%)	77 (9.3%)	71 (8.6%)	0.0245	197 (11.7%)	192 (11.4%)	0.0094	400 (15.2%)	412 (15.7%)	-0.0138	477 (9.3%)	483 (9.4%)	-0.0034
...South; n (%)	463 (55.9%)	460 (55.6%)	0.0060	1,024 (60.7%)	1,010 (59.9%)	0.0164	1,189 (45.2%)	1,208 (45.9%)	-0.0141	1,652 (32.1%)	1,668 (32.4%)	-0.0064
...Midwest; n (%)	99 (12.0%)	119 (14.4%)	-0.0709	252 (14.9%)	259 (15.4%)	-0.0139	422 (16.0%)	379 (14.4%)	0.0446	521 (10.1%)	498 (9.7%)	0.0134
...West; n (%)	189 (22.8%)	178 (21.5%)	0.0313	206 (12.2%)	219 (13.0%)	-0.0241	619 (23.5%)	631 (24.0%)	-0.0117	808 (15.7%)	809 (15.7%)	0.0000
Calendar Time - Year of Initiation (2014/15 - 2020)												
...2014-2015; n (%)	257 (31.0%)	270 (32.6%)	-0.0344	531 (31.5%)	539 (32.0%)	-0.0107	755 (28.7%)	790 (30.0%)	-0.0286	1,012 (19.7%)	1,060 (20.6%)	-0.0224
...2016; n (%)	67 (8.1%)	75 (9.1%)	-0.0357	399 (23.7%)	408 (24.2%)	-0.0117	682 (25.9%)	659 (25.1%)	0.0184			
...2017; n (%)	119 (14.4%)	131 (15.8%)	-0.0391	364 (21.6%)	343 (20.3%)	0.0319	1,193 (45.4%)	1,181 (44.9%)	0.0100	1,312 (25.5%)	1,312 (25.5%)	0.0000
...2018; n (%)	140 (16.9%)	125 (15.1%)	0.0491	393 (23.3%)	397 (23.5%)	-0.0047	0 (0.0%)	0 (0.0%)	#DIV/0!	140 (2.7%)	125 (2.4%)	0.0190
...2019 - March 2020; n (%)	245 (29.6%)	227 (27.4%)	0.0488	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	245 (4.8%)	227 (4.4%)	0.0191
Combined comorbidity score, 180 days ...mean (sd)	2.54 (2.24)	2.57 (2.25)	-0.0134	1.64 (1.78)	1.63 (1.82)	0.0056	2.07 (2.19)	2.02 (2.14)	0.0231	2.00 (2.07)	1.98 (2.06)	0.0097
Frailty Score: Empirical Version, 180 days ...mean (sd)	0.16 (0.05)	0.16 (0.05)	0.0000	0.15 (0.03)	0.15 (0.03)	0.0000	0.19 (0.06)	0.19 (0.05)	0.0000	0.17 (0.05)	0.17 (0.04)	0.0000
DiabRen - CKD II; n (%)	162 (19.6%)	181 (21.9%)	-0.0567	339 (20.1%)	341 (20.2%)	-0.0025	513 (19.5%)	482 (18.3%)	0.0307	675 (13.1%)	663 (12.9%)	0.0059
DiabRen - CKD III; n (%)	351 (42.4%)	350 (42.3%)	0.0020	492 (29.2%)	508 (30.1%)	-0.0197	1,107 (42.1%)	1,090 (41.4%)	0.0142	1,458 (28.3%)	1,440 (28.0%)	0.0067
DiabRen - Occurrence of Diabetic Nephropathy ; n (%)	371 (44.8%)	381 (46.0%)	-0.0241	558 (33.1%)	570 (33.8%)	-0.0148	907 (34.5%)	883 (33.6%)	0.0190	1,278 (24.8%)	1,264 (24.6%)	0.0046
DiabRen - Occurrence of Diabetic Neuropathy ; n (%)	252 (30.4%)	242 (29.2%)	0.0262	357 (21.2%)	328 (19.4%)	0.0448	869 (33.0%)	821 (31.2%)	0.0386	1,121 (21.8%)	1,063 (20.7%)	0.0269
DiabRen - Diabetic retinopathy ; n (%)	99 (12.0%)	90 (10.9%)	0.0346	118 (7.0%)	102 (6.0%)	0.0406	285 (10.8%)	309 (11.7%)	-0.0285	384 (7.5%)	399 (7.8%)	-0.0113
DiabRen - Diabetic foot ; n (%)	18 (2.2%)	26 (3.1%)	-0.0561	33 (2.0%)	42 (2.5%)	-0.0337	92 (3.5%)	88 (3.3%)	0.0110	110 (2.1%)	114 (2.2%)	-0.0069
DiabRen - Diabetes with peripheral circulatory disorders ; n (%)	74 (8.9%)	86 (10.4%)	-0.0508	86 (5.1%)	86 (5.1%)	0.0000	335 (12.7%)	328 (12.5%)	0.0060	409 (7.9%)	414 (8.0%)	-0.0037
DiabRen - Hypertensive nephropathy; n (%)	204 (24.6%)	221 (26.7%)	-0.0481	316 (18.7%)	318 (18.9%)	-0.0051	496 (18.9%)	465 (17.7%)	0.0310	700 (13.6%)	686 (13.3%)	0.0088
DiabRen - Hypertension ; n (%)	750 (90.6%)	749 (90.5%)	0.0034	1,442 (85.5%)	1,429 (84.7%)	0.0225	2,483 (94.4%)	2,474 (94.1%)	0.0129	3,233 (62.8%)	3,223 (62.6%)	0.0041
DiabRen - Hypotension ; n (%)	27 (3.3%)	20 (2.4%)	0.0541	21 (1.2%)	23 (1.4%)	-0.0177	77 (2.9%)	70 (2.7%)	0.0121	104 (2.0%)	090 (1.7%)	0.0223
DiabRen - Gout (acute/chronic) ; n (%)	14 (1.7%)	14 (1.7%)	0.0000	31 (1.8%)	38 (2.3%)	-0.0353	49 (1.9%)	44 (1.7%)	0.0150	063 (1.2%)	058 (1.1%)	0.0094
DiabRen - Nephrolithiasis; n (%)	20 (2.4%)	17 (2.1%)	0.0202	29 (1.7%)	34 (2.0%)	-0.0223	54 (2.1%)	49 (1.9%)	0.0143	074 (1.4%)	066 (1.3%)	0.0087
DiabRen - Proteinuria ; n (%)	72 (8.7%)	75 (9.1%)	-0.0140	40 (2.4%)	42 (2.5%)	-0.0065	251 (9.5%)	244 (9.3%)	0.0069	323 (6.3%)	319 (6.2%)	0.0041
DiabRen - Urinary tract infections (UTIs) ; n (%)	78 (9.4%)	79 (9.5%)	-0.0034	92 (5.5%)	83 (4.9%)	0.0270	405 (15.4%)	396 (15.1%)	0.0083	483 (9.4%)	475 (9.2%)	0.0069
DiabRen - Genital infections; n (%)	10 (1.2%)	9 (1.1%)	0.0094	25 (1.5%)	26 (1.5%)	0.0000	39 (1.5%)	44 (1.7%)	-0.0159	049 (1.0%)	053 (1.0%)	0.0000
DiabRen - Hypoglycemia v2 ; n (%)	132 (15.9%)	117 (14.1%)	0.0504	155 (9.2%)	145 (8.6%)	0.0211	284 (10.8%)	278 (10.6%)	0.0065	416 (8.1%)	395 (7.7%)	0.0148
DiabRen - Hyperglycemia; n (%)	31 (3.7%)	30 (3.6%)	0.0053	70 (4.1%)	59 (3.5%)	0.0314	130 (4.9%)	144 (5.5%)	-0.0270	161 (3.1%)	174 (3.4%)	-0.0169
DiabRen - Hyperkalemia; n (%)	22 (2.7%)	33 (4.0%)	-0.0723	36 (2.1%)	37 (2.2%)	-0.0069	78 (3.0%)	87 (3.3%)	-0.0172	100 (1.9%)	120 (2.3%)	-0.0279
DiabRen - Hypovolemia/volume depletion; n (%)	22 (2.7%)	27 (3.3%)	-0.0352	44 (2.6%)	39 (2.3%)	0.0194	96 (3.7%)	88 (3.3%)	0.0218	118 (2.3%)	115 (2.2%)	0.0067
NephroTox - ACE inhibitors ; n (%)	443 (53.5%)	433 (52.3%)	0.0240	899 (53.3%)	905 (53.6%)	-0.0060	1,366 (51.9%)	1,327 (50.5%)	0.0280	1,809 (35.2%)	1,760 (34.2%)	0.0210
NephroTox - ARBs ; n (%)	428 (51.7%)	430 (51.9%)	-0.0040	852 (50.5%)	848 (50.3%)	0.0040	1,371 (52.1%)	1,400 (53.2%)	-0.0220	1,799 (35.0%)	1,830 (35.6%)	-0.0126
NephroTox - Loop Diuretics ; n (%)	153 (18.5%)	159 (19.2%)	-0.0179	222 (13.2%)	241 (14.3%)	-0.0319	653 (24.8%)	634 (24.1%)	0.0163	806 (15.7%)	793 (15.4%)	0.0083
NephroTox - Thiazide diuretics ; n (%)	169 (20.4%)	159 (19.2%)	0.0301	293 (17.4%)	300 (17.8%)	-0.0105	474 (18.0%)	476 (18.1%)	-0.0026	643 (12.5%)	635 (12.3%)	0.0061
NephroTox - Mineralocorticoid receptor antagonist ; n (%)	42 (5.1%)	49 (5.9%)	-0.0351	83 (4.9%)	89 (5.3%)	-0.0182	129 (4.9%)	126 (4.8%)	0.0047	171 (3.3%)	175 (3.4%)	-0.0056
NephroTox - NSAIDs; n (%)	142 (17.1%)	133 (16.1%)	0.0269	299 (17.7%)	288 (17.1%)	0.0158	439 (16.7%)	411 (15.6%)	0.0299	581 (11.3%)	544 (10.6%)	0.0224
NephroTox - PPIs; n (%)	202 (24.4%)	193 (23.3%)	0.0258	318 (18.9%)	329 (19.5%)	-0.0152	671 (25.5%)	676 (25.7%)	-0.0046	873 (17.0%)	869 (16.9%)	0.0027
NephroTox - H2RAs; n (%)	51 (6.2%)	40 (4.8%)	0.0614	58 (3.4%)	59 (3.5%)	-0.0055	195 (7.4%)	205 (7.8%)	-0.0151	246 (4.8%)	245 (4.8%)	0.0000
NephroTox - Antivirals/Antiretrovirals/Antimicrobials; n (%)	12 (1.4%)	13 (1.6%)	-0.0165	14 (0.8%)	17 (1.0%)	-0.0212	28 (1.1%)	32 (1.2%)	-0.0094	040 (0.8%)	045 (0.9%)	-0.0109
DM Medications - 1st and 2nd Generation SUs ; n (%)	362 (43.7%)	366 (44.2%)	-0.0101	641 (38.0%)	630 (37.3%)	0.0144	1,144 (43.5%)	1,160 (44.1%)	-0.0121	1,506 (29.3%)	1,526 (29.7%)	-0.0088
DM Medications - AGI & Meglinitides; n (%)	17 (2.1%)	17 (2.1%)	0.0000	34 (2.0%)	30 (1.8%)	0.0146	126 (4.8%)	131 (5.0%)	-0.0093	143 (2.8%)	148 (2.9%)	-0.0060
DM Medications - DPP-4 Inhibitors (excluding sitagliptin); n (%)	113 (13.6%)	120 (14.5%)	-0.0259	148 (8.8%)	154 (9.1%)	-0.0105	372 (14.1%)	404 (15.4%)	-0.0367	485 (9.4%)	524 (10.2%)	-0.0269
DM Medications - Glitazones ; n (%)	98 (11.8%)	101 (12.2%)	-0.0123	198 (11.7%)	203 (12.0%)	-0.0093	318 (12.1%)	307 (11.7%)	0.0124	416 (8.1%)	408 (7.9%)	0.0074
DM Medications - GLP-1 RA ; n (%)	207 (25.0%)	198 (23.9%)	0.0256	312 (18.5%)	332 (19.7%)	-0.0305	497 (18.9%)	460 (17.5%)	0.0363	704 (13.7%)	658 (12.8%)	0.0265
DM Medications - Insulins; n (%)	268 (32.4%)	276 (33.3%)	-0.0192	529 (31.4%)	507 (30.1%)	0.0282	994 (37.8%)	966 (36.7%)	0.0228	1,262 (24.5%)	1,242 (24.1%)	0.0093
DM Medications - Metformin ; n (%)	487 (58.8%)	497 (60.0%)	-0.0244	1,019 (60.4%)	1,020 (60.5%)	-0.0020	1,447 (55.0%)	1,468 (55.8%)	-0.0161	1,934 (37.6%)	1,965 (38.2%)	-0.0124
DM Medications - SGLT-2 Inhibitors (excluding dapagliflozin); n (%)	58 (7.0%)	55 (6.6%)	0.0159	136 (8.1%)	158 (9.4%)	-0.0460	161 (6.1%)	158 (6.0%)	0.0042	219 (4.3%)	213 (4.1%)	0.0100
DM Medications - Number of antiDM medications at index date ...mean (sd)	2.80 (0.96)	2.80 (0.96)	0.0000	2.69 (0.87)	2.70 (0.93)	-0.0111	2.82 (0.94)	2.83 (0.99)	-0.0104	2.77 (0.92)	2.78 (0.97)	-0.0106
CV Comorbidity - Acute and Old MI ; n (%)	26 (3.1%)	28 (3.4%)	-0.0169	20 (1.2%)	25 (1.5%)	-0.0260	126 (4.8%)	124 (4.7%)	0.0047	152 (3.0%)	152 (3.0%)	0.0000
CV Comorbidity - Any Heart failure (HF) ; n (%)	85 (10.3%)	90 (10.9%)	-0.0195	82 (4.9%)	86 (5.1%)	-0.0092	419 (15.9%)	379 (14.4%)	0.0418	504 (9.8%)	469 (9.1%)	0.0239
CV Comorbidity - Hospitalization for CHF ; n (%)	21 (2.5%)	23 (2.8%)	-0.0187	19 (1.1%)	23 (1.4%)	-0.0270	86 (3.3%)	78 (3.0%)	0.0172	107 (2.1%)	101 (2.0%)	0.0071
CV Comorbidity - Atrial fibrillation; n (%)	65 (7.9%)	62 (7.5%)	0.0150	71 (4.2%)	75 (4.4%)	-0.0099	352 (13.4%)	349 (13.3%)	0.0029	417 (8.1%)	411 (8.0%)	0.0037
CV Comorbidity - Other dysrythmias ; n (%)	107 (12.9%)	108 (13.0%)	-0.0030	113 (6.7%)	115 (6.8%)	-0.0040	418 (15.9%)	408 (15.5%)	0.0110	525 (10.2%)	516 (10.0%)	0.0066
CV Comorbidity - Valve disorder ; n (%)	18 (2.2%)	17 (2.1%)	0.0069	10 (0.6%)	15 (0.9%)	-0.0348	90 (3.4%)	94 (3.6%)	-0.0109	108 (2.1%)	111 (2.2%)	-0.0069

Appendix B: Dapagliflozin vs. Sitagliptin

CV Comorbidity - Implantable cardioverter defibrillator ; n (%)	9 (1.1%)	10 (1.2%)	-0.0094	9 (0.5%)	10 (0.6%)	-0.0135	47 (1.8%)	47 (1.8%)	0.0000	056 (1.1%)	057 (1.1%)	0.0000
CV Comorbidity - CABG/PCI ; n (%)	63 (7.6%)	58 (7.0%)	0.0231	39 (2.3%)	38 (2.3%)	0.0000	268 (10.2%)	260 (9.9%)	0.0100	331 (6.4%)	318 (6.2%)	0.0082
CV Comorbidity - Coronary atherosclerosis and other forms of chronic ischemic heart disease ; n (%)	201 (24.3%)	189 (22.8%)	0.0354	268 (15.9%)	260 (15.4%)	0.0138	912 (34.7%)	865 (32.9%)	0.0381	1,113 (21.6%)	1,054 (20.5%)	0.0270
CV Comorbidity - Hyperlipidemia ; n (%)	690 (83.3%)	686 (82.9%)	0.0107	1,299 (77.0%)	1,281 (75.9%)	0.0259	2,212 (84.1%)	2,200 (83.7%)	0.0109	2,902 (56.4%)	2,886 (56.1%)	0.0060
CV Comorbidity - Stable Angina ; n (%)	35 (4.2%)	33 (4.0%)	0.0101	34 (2.0%)	37 (2.2%)	-0.0139	143 (5.4%)	132 (5.0%)	0.0180	178 (3.5%)	165 (3.2%)	0.0167
CV Comorbidity - Unstable Angina ; n (%)	24 (2.9%)	17 (2.1%)	0.0513	14 (0.8%)	12 (0.7%)	0.0116	42 (1.6%)	37 (1.4%)	0.0165	066 (1.3%)	054 (1.0%)	0.0281
CV Comorbidity - Peripheral Vascular Disease (PVD) or PVD Surgery ; n (%)	76 (9.2%)	89 (10.7%)	-0.0501	62 (3.7%)	72 (4.3%)	-0.0306	415 (15.8%)	405 (15.4%)	0.0110	491 (9.5%)	494 (9.6%)	-0.0034
CV Comorbidity - Stroke/TIA ; n (%)	23 (2.8%)	25 (3.0%)	-0.0119	20 (1.2%)	17 (1.0%)	0.0192	84 (3.2%)	82 (3.1%)	0.0057	107 (2.1%)	107 (2.1%)	0.0000
CV Comorbidity - Pulmonary hypertension/Other pulmonary heart disease ; n (%)	20 (2.4%)	19 (2.3%)	0.0066	16 (0.9%)	16 (0.9%)	0.0000	81 (3.1%)	63 (2.4%)	0.0428	101 (2.0%)	082 (1.6%)	0.0301
CV Medication - Beta blockers ; n (%)	408 (49.3%)	419 (50.6%)	-0.0260	719 (42.6%)	731 (43.3%)	-0.0141	1,478 (56.2%)	1,452 (55.2%)	0.0201	1,886 (36.7%)	1,871 (36.4%)	0.0062
CV Medication - CCB; n (%)	243 (29.3%)	267 (32.2%)	-0.0629	500 (29.6%)	484 (28.7%)	0.0198	964 (36.7%)	959 (36.5%)	0.0042	1,207 (23.5%)	1,226 (23.8%)	-0.0071
CV Medication - Digoxin ; n (%)	7 (0.8%)	14 (1.7%)	-0.0811	19 (1.1%)	17 (1.0%)	0.0098	87 (3.3%)	82 (3.1%)	0.0114	094 (1.8%)	096 (1.9%)	-0.0074
CV Medication - Nitrates ; n (%)	68 (8.2%)	72 (8.7%)	-0.0180	65 (3.9%)	67 (4.0%)	-0.0051	266 (10.1%)	246 (9.4%)	0.0236	334 (6.5%)	318 (6.2%)	0.0123
CV Medication - Use of Statins ; n (%)	688 (83.1%)	677 (81.8%)	0.0342	1,240 (73.5%)	1,275 (75.6%)	-0.0482	2,163 (82.2%)	2,135 (81.2%)	0.0259	2,851 (55.4%)	2,812 (54.7%)	0.0141
CV Medication - Use of other lipid-lowering drugs ; n (%)	148 (17.9%)	146 (17.6%)	0.0079	330 (19.6%)	345 (20.5%)	-0.0225	474 (18.0%)	479 (18.2%)	-0.0052	622 (12.1%)	625 (12.1%)	0.0000
CV Medication - Use of other hypertension drugs ; n (%)	75 (9.1%)	79 (9.5%)	-0.0138	156 (9.2%)	167 (9.9%)	-0.0238	372 (14.1%)	341 (13.0%)	0.0321	447 (8.7%)	420 (8.2%)	0.0180
Other Comorbidity - Anemia ; n (%)	150 (18.1%)	127 (15.3%)	0.0751	211 (12.5%)	217 (12.9%)	-0.0120	695 (26.4%)	705 (26.8%)	-0.0091	845 (16.4%)	832 (16.2%)	0.0054
Other Comorbidity - Cancer ; n (%)	78 (9.4%)	91 (11.0%)	-0.0529	106 (6.3%)	116 (6.9%)	-0.0242	346 (13.2%)	341 (13.0%)	0.0059	424 (8.2%)	432 (8.4%)	-0.0072
Other Comorbidity - COPD ; n (%)	86 (10.4%)	85 (10.3%)	0.0033	56 (3.3%)	58 (3.4%)	-0.0056	339 (12.9%)	354 (13.5%)	-0.0177	425 (8.3%)	439 (8.5%)	-0.0072
Other Comorbidity - Dementia ; n (%)	27 (3.3%)	28 (3.4%)	-0.0056	7 (0.4%)	9 (0.5%)	-0.0149	170 (6.5%)	161 (6.1%)	0.0165	197 (3.8%)	189 (3.7%)	0.0053
Other Comorbidity - Depression ; n (%)	105 (12.7%)	100 (12.1%)	0.0182	131 (7.8%)	118 (7.0%)	0.0306	344 (13.1%)	339 (12.9%)	0.0059	449 (8.7%)	439 (8.5%)	0.0071
Other Comorbidity - Fractures ; n (%)	19 (2.3%)	21 (2.5%)	-0.0131	33 (2.0%)	34 (2.0%)	0.0000	108 (4.1%)	99 (3.8%)	0.0154	127 (2.5%)	120 (2.3%)	0.0131
Other Comorbidity - Hypothyroidism ; n (%)	65 (7.9%)	69 (8.3%)	-0.0147	131 (7.8%)	133 (7.9%)	-0.0037	313 (11.9%)	322 (12.2%)	-0.0092	378 (7.3%)	391 (7.6%)	-0.0114
Other Comorbidity - Osteoporosis ; n (%)	45 (5.4%)	46 (5.6%)	-0.0088	18 (1.1%)	25 (1.5%)	-0.0353	277 (10.5%)	291 (11.1%)	-0.0193	322 (6.3%)	337 (6.6%)	-0.0122
Other Comorbidity - Pneumonia ; n (%)	19 (2.3%)	21 (2.5%)	-0.0131	33 (2.0%)	27 (1.6%)	0.0301	109 (4.1%)	96 (3.7%)	0.0207	128 (2.5%)	117 (2.3%)	0.0131
Other Comorbidity - Sleep apnea ; n (%)	141 (17.0%)	137 (16.5%)	0.0134	313 (18.6%)	287 (17.0%)	0.0418	409 (15.6%)	389 (14.8%)	0.0223	550 (10.7%)	526 (10.2%)	0.0163
Other Medication - Use of anticonvulsants ; n (%)	171 (20.7%)	178 (21.5%)	-0.0196	279 (16.5%)	262 (15.5%)	0.0273	729 (27.7%)	681 (25.9%)	0.0406	900 (17.5%)	859 (16.7%)	0.0212
Other Medication - Use of antidepressants ; n (%)	219 (26.4%)	214 (25.8%)	0.0137	415 (24.6%)	390 (23.1%)	0.0352	804 (30.6%)	778 (29.6%)	0.0218	1,023 (19.9%)	992 (19.3%)	0.0151
Other Medication - Use of antiparkinsonian meds ; n (%)	25 (3.0%)	24 (2.9%)	0.0059	32 (1.9%)	38 (2.3%)	-0.0279	118 (4.5%)	115 (4.4%)	0.0048	143 (2.8%)	139 (2.7%)	0.0061
Other Medication - Use of dementia meds ; n (%)	21 (2.5%)	16 (1.9%)	0.0409	0 (0.0%)	3 (0.2%)	-0.0633	124 (4.7%)	125 (4.8%)	-0.0047	145 (2.8%)	141 (2.7%)	0.0061
Other Medication - Use of antipsychotics ; n (%)	22 (2.7%)	22 (2.7%)	0.0000	21 (1.2%)	22 (1.3%)	-0.0090	87 (3.3%)	89 (3.4%)	-0.0056	109 (2.1%)	111 (2.2%)	-0.0069
Other Medication - Use of anxiolytics/hypnotics ; n (%)	52 (6.3%)	51 (6.2%)	0.0041	122 (7.2%)	111 (6.6%)	0.0237	207 (7.9%)	197 (7.5%)	0.0150	259 (5.0%)	248 (4.8%)	0.0093
Other Medication - Use of Benzodiazepines ; n (%)	79 (9.5%)	98 (11.8%)	-0.0746	167 (9.9%)	167 (9.9%)	0.0000	340 (12.9%)	334 (12.7%)	0.0060	419 (8.1%)	432 (8.4%)	-0.0109
Other Medication - Use of COPD/asthma meds; n (%)	166 (20.0%)	169 (20.4%)	-0.0100	277 (16.4%)	268 (15.9%)	0.0136	590 (22.4%)	581 (22.1%)	0.0072	756 (14.7%)	750 (14.6%)	0.0028
Other Medication - Use of antiplatelet agents; n (%)	94 (11.4%)	104 (12.6%)	-0.0369	238 (14.1%)	234 (13.9%)	0.0058	444 (16.9%)	434 (16.5%)	0.0107	538 (10.5%)	538 (10.5%)	0.0000
Other Medication - Use of oral anticoagulants ; n (%)	77 (9.3%)	68 (8.2%)	0.0389	81 (4.8%)	93 (5.5%)	-0.0317	346 (13.2%)	338 (12.9%)	0.0089	423 (8.2%)	406 (7.9%)	0.0110
Other Medication - Use of opioids ; n (%)	190 (22.9%)	188 (22.7%)	0.0048	419 (24.8%)	410 (24.3%)	0.0116	708 (26.9%)	717 (27.3%)	-0.0090	898 (17.5%)	905 (17.6%)	-0.0026
Lifestyle - Alcohol/Drug Abuse or Dependence ; n (%)	22 (2.7%)	15 (1.8%)	0.0607	18 (1.1%)	17 (1.0%)	0.0098	40 (1.5%)	43 (1.6%)	-0.0081	062 (1.2%)	058 (1.1%)	0.0094
Lifestyle - Obesity; n (%)	267 (32.2%)	255 (30.8%)	0.0301	383 (22.7%)	393 (23.3%)	-0.0143	830 (31.6%)	771 (29.3%)	0.0500	1,097 (21.3%)	1,026 (19.9%)	0.0346
Lifestyle - Smoking; n (%)	88 (10.6%)	92 (11.1%)	-0.0161	88 (5.2%)	77 (4.6%)	0.0278	390 (14.8%)	388 (14.8%)	0.0000	478 (9.3%)	480 (9.3%)	0.0000
HU - Number of Cardiologist visits ...mean (sd)	1.74 (4.42)	1.67 (4.26)	0.0161	0.90 (3.32)	0.86 (2.40)	0.0138	2.18 (5.13)	2.06 (5.04)	0.0236	1.69 (4.50)	1.60 (4.22)	0.0206
HU - Number of Nephrologist visit ...mean (sd)	0.56 (2.07)	0.49 (1.76)	0.0364	0.36 (2.09)	0.39 (1.74)	-0.0156	0.70 (2.81)	0.68 (3.92)	0.0059	0.57 (2.48)	0.55 (3.06)	0.0072
HU - Number of Endocrinologist visits ...mean (sd)	0.90 (3.46)	1.04 (3.30)	-0.0414	0.86 (3.63)	0.88 (2.85)	-0.0061	1.50 (5.97)	1.31 (4.51)	0.0359	1.19 (4.95)	1.13 (3.85)	0.0135
HU - Number of Internal Medicine/Family Medicine Visits ...mean (sd)	13.24 (19.07)	12.07 (16.06)	0.0664	7.27 (7.85)	7.76 (8.89)	-0.0584	10.39 (14.68)	10.73 (14.87)	-0.0230	9.83 (13.74)	9.97 (13.43)	-0.0103
HU - Number of Emergency Department (ED) visits ...mean (sd)	0.56 (1.88)	0.54 (1.87)	0.0107	0.20 (1.55)	0.19 (1.62)	0.0063	0.60 (1.52)	0.55 (1.35)	0.0348	0.46 (1.59)	0.43 (1.53)	0.0192
HU - Number of Distinct Medication Prescriptions (not generalized to generics) ...mean (sd)	33.68 (29.55)	33.35 (20.44)	0.0130	26.94 (17.22)	26.88 (16.42)	0.0036	35.51 (26.27)	35.61 (25.53)	-0.0039	32.41 (24.30)	32.38 (22.11)	0.0013
HU - Number of Echocardiogram ...mean (sd)	0.29 (1.50)	0.31 (1.59)	-0.0129	0.13 (0.52)	0.12 (0.42)	0.0212	0.22 (0.60)	0.23 (0.65)	-0.0160	0.20 (0.80)	0.21 (0.82)	-0.0123
HU - Number of Electrocardiogram Performed ...mean (sd)	0.77 (1.86)	0.77 (1.85)	0.0000	0.51 (1.17)	0.47 (0.96)	0.0374	0.87 (1.61)	0.85 (1.59)	0.0125	0.74 (1.53)	0.71 (1.46)	0.0201
HU - Number of HbA1c tests ordered ...mean (sd)	1.55 (1.11)	1.50 (0.92)	0.0490	1.36 (0.96)	1.36 (0.93)	0.0000	1.70 (0.98)	1.71 (0.97)	-0.0103	1.56 (1.00)	1.56 (0.95)	0.0000
HU - Number of Hospitalizations during CAP ...mean (sd)	0.12 (0.44)	0.12 (0.44)	0.0000	0.08 (0.33)	0.08 (0.32)	0.0000	0.14 (0.47)	0.13 (0.44)	0.0220	0.12 (0.42)	0.11 (0.40)	0.0244
HU - Recent hospitalization (-30 days to Index Rx date) ; n (%)	9 (1.1%)	13 (1.6%)	-0.0433	19 (1.1%)	18 (1.1%)	0.0000	38 (1.4%)	35 (1.3%)	0.0087	047 (0.9%)	048 (0.9%)	0.0000
HU - Old hospitalizations (-180 to -31 days); n (%)	69 (8.3%)	72 (8.7%)	-0.0143	99 (5.9%)	99 (5.9%)	0.0000	240 (9.1%)	243 (9.2%)	-0.0035	309 (6.0%)	315 (6.1%)	-0.0042
HU - Mammogram ; n (%)	92 (11.1%)	104 (12.6%)	-0.0464	164 (9.7%)	154 (9.1%)	0.0206	284 (10.8%)	285 (10.8%)	0.0000	376 (7.3%)	389 (7.6%)	-0.0114
HU - Pap smear ; n (%)	15 (1.8%)	18 (2.2%)	-0.0286	67 (4.0%)	71 (4.2%)	-0.0101	49 (1.9%)	46 (1.7%)	0.0150	064 (1.2%)	064 (1.2%)	0.0000
HU - Prostate exam for DRE ; n (%)	41 (5.0%)	37 (4.5%)	0.0235	80 (4.7%)	76 (4.5%)	0.0095	171 (6.5%)	178 (6.8%)	-0.0120	212 (4.1%)	215 (4.2%)	-0.0050
HU - Flexible Sigmoidoscopy or colonoscopy or CT virtual colonoscopy; n (%)	29 (3.5%)	32 (3.9%)	-0.0212	90 (5.3%)	92 (5.5%)	-0.0088	109 (4.1%)	128 (4.9%)	-0.0386	138 (2.7%)	160 (3.1%)	-0.0238
HU - Bone mineral density ; n (%)	33 (4.0%)	37 (4.5%)	-0.0248	32 (1.9%)	37 (2.2%)	-0.0212	124 (4.7%)	130 (4.9%)	-0.0094	157 (3.1%)	167 (3.2%)	-0.0057
HU - Flu vaccine ; n (%)	191 (23.1%)	186 (22.5%)	0.0143	307 (18.2%)	305 (18.1%)	0.0026	925 (35.2%)	906 (34.4%)	0.0168	1,116 (21.7%)	1,092 (21.2%)	0.0122
HU - Pneumococcal vaccine ; n (%)	192 (23.2%)	185 (22.3%)	0.0215	227 (13.5%)	244 (14.5%)	-0.0288	838 (31.9%)	831 (31.6%)	0.0064	1,030 (20.0%)	1,016 (19.7%)	0.0075
Lab - Occurrence of 24-hour urine test; n (%)	331 (40.0%)	347 (41.9%)	-0.0386	653 (38.7%)	648 (38.4%)	0.0062	1,085 (41.3%)	1,076 (40.9%)	0.0081	1,416 (27.5%)	1,423 (27.7%)	-0.0045
Lab - Occurrence of creatinine tests ordered; n (%)	48 (5.8%)	50 (6.0%)	-0.0085	71 (4.2%)	70 (4.1%)	0.0050	203 (7.7%)	188 (7.1%)	0.0229	251 (4.9%)	238 (4.6%)	0.0141
Lab - Occurrence of urine albumin test ordered; n (%)	412 (49.8%)	445 (53.7%)	-0.0781	748 (44.3%)	739 (43.8%)	0.0101	1,222 (46.5%)	1,242 (47.2%)	-0.0140	1,634 (31.8%)	1,687 (32.8%)	-0.0214
Lab - Occurrence of HgA1c test; n (%)	372 (44.9%)	376 (45.4%)	-0.0100	134 (7.9%)	135 (8.0%)	-0.0037	2,454 (93.3%)	2,439 (92.7%)	0.0235	2,826 (54.9%)	2,815 (54.7%)	0.0040
SES Proxy - Copay for pharmacy cost (charges in U.S. $) ...mean (sd)	33.75 (44.90)	32.86 (35.48)	0.0220	23.59 (24.04)	23.70 (24.63)	-0.0045	31.51 (40.70)	31.37 (43.52)	0.0033	29.27 (36.89)	29.09 (37.01)	0.0049
SES Proxy - Low income indicator; n (%)	213 (25.7%)	194 (23.4%)	0.0535	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	213 (4.1%)	194 (3.8%)	0.0154
SES Proxy - Business type												
...Commercial; n (%)	354 (42.8%)	361 (43.6%)	-0.0162	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	354 (6.9%)	361 (7.0%)	-0.0039
...Medicare; n (%)	474 (57.2%)	467 (56.4%)	0.0162	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	474 (9.2%)	467 (9.1%)	0.0035

Appendix B: Dapagliflozin vs. Sitagliptin

SES Proxy - Insurance Plan type												
...Comprehensive; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	117 (6.9%)	132 (7.8%)	-0.0345	0 (0.0%)	0 (0.0%)	#DIV/0!	117 (2.3%)	132 (2.6%)	-0.0194
...HMO; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	161 (9.5%)	176 (10.4%)	-0.0301	0 (0.0%)	0 (0.0%)	#DIV/0!	161 (3.1%)	176 (3.4%)	-0.0169
...PPO; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	924 (54.8%)	918 (54.4%)	0.0080	0 (0.0%)	0 (0.0%)	#DIV/0!	924 (18.0%)	918 (17.8%)	0.0052
...Others; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	485 (28.7%)	461 (27.3%)	0.0312	0 (0.0%)	0 (0.0%)	#DIV/0!	485 (9.4%)	461 (9.0%)	0.0138
SES Proxy - Dual status code (with Medicaid); n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	778 (29.6%)	817 (31.1%)	-0.0326	778 (15.1%)	817 (15.9%)	-0.0221