

ACO #38 Risk-Standardized Acute Admission Rates for Patients With Multiple Chronic Conditions

Measure Information Form (MIF)

Release Notes / Summary of Changes

This is an addendum to the MIF released in spring 2015. This addendum reflects the ICD-10 mapping for the CMS Chronic Condition criteria, defined by the Chronic Conditions Warehouse (CCW), used to identify beneficiaries with MCCs. This addendum also reflects conversion to Version 22 HCCs which allows for ICD-10 mapping.

Data Source

- Medicare inpatient claims
- Medicare outpatient claims
- Medicare beneficiary enrollment data
- Accountable Care Organization (ACO) assignment file

Measure Set ID

- ACO #38

Version Number and Effective Date

- Version 1.1, effective 12/31/2015

CMS Approval Date

- 12/31/2015

NQF ID

- N/A; measure has not yet been submitted to the National Quality Forum (NQF) for endorsement.

Date Endorsed

- N/A

Care Setting

- Hospital

Unit of Measurement

- ACO

Measurement Duration

- Calendar Year

Measurement Period

- Calendar Year

Measure Type

- Outcome

Measure Scoring

- Risk-standardized acute admission rate (RSAAR)

Payer Source

- Medicare fee-for-service (FFS)

Improvement Notation

- Lower RSAAR scores indicate better quality.

Measure Steward

- Centers for Medicare & Medicaid Services (CMS)

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- This quality measure was developed for CMS by Yale New Haven Hospital Health Services Corporation Center for Outcomes Research and Evaluation (CORE) in 2014.

Measure Description

- Rate of risk-standardized acute, unplanned hospital admissions among Medicare fee-for-service (FFS) beneficiaries 65 years and older with multiple chronic conditions (MCCs) who are assigned to the Accountable Care Organization (ACO)

Rationale

As of 2010, more than two-thirds of Medicare beneficiaries had been diagnosed with or treated for two or more chronic conditions [1]. People with MCCs are more likely to be admitted to the hospital than those without chronic conditions or with a single chronic condition. Additionally, they are more likely to visit the emergency department, use post-acute care (such as skilled nursing facilities), and require home health assistance [1]. No quality measures specifically designed for this population exist to assess quality of care or to enable the evaluation of whether current efforts to improve care are successful; this measure is designed to help fill that gap as called for in NQF's "Multiple Chronic Conditions Measurement Framework" [2].

The measure is focused on ACOs because providers in ACOs share responsibility for patients' ambulatory care, and better coordinated care should lower the risk of hospitalization for this vulnerable population. The measure is designed to illuminate variation in hospital admission rates and incentivize ACOs to develop efficient and coordinated chronic disease management strategies that anticipate and respond to patients' needs and preferences. The measure is also consistent with ACOs' commitment to deliver patient-centered care that fulfills the goals of the Department of Health and Human Services' National Quality Strategy – improving population health, providing better care, and lowering healthcare costs [3].

The rationale for measuring all-cause acute admissions is to assess the quality of care as experienced by the patient and to drive overall improvements in care quality, coordination, and efficiency that are not specific to certain diseases. Ambulatory care providers can act together to lower patients' risk for a wide range of acute illness requiring admission in several ways:

1. Provide optimal and accessible chronic disease management to reduce catastrophic sequelae of chronic disease.
For example:
 - a. Support healthy lifestyle behaviors and optimize medical management to minimize the risk for cardiovascular events such as stroke and heart attacks.

- b. Carefully monitor and act early to address chronic problems that require major interventions if allowed to progress (for example, assessment and treatment of peripheral artery disease in persistent infections in order to prevent amputation).
2. Anticipate and manage the interactions between chronic conditions. For example:
 - a. Closely monitor renal function in patients on diuretic therapy for heart failure and chronic kidney disease.
 - b. Minimize polypharmacy to reduce drug-drug and drug-disease interactions.
 - c. Assess and treat depression to improve self-efficacy and self-management of chronic disease.
3. Provide optimal primary prevention of acute illnesses, such as recommended immunizations and screening.
4. Facilitate rapid, effective ambulatory intervention when acute illness does occur, whether related or unrelated to the chronic conditions. For example:
 - a. Promptly prescribe antibiotics for presumed bacterial pneumonia and diuretic treatment for fluid overload in heart failure.
 - b. Empower patients to recognize symptoms and to seek timely care.
 - c. Create accessible care options for patients (for example, weekend or evening hours; capacity to deliver intravenous medications).
5. Partner with the government, local businesses, and community organizations to improve support for patients with chronic illness. For example:
 - a. Collaborate with home nursing programs.
 - b. Partner with local businesses to increase opportunities to engage in healthy lifestyle behaviors.
 - c. Provide outreach and services at senior centers.

Finally, a number of studies have shown that improvements in the delivery of healthcare services for ambulatory patients with MCCs can lower the risk of admission [4-10]. Demonstrated strategies include improving access to care; supporting self-care in the home; better coordinating care across providers; and integrating social work, nursing, and medical services.

Citations

1. Centers for Medicare and Medicaid Services. Chronic Conditions among Medicare Beneficiaries, Chartbook: 2012 Edition. 2012; <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Downloads/2012Chartbook.pdf>. Accessed March 18, 2014.
2. National Quality Forum (NQF). Multiple Chronic Conditions Measurement Framework. 2012; <http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=71227>
3. U.S. Department of Health and Human Services. Multiple chronic conditions—A strategic framework: Optimum health and quality of life for individuals with multiple chronic conditions. December 2010; http://www.hhs.gov/ash/initiatives/mcc/mcc_framework.pdf. Accessed March 20, 2014
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5. Dorr DA, Wilcox AB, Brunner CP, Burdon RE, Donnelly SM. The effect of technology-supported, multidisease care management on the mortality and hospitalization of seniors. Journal of the American Geriatrics Society. Dec 2008; 56(12):2195-2202.
6. Levine S, Steinman BA, Attaway K, Jung T, Enguidanos S. Home care program for patients at high risk of hospitalization. American Journal of Managed Care. 2012 Aug 2012; 18(8):e269-276.
7. Centers for Medicare & Medicaid Services (CMS). Medicare Health Support. 2012; <https://www.cms.gov/Medicare/Medicare-General-Information/CCIP/>. Accessed March 27, 2014.
8. Littleford A, Kralik D. Making a difference through integrated community care for older people. Journal of Nursing and Healthcare of Chronic Illness. 2010; 2(3):178-186.
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10. Zhang NJ, Wan TT, Rossiter LF, Murawski MM, Patel UB. Evaluation of chronic disease management on outcomes and cost of care for Medicaid beneficiaries. *Health policy (Amsterdam, Netherlands)*. May 2008; 86(2-3):345-354. Brown RS, Peikes D, Peterson G, Schore J, Razafindrakoto CM. Six features of Medicare coordinated care demonstration programs that cut hospital admissions of high-risk patients. *Health Affairs*. 2012 Jun 2012; 31(6):1156-1166.

Clinical Recommendation Statement

The rationale for measuring acute unplanned admissions for ACO assigned beneficiaries with chronic disease is that ACOs are established precisely to improve patient-centered care and outcomes for these patients. Providers within an ACO share responsibility for delivering primary preventive services, chronic disease management, and acute care to patients with MCCs. Further, ACOs accept accountability for patient outcomes; providers form ACOs voluntarily and commit to the goals of the ACO program, which include providing better coordinated care and chronic disease management while lowering costs [1]. These program goals are fully aligned with the objective of lowering patients' risk of admission incentivized by the measure [1]. ACOs should be able to lower the risk of acute, unplanned admissions more feasibly than less integrated Medicare fee-for-service providers through strengthening preventive care, delivering better coordinated and more effective chronic disease management, and providing timely ambulatory care for acute exacerbations of chronic disease. ACOs may also need to engage with community organizations and health-related community services to facilitate effective chronic disease management.

Finally, a number of studies have shown that improvements in the delivery of healthcare services for ambulatory patients with MCCs can lower the risk of admission [2-7]. Demonstrated strategies include improving access to care; supporting self-care in the home; better coordinating care across providers; and integrating social work, nursing, and medical services. It is our vision that this measure will illuminate variation among ACOs in hospital admission rates for people with MCCs and incentivize ACOs to expand efforts to develop and implement efficient and coordinated chronic disease management strategies that anticipate and respond to patients' needs and preferences.

References

1. Centers for Medicare & Medicaid Services (CMS). Accountable Care Organizations (ACOs): General Information. <http://innovation.cms.gov/initiatives/aco/>. Accessed September 25, 2014.
2. Dorr DA, Wilcox AB, Brunner CP, Burdon RE, Donnelly SM. The effect of technology-supported, multidisease care management on the mortality and hospitalization of seniors. *Journal of the American Geriatrics Society*. Dec 2008; 56(12):2195-2202.
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5. Chan CL, You HJ, Huang HT, Ting HW. Using an integrated COC index and multilevel measurements to verify the care outcome of patients with multiple chronic conditions. *BMC health services research*. 2012 2012; 12:405.
6. Sommers LS, Marton KI, Barbaccia JC, Randolph J. Physician, nurse, and social worker collaboration in primary care for chronically ill seniors. *Arch Intern Med*. Jun 26 2000; 160(12):1825-1833.
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Technical Specifications

- Target Population
ACO-assigned or aligned Medicare beneficiaries with MCCs

Denominator

- Denominator Statement

Our target population is Medicare FFS beneficiaries aged 65 years and older assigned to the ACO whose combinations of chronic conditions put them at high risk of admission and whose admission rates could be lowered through better care. NQF’s “Multiple Chronic Conditions Measurement Framework,” which defines patients with MCCs as people “having two or more concurrent chronic conditions that.... act together to significantly increase the complexity of management, and affect functional roles and health outcomes, compromise life expectancy, or hinder self-management” [1].

Citations

1. National Quality Forum (NQF). Multiple Chronic Conditions Measurement Framework. 2012; <http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=71227>

- Denominator Details

The cohort is Medicare FFS beneficiaries aged 65 years and older assigned to the ACO during the measurement period with diagnoses that fall into two or more of eight chronic disease groups:

1. Acute myocardial infarction (AMI)
2. Alzheimer’s disease and related disorders or senile dementia
3. Atrial fibrillation
4. Chronic kidney disease (CKD)
5. Chronic obstructive pulmonary disease (COPD) and asthma
6. Depression
7. Heart failure
8. Stroke and transient ischemic attack (TIA)

This approach captures approximately 25% of Medicare FFS beneficiaries aged 65 years and older with at least one chronic condition (about five million patients in 2012).

The eight disease groups are defined using data from the Integrated Data Repository (IDR) in combination with algorithms for nine chronic condition categories. The nine categories are based on those used in CMS’s Chronic Condition Data Warehouse (CCW) [1]. We combined two CCW categories into a single chronic disease group – COPD and asthma. Table 1 identifies the claim algorithms and the specific International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes for each of the eight chronic disease groups. The ICD-10 diagnosis codes for the CCW chronic condition categories are in Appendix Table 1.

To be included in the cohort, beneficiaries must also be enrolled full-time in both Medicare Part A and B during the year prior to the measurement period. This requirement for full enrollment in Medicare Part A & B one year prior to measurement is to ensure adequate claims data to identify beneficiaries with these chronic conditions.

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort

ICD-9-CM Code	Description
Acute myocardial infarction (AMI)	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient claim with diagnosis (DX) codes during the 1-year period	
410.01	AMI of anterolateral wall, initial episode of care
410.11	AMI of other anterior wall, initial episode of care
410.21	AMI of inferolateral wall, initial episode of care
410.31	AMI of inferoposterior wall, initial episode of care

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
410.41	AMI of other inferior wall, initial episode of care
410.51	AMI of other lateral wall, initial episode of care
410.61	True posterior wall infarction, initial episode of care
410.71	Subendocardial infarction, initial episode of care
410.81	AMI of other specified sites, initial episode of care
410.91	AMI of unspecified site, initial episode of care
Alzheimer's disease and related disorders or senile dementia	
Years prior to measurement year from which codes are used: 3 years	
Number/types of claims to qualify: At least 1 inpatient, Skilled Nursing Facility (SNF), Home Health Agency (HHA), Hospital Outpatient (HOP) or Carrier claim with DX codes during the 1-year period	
331.0	Alzheimer's disease
331.11	Other frontotemporal dementia
331.19	Senile degeneration of brain
331.2	Cerebral degeneration in diseases classified elsewhere
331.7	Cerebral degeneration in diseases classified elsewhere
290.0	Senile dementia, uncomplicated
290.10	Presenile dementia, uncomplicated
290.11	Presenile dementia with delirium
290.12	Presenile dementia with delusional features
290.13	Presenile dementia with depressive features
290.20	Senile dementia with delusional features
290.21	Senile dementia with depressive features
290.3	Senile dementia with delirium
290.40	Vascular dementia, uncomplicated
290.41	Vascular dementia, with delirium
290.42	Vascular dementia, with delusions
290.43	Vascular dementia, with depressed mood
294.0	Amnesic disorder in conditions classified elsewhere
294.10	Dementia in conditions classified elsewhere without behavioral disturbance
294.11	Dementia in conditions classified elsewhere with behavioral disturbance
294.8	Other persistent mental disorders due to conditions classified elsewhere
797	Senility without mention of psychosis
Atrial fibrillation	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient claim or 2 HOP or Carrier claims with DX code during the 1-year period	
427.31	Atrial fibrillation
Chronic kidney disease (CKD)	
Years prior to measurement year from which codes are used: 2 years	
Number/types of claims to qualify: At least 1 inpatient, SNF or HHA claim or 2 HOP or Carrier claims with DX codes during the 1-year period	
016.00	Tuberculosis of kidney, unspecified
016.01	Tuberculosis of kidney, no exam
016.02	Tuberculosis of kidney, bacteriological or histological examination unknown (at present)

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
016.03	Tuberculosis of kidney, tubercle bacilli found (in sputum) by microscopy
016.04	Tuberculosis of kidney, tubercle bacilli not found (in sputum) by microscopy, but found by bacterial culture
016.05	Tuberculosis of kidney, tubercle bacilli not found by bacteriological examination, but tuberculosis confirmed histologically
016.06	Tuberculosis of kidney, tubercle bacilli not found by bacteriological or histological examination, but tuberculosis confirmed by other methods [inoculation of animals]
095.4	Syphilis of kidney
189.0	Malignant neoplasm of kidney, except pelvis
189.9	Malignant neoplasm of urinary organ, site unspecified
223.0	Benign neoplasm of kidney, except pelvis
236.91	Neoplasm of uncertain behavior of kidney and ureter
249.40	Secondary diabetes mellitus with renal manifestations, not stated as uncontrolled, or unspecified
249.41	Secondary diabetes mellitus with renal manifestations, uncontrolled
250.40	Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled
250.41	Diabetes with renal manifestations, type I [juvenile type], not stated as uncontrolled
250.42	Diabetes with renal manifestations, type II or unspecified type, uncontrolled
250.43	Diabetes with renal manifestations, type I [juvenile type], uncontrolled
271.4	Renal glycosuria
274.10	Gouty nephropathy, unspecified
283.11	Hemolytic-uremic syndrome
403.01	Hypertensive CKD, malignant, with CKD stage V or end stage renal disease
403.11	Hypertensive CKD, benign, with CKD stage V or end stage renal disease
403.91	Hypertensive CKD, unspecified, with CKD stage V or end stage renal disease
404.02	Hypertensive heart and CKD, malignant, without heart failure and with CKD stage V or end stage renal disease
404.03	Hypertensive heart and CKD, malignant, with heart failure and with CKD stage V or end stage renal disease
404.12	Hypertensive heart and CKD, benign, without heart failure and with CKD stage V or end stage renal disease
404.13	Hypertensive heart and CKD, benign, with heart failure and CKD stage V or end stage renal disease
404.92	Hypertensive heart and CKD, unspecified, without heart failure and with CKD stage V or end stage renal disease
404.93	Hypertensive heart and CKD, unspecified, with heart failure and CKD stage V or end stage renal disease
440.1	Atherosclerosis of renal artery
442.1	Aneurysm of renal artery
572.4	Hepatorenal syndrome
580.0	Acute glomerulonephritis with lesion of proliferative glomerulonephritis
580.4	Acute glomerulonephritis with lesion of rapidly progressive glomerulonephritis
580.81	Acute glomerulonephritis in diseases classified elsewhere
580.89	Acute glomerulonephritis with other specified pathological lesion in kidney
580.9	Acute glomerulonephritis with unspecified pathological lesion in kidney
581.0	Nephrotic syndrome with lesion of proliferative glomerulonephritis
581.1	Nephrotic syndrome with lesion of membranous glomerulonephritis

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
581.2	Nephrotic syndrome with lesion of membranoproliferative glomerulonephritis
581.3	Nephrotic syndrome with lesion of minimal change glomerulonephritis
581.81	Nephrotic syndrome in diseases classified elsewhere
581.89	Nephrotic syndrome with other specified pathological lesion in kidney
581.9	Nephrotic syndrome with unspecified pathological lesion in kidney
582.0	Chr Proliferat Nephritis (Chronic Glomerulonephritis With Lesion Of Proliferative Glomerulonephritis)
582.1	Chronic glomerulonephritis with lesion of membranous glomerulonephritis
582.2	Chronic glomerulonephritis with lesion of membranoproliferative glomerulonephritis
582.4	Chronic glomerulonephritis with lesion of rapidly progressive glomerulonephritis
582.81	Chr Nephritis In Oth Dis (Chronic Glomerulonephritis In Diseases Classified Elsewhere)
582.89	Chronic glomerulonephritis with other specified pathological lesion in kidney
582.9	Chronic glomerulonephritis with unspecified pathological lesion in kidney
583.0	Nephritis and nephropathy, not specified as acute or chronic, with lesion of proliferative glomerulonephritis
583.1	Nephritis and nephropathy, not specified as acute or chronic, with lesion of membranous glomerulonephritis
583.2	Nephritis and nephropathy, not specified as acute or chronic, with lesion of membranoproliferative glomerulonephritis
583.4	Nephritis and nephropathy, not specified as acute or chronic, with lesion of rapidly progressive glomerulonephritis
583.6	Nephritis and nephropathy, not specified as acute or chronic, with lesion of renal cortical necrosis
583.7	Nephritis and nephropathy, not specified as acute or chronic, with lesion of renal medullary necrosis
583.81	Nephritis and nephropathy, not specified as acute or chronic, in diseases classified elsewhere
583.89	Nephritis and nephropathy, not specified as acute or chronic, with other specified pathological lesion in kidney
583.9	Nephritis and nephropathy, not specified as acute or chronic, with unspecified pathological lesion in kidney
584.5	Acute kidney failure with lesion of tubular necrosis
584.6	Acute kidney failure with lesion of renal cortical necrosis
584.7	Acute kidney failure with lesion of renal medullary [papillary] necrosis
584.8	Acute kidney failure with other specified pathological lesion in kidney
584.9	Acute kidney failure, unspecified
585	Chronic kidney disease
585.1	Chronic kidney disease, Stage I
585.2	Chronic kidney disease, Stage II (mild)
585.3	Chronic kidney disease, Stage III (moderate)
585.4	Chronic kidney disease, Stage IV (severe)
585.5	Chronic kidney disease, Stage V
585.6	End stage renal disease
585.9	Chronic kidney disease, unspecified
586	Renal failure, unspecified
587	Renal sclerosis, unspecified
588.0	Renal osteodystrophy
588.1	Nephrogenic diabetes insipidus

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
588.81	Secondary hyperparathyroidism (of renal origin)
588.89	Other specified disorders resulting from impaired renal function
588.9	Unspecified disorder resulting from impaired renal function
591	Hydronephrosis
753.12	Polycystic kidney, unspecified type
753.13	Polycystic kidney, autosomal dominant
753.14	Polycystic kidney, autosomal recessive
753.15	Renal dysplasia
753.16	Medullary cystic kidney
753.17	Medullary sponge kidney
753.19	Other specified cystic kidney disease
753.20	Unspecified obstructive defect of renal pelvis and ureter
753.21	Congenital obstruction of ureteropelvic junction
753.22	Congenital obstruction of ureterovesical junction
753.23	Congenital ureterocele
753.29	Other obstructive defects of renal pelvis and ureter
794.4	Nonspecific abnormal results of function study of kidney
Chronic obstructive pulmonary disease (COPD) and asthma	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient, SNF, HHA or 2 HOP or Carrier claims with DX codes during the 1-year period	
490	Bronchitis, not specified as acute or chronic
491.0	Simple chronic bronchitis
491.1	Mucopurulent chronic bronchitis
491.20	Obstructive chronic bronchitis without exacerbation
491.21	Obstructive chronic bronchitis with (acute) exacerbation
491.22	Obstructive chronic bronchitis with acute bronchitis
491.8	Other chronic bronchitis
491.9	Unspecified chronic bronchitis
492.0	Emphysematous bleb
492.8	Other emphysema
494.0	Bronchiectasis without acute exacerbation
494.1	Bronchiectasis with acute exacerbation
496	Chronic airway obstruction, not elsewhere classified
493.00	Extrinsic Asthma NOS (Extrinsic Asthma, Unspecified)
493.01	Ext Asthma W Status Asth (Extrinsic Asthma With Status Asthmaticus)
493.02	Ext asthma w(acute) exac (Extrinsic asthma with (acute) exacerbation)
493.10	Mild intermittent asthma, uncomplicated
493.11	Int asthma w status asth (Intrinsic asthma with status asthmaticus)
493.12	Int asthma w (ac) exac (Intrinsic asthma with (acute) exacerbation)
493.20	chronic obst asthma NOS (Chronic obstructive asthma, unspecified)
493.21	Ch ob asthma w stat asth (Chronic obstructive asthma with status asthmaticus)
493.22	Ch obst asth w (ac) exac (Chronic obstructive asthma with (acute) exacerbation)
493.81	Exercse ind bronchospasm (Exercise induced bronchospasm)

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
493.82	Cough Variant Asthma
493.90	Asthma NOS (Asthma, unspecified type, unspecified)
493.91	Asthma w status asthmat (Asthma, unspecified type, with status asthmaticus)
493.92	Asthma NOS W (Ac) Exac (Asthma, Unspecified Type, With (Acute) Exacerbation)
Depression	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient, SNF, HHA, HOP or Carrier claim with DX codes during the 1-year period	
296.20	Major depressive affective disorder, single episode, unspecified
296.21	Major depressive affective disorder, single episode, mild
296.22	Major depressive affective disorder, single episode, moderate
296.23	Major depressive affective disorder, single episode, severe, without mention of psychotic behavior
296.24	Major depressive affective disorder, single episode, severe, specified as with psychotic behavior
296.25	Major depressive affective disorder, single episode, in partial or unspecified remission
296.26	Major depressive affective disorder, single episode, in full remission
296.30	Major depressive affective disorder, recurrent episode, unspecified
296.31	Major depressive affective disorder, recurrent episode, mild
296.32	Major depressive affective disorder, recurrent episode, moderate
296.33	Major depressive affective disorder, recurrent episode, severe, without mention of psychotic behavior
296.34	Major depressive affective disorder, recurrent episode, severe, specified as with psychotic behavior
296.35	Major depressive affective disorder, recurrent episode, in partial or unspecified remission
296.36	Major depressive affective disorder, recurrent episode, in full remission
296.51	Bipolar I disorder, most recent episode (or current) depressed, mild
296.52	Bipolar I disorder, most recent episode (or current) depressed, moderate
296.53	Bipolar I disorder, most recent episode (or current) depressed, severe, without mention of psychotic behavior
296.54	Bipolar I disorder, most recent episode (or current) depressed, severe, specified as with psychotic behavior
296.55	Bipolar I disorder, most recent episode (or current) depressed, in partial or unspecified remission
296.56	Bipolar I disorder, most recent episode (or current) depressed, in full remission
296.60	Bipolar I disorder, most recent episode (or current) mixed, unspecified
296.61	Bipolar I disorder, most recent episode (or current) mixed, mild
296.62	Bipolar I disorder, most recent episode (or current) mixed, moderate
296.63	Bipolar I disorder, most recent episode (or current) mixed, severe, without mention of psychotic behavior
296.64	Bipolar I disorder, most recent episode (or current) mixed, severe, specified as with psychotic behavior
296.65	Bipolar I disorder, most recent episode (or current) mixed, in partial or unspecified remission
296.66	Bipolar I disorder, most recent episode (or current) mixed, in full remission
296.89	Other bipolar disorders
298.0	Depressive type psychosis
300.4	Dysthymic disorder
309.1	Prolonged depressive reaction
311	Hydronephrosis

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
Heart failure	
Years prior to measurement year from which codes are used: 2 years	
Number/types of claims to qualify: At least 1 inpatient, HOP or Carrier claim with DX codes during the 1-year period	
398.91	Rheumatic heart failure (congestive)
402.01	Malignant hypertensive heart disease with heart failure
402.11	Benign hypertensive heart disease with heart failure
402.91	Unspecified hypertensive heart disease with heart failure
404.01	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified
404.11	Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified
404.91	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified
404.03	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V or end stage renal disease
404.13	Hypertensive heart and chronic kidney disease, benign, with heart failure and chronic kidney disease stage V or end stage renal disease
404.93	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and chronic kidney disease stage V or end stage renal disease
428.0	Congestive heart failure, unspecified
428.1	Left heart failure
428.20	Systolic heart failure, unspecified
428.21	Acute systolic heart failure
428.22	Chronic systolic heart failure
428.23	Acute on chronic systolic heart failure
428.30	Diastolic heart failure, unspecified
428.31	Acute diastolic heart failure
428.32	Chronic diastolic heart failure
428.33	Acute on chronic diastolic heart failure
428.40	Combined systolic and diastolic heart failure, unspecified
428.41	Acute combined systolic and diastolic heart failure
428.42	Chronic combined systolic and diastolic heart failure
428.43	Acute on chronic combined systolic and diastolic heart failure
428.9	Heart failure, unspecified
Stroke and transient ischemic attack (TIA)	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient claim or 2 HOP or Carrier claims with DX codes during the 1-year period	
430	Subarachnoid hemorrhage
431	Intracerebral hemorrhage
433.01	Ocl Bslr Art W Infrc (Occlusion And Stenosis Of Basilar Artery With Cerebral Infarction)
433.11	Ocl crtd art w infrc (Occlusion and stenosis of carotid artery with cerebral infarction)
433.21	Ocl Vrtb Art W Infrc (Occlusion And Stenosis Of Vertebral Artery With Cerebral Infarction)

(continued)

Table 1. Denominator Details: Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-9-CM Code	Description
433.31	Ocl Mlt Bi Art W Infrc (Occlusion And Stenosis Of Multiple And Bilateral Precerebral Arteries With Cerebral Infarction)
433.81	Occlusion and stenosis of other specified precerebral artery with cerebral infarction
433.91	Ocl art NOS w infrc (Occlusion and stenosis of unspecified precerebral artery with cerebral infarction)
434.00	Crbl Thrmb W Infrc (Cerebral Thrombosis Without Mention Of Cerebral Infarction)
434.01	Crbl Thrmb W Infrc (Cerebral Thrombosis With Cerebral Infarction)
434.11	Crbl Emblsm W Infrc (Cerebral Embolism With Cerebral Infarction)
434.90	Crbl Art Oc NOS Wo Infrc (Cerebral Artery Occlusion, Unspecified Without Mention Of Cerebral Infarction)
434.91	Crbl Art Ocl NOS W Infrc (Cerebral Artery Occlusion, Unspecified With Cerebral Infarction)
435.0	Basilar artery syndrome
435.1	Vertebral Artery Syndrom (Vertebral Artery Syndrome)
435.3	Vertbrobaslr artery synd (Vertebrobasilar artery syndrome)
435.8	Trans cereb ischemia NEC (Other specified transient cerebral ischemias)
435.9	Trans cereb ischemia NOS (Unspecified transient cerebral ischemia)
436	Acute, but ill-defined, cerebrovascular disease
997.02	Iatrogen CV Infarc/Hmrhg (Iatrogenic Cerebrovascular Infarction Or Hemorrhage)

- Denominator Exceptions and Exclusions
 1. Beneficiaries that do not have 12 months continuous enrollment in Medicare Part A and B during the year prior to the measurement year.
Rationale: This data is needed to attribute chronic conditions to beneficiaries.
 2. Beneficiaries that do not have 12 months continuous enrollment in Medicare Part A during the measurement year. Beneficiaries who become deceased during the measurement period are excluded if they do not have continuous enrollment in Medicare Part A until death (i.e. the 12 month requirement is relaxed for these beneficiaries). Beneficiaries with continuous enrollment until death are excluded after the time of death.
Rationale: We exclude these patients to ensure full data availability for outcome assessment (Part A during the measurement year). Beneficiaries with continuous enrollment who become deceased during the year are included only for the time they are alive.
- Denominator Exceptions and Exclusions Details
 1. Beneficiaries without continuous enrollment in Medicare Part A and B during the year prior to the measurement year. Lack of continuous enrollment in Medicare Part A and B is determined by patient enrollment status in a Medicare Denominator File. The enrollment indicators must be appropriately marked during the year prior to the measurement year.
 2. Beneficiaries without continuous enrollment in Medicare Part A for the duration of the measurement period (or until death) are excluded. Lack of continuous enrollment in Medicare Part A is determined by patient enrollment status in a Medicare Denominator File. The enrollment indicators must be appropriately marked during the measurement year.

Numerator

- Numerator Statement

The outcome measured for each beneficiary is the number of acute unplanned admissions per 100 person-years at risk for admission. Persons are considered at risk for admission if they are alive, enrolled in FFS Medicare, and not currently admitted to an acute care hospital.

- Numerator Details

Outcome Definition

The outcome for this measure is the number of acute unplanned admissions per 100 person-years at risk for admission. The outcome includes inpatient admissions to an acute care hospital for any cause during the measurement year, unless an admission is identified as “planned.”

Identification of Planned Admissions

The measure outcome includes only unplanned admissions. Although clinical experts agree that proper care in the ambulatory setting should reduce hospital admissions, variation in planned admissions (such as for elective surgery) does not typically reflect quality differences. We based the planned admission algorithm on CMS’s Planned Readmission Algorithm Version 3.0, which CMS originally created to identify planned readmissions for the hospital-wide readmission measure. In brief, the algorithm identifies a short list of always planned admissions (that is, those where the principal discharge diagnosis is major organ transplant, obstetrical delivery, or maintenance chemotherapy; See Appendix Table PA1) as well as those admissions with a potentially planned procedure (for example, total hip replacement or cholecystectomy; See Appendix Table PA2 and PA3) AND a non-acute principal discharge diagnosis code (See Appendix Table PA4 for acute diagnoses). Admissions that include potentially planned procedures that might represent complications of ambulatory care, such as cardiac catheterization, are not considered planned. To adapt the algorithm for this measure, we removed from the potentially planned procedure list two procedures, cardiac catheterization and amputation, because the need for these procedures might reflect progression of clinical conditions that potentially could have been managed in the ambulatory setting to avoid admissions for these procedures.

Outcome Attribution

The outcome is attributed to the ACO to which the beneficiary is assigned in the Shared Savings Program or aligned in the Pioneer ACO Model.

Stratification or Risk Adjustment

- Stratification: Not applicable. This measure is not stratified.

- Risk Adjustment:

We use a two-level hierarchical negative binomial model to estimate risk-standardized acute, unplanned admissions per 100 person-years at risk for admission. This approach accounts for the clustering of patients within ACOs and variation in sample size.

The model adjusts for clinical risk factors present at the start of the measurement year, age, and the chronic disease categories that qualify the patient for the measure cohort.

Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association Scientific Statement, “Standards for Statistical Models Used for Public Reporting of Health Outcomes” [1-2].

The risk-standardization model has 45 variables: age, each of the eight chronic disease groups, and 36 comorbidity variables. We define clinical variables primarily using CMS’s Condition Categories (CCs), which are clinically meaningful groupings of ICD-9-CM/ICD-10 diagnosis codes [3]. Where ICD-9-CM/ICD-10 codes in CCs overlap with those used in the variables that define the eight chronic disease groups, we removed those ICD-9-CM/ICD-10

codes from the CCs to eliminate the overlap. Some variables are also defined by subsets of ICD-9-CM/ICD-10 codes within CCs.

The risk-adjustment variables are:

Demographic

1. Age (continuous variable)

Eight chronic disease groups

1. AMI
2. Alzheimer's disease and related disorders or senile dementia
3. Atrial fibrillation
4. CKD
5. COPD and asthma
6. Depression
7. Heart failure
8. Stroke and TIA

Clinical comorbidities defined using Version 22 CCs or ICD-9-CM/ ICD-10 codes

1. Dialysis status (CC 134)
2. Respiratory failure (CC 82, 83, 84)
3. Advanced liver disease (27 [remove ICD-9-CM 572.4 or ICD-10 K767], 28, 29, 30)
4. Pneumonia (CC 114, 115, 116)
5. Septicemia/shock (CC 2)
6. Marked disability/frailty (CC 21, 70, 71, 73, 157, 158, 159, 160, 161, 189, 190)
7. Pleural effusion/pneumothorax (CC 117)
8. Hematological diseases (CC46 [remove ICD-9-CM 283.11 or ICD-10 D593], 48)
9. Advanced cancer (CC 8, 9, 10, 13)
10. Infectious and immunologic diseases (CC 1, 3, 4, 5 [remove ICD-9-CM 01600, 01601, 01602, 01603, 01604, 01605, 01606 or ICD-10 A1811], 6, 47, 90)
11. Severe cognitive impairment (CC 50 [remove ICD-10 F05, F061, F068], 80, 64, 65)
12. Major organ transplant status (CC 132, 186)
13. Pulmonary heart disease (ICD-9-CM 415.0, 416.0, 416.1, 416.8, 416.9, 417.0, 417.1, 417.8, 417.9 or ICD-10 I2601, I2602, I2609, I270, I271, I272, I2789, I2781, I279, I280, I281, I288, I289)
14. Cardiomyopathy (ICD-9-CM 425.2, 425.4, 425.5, 425.7, 425.8, 4259, 429.0, 429.1, 425.11, 425.18 or ICD-10 I420, I421, I422, I428, I425, I429, I426, I43, I427, I514)
15. Gastrointestinal disease (CC 31, 32, 33, 35, 36)
16. Bone/joint/muscle infections/necrosis (CC 39)
17. Iron deficiency anemia (CC 49)
18. Diabetes with complications (CC 17, 18 [remove ICD-9 24940, 24941, 25040, 25041, 25042, 25043 or ICD-10 E0821, E0822, E0829, E0865, E0921, E0922, E0929, E1021, E1022, E1029, E1065, E1121, E1122, E1129, E1165, E1321, E1322, E1329], 19, 122, 123)
19. Ischemic heart disease except AMI (87, 88, 89, 98 add ICD-9-CM 429.5, 429.6 or ICD-10 I234, I235, I51.1, I51.2)
20. Other lung disorders (CC 112 [remove ICD-9-CM 4940, 4941 or ICD-10 J470, J471, J479], 118)
21. Vascular or circulatory disease (CC 106, 107, 108 [remove ICD-9-CM 4401, 4421 or remove ICD-10 I701, I722])
22. Other significant endocrine disorders (CC 23 [remove ICD-9-CM 271.4, 588.1, 588.81 or ICD-10 E748, N251, N2581])
23. Other disability and paralysis (CC 72, 74, 103, 104, 119)
24. Substance abuse (CC 54, 55, 56)
25. Pancreatic disease (CC 34)
26. Other neurologic disorders (CC 75, 77, 78, 79, 81, 105)

27. Arrhythmia (except atrial fibrillation) (96 [remove ICD-9-CM 427.31 or ICD-10 I480, I482, I4891] and 97])
28. Hypertension (CC 94, 95)
29. Hip or vertebral fracture (CC 169, 170)
30. Lower-risk cardiovascular disease (CC 91, 92, 93)
31. Cerebrovascular disease (CC 102 [remove ICD-10 I6789])
32. Other malignancy (CC 11 [remove ICD-9-CM 1890, 1899 or ICD-10 C641, C642, C649, C689], 12)
33. Morbid obesity (ICD-9-CM V853.5, V853.6, V853.7, V853.8, 278.01, V853.9, V854.2, V854.3, V854.4, V854.5, V854.3 or ICD-10 Z6835, Z6836, Z6837, Z6838, Z6839, Z6842, Z6843, Z6843, Z6844, Z6845, E6601)
34. Urinary disorders (142 [remove ICD-9-CM 591, 753.21, 753.20, 753.29, 753.22, 753.23 or ICD-10 N131, N132, N1330, N1339, Q620, Q6210, Q6211, Q6212, Q622, Q6231, Q6232, Q6239], 145 [remove ICD-9-CM 587, , 588.9, 588.89, 753.12, 753.13, 753.15, 753.16, 753.19 or remove ICD-10 N2589, N259, N261, N269, Q6102, Q612, Q613, Q614, Q615, Q618])
35. Psychiatric disorders other than depression (CC 57,59,60,62,63 [remove ICD-10 F4321])

Citations

1. Krumholz HM, Brindis RG, Brush JE, et al. Standards for Statistical Models Used for Public Reporting of Health Outcomes: An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College of Cardiology Foundation. *Circulation*. 2006; 113 (3): 456-462.
2. Normand S-LT, Shahian DM. Statistical and Clinical Aspects of Hospital Outcomes Profiling. *Stat Sci*. 2007; 22 (2): 206-226.

Sampling

- This is not based on a sample or survey.

Calculation Algorithm

The risk-standardized acute admission rate (RSAAR) for each ACO is calculated as the number of “predicted” to the number of “expected” admissions per 100 person-years, multiplied by the national crude number of admissions per 100 person-years among all ACO beneficiaries with MCCs. All eligible ACO beneficiaries with MCCs are used in the measure score calculation, and a score is generated for each ACO.

1. Two-level hierarchical statistical models, accounting for clustering of patients within ACOs and patient level characteristics, are estimated. The measure uses a negative binomial model since our outcome is a count of the number of admissions. The first level of the model adjusts for patient factors. The relationship between patient risk factors and the outcome of admission is determined based on the overall sample of patients within ACOs. The second level of the model estimates a random-intercept term that reflects the ACO’s contribution to admission risk, based on its actual admission rate, the performance of other providers with similar case mix, and its sample size. The ACO-specific random intercept is used in the numerator calculation to derive an ACO-specific number of “predicted” admissions per person-year.
2. The expected number of admissions is calculated based on the ACO’s case mix and national average intercept.
3. The predicted number of admissions is calculated based on the ACO’s case mix and the estimated ACO-specific intercept term.
4. The measure score is the ratio of predicted admissions over the expected admissions multiplied by the crude national admission rate among all ACO patients. The predicted to expected ratio of admissions is analogous to an observed/expected ratio, but the numerator accounts for clustering and sample-size variation.
5. We multiply the ratio for each ACO by a constant, the crude national rate of acute, unplanned admissions per 100 person-years at risk for hospitalization, for ease of interpretation (RSAAR).

Appendix Tables

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort

ICD-10	Description
Acute myocardial infarction (AMI)	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient claim with diagnosis (DX) codes during the 1-year period	
I21.01	ST elevation (STEMI) myocardial infarction involving left main coronary artery
I21.02	ST elevation (STEMI) myocardial infarction involving left anterior descending coronary artery
I21.09	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall
I21.11	ST elevation (STEMI) myocardial infarction involving right coronary artery
I21.19	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall
I21.21	ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery
I21.29	ST elevation (STEMI) myocardial infarction involving other sites
I21.3	ST elevation (STEMI) myocardial infarction involving other sites
I21.4	Non-ST elevation (NSTEMI) myocardial infarction
I22.0	Subsequent ST elevation (STEMI) myocardial infarction of anterior wall
I22.1	Subsequent ST elevation (STEMI) myocardial infarction of inferior wall
I22.2	Subsequent non-ST elevation (NSTEMI) myocardial infarction
I22.8	Subsequent ST elevation (STEMI) myocardial infarction of other sites
I22.9	Subsequent ST elevation (STEMI) myocardial infarction of unspecified site
Alzheimer's disease and related disorders or senile dementia	
Years prior to measurement year from which codes are used: 3 years	
Number/types of claims to qualify: At least 1 inpatient, Skilled Nursing Facility (SNF), Home Health Agency (HHA), Hospital Outpatient (HOP) or Carrier claim with DX codes during the 1-year period	
F01.50	Vascular dementia without behavioral disturbance
F01.51	Vascular dementia with behavioral disturbance
F02.80	Dementia in other diseases classified elsewhere without behavioral disturbance
F02.81	Dementia in other diseases classified elsewhere with behavioral disturbance
F03.90	Unspecified dementia without behavioral disturbance
F03.91	Unspecified dementia with behavioral disturbance
F04	Amnestic disorder due to known physiological condition
G13.2	Systemic atrophy primarily affecting the central nervous system in myxedema
G13.8	Systemic atrophy primarily affecting central nervous system in other diseases classified elsewhere
F05	Delirium due to known physiological condition
F06.1	Catatonic disorder due to known physiological condition
F06.8	Other specified mental disorders due to known physiological condition
G30.0	Alzheimer's disease with early onset
G30.1	Alzheimer's disease with late onset
G30.8	Other Alzheimer's disease
G30.9	Alzheimer's disease, unspecified
G31.1	Senile degeneration of brain, not elsewhere classified
G31.2	Degeneration of nervous system due to alcohol
G31.01	Pick's disease
G31.09	Other frontotemporal dementia
G91.4	Hydrocephalus in diseases classified elsewhere

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
G94	Other disorders of brain in diseases classified elsewhere
R41.81	Age-related cognitive decline
R54	Age-related physical debility
Atrial fibrillation	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient claim or 2 HOP or Carrier claims with DX code during the 1-year period	
I48.0	Paroxysmal atrial fibrillation
I48.2	Chronic atrial fibrillation
I48.91	Unspecified atrial fibrillation
Chronic kidney disease (CKD)	
Years prior to measurement year from which codes are used: 2 years	
Number/types of claims to qualify: At least 1 inpatient, SNF or HHA claim or 2 HOP or Carrier claims with DX codes during the 1-year period	
A18.11	Tuberculosis of kidney and ureter
A52.75	Syphilis of kidney and ureter
B52.0	Plasmodium malariae malaria with nephropathy
C64.1	Malignant neoplasm of right kidney, except renal pelvis
C64.2	Malignant neoplasm of left kidney, except renal pelvis
C64.9	Malignant neoplasm of unspecified kidney, except renal pelvis
C68.9	Malignant neoplasm of urinary organ, unspecified
D30.00	Benign neoplasm of unspecified kidney
D30.01	Benign neoplasm of right kidney
D30.02	Benign neoplasm of left kidney
D41.00	Neoplasm of uncertain behavior of unspecified kidney
D41.01	Neoplasm of uncertain behavior of right kidney
D41.02	Neoplasm of uncertain behavior of left kidney
D41.10	Neoplasm of uncertain behavior of unspecified renal pelvis
D41.11	Neoplasm of uncertain behavior of right renal pelvis
D41.12	Neoplasm of uncertain behavior of left renal pelvis
D41.20	Neoplasm of uncertain behavior of unspecified ureter
D41.21	Neoplasm of uncertain behavior of right ureter
D41.22	Neoplasm of uncertain behavior of left ureter
D59.3	Hemolytic-uremic syndrome
E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy
E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease
E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication
E08.65	Diabetes mellitus due to underlying condition with hyperglycemia
E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy
E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease
E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication
E10.21	Type 1 diabetes mellitus with diabetic nephropathy
E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease
E10.29	Type 1 diabetes mellitus with other diabetic kidney complication

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
E10.65	Type 1 diabetes mellitus with hyperglycemia
E11.21	Type 2 diabetes mellitus with diabetic nephropathy
E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication
E11.65	Type 2 diabetes mellitus with hyperglycemia
E13.21	Other specified diabetes mellitus with diabetic nephropathy
E13.22	Other specified diabetes mellitus with diabetic chronic kidney disease
E13.29	Other specified diabetes mellitus with other diabetic kidney complication
E74.8	Other specified disorders of carbohydrate metabolism
I12.0	Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease
I13.11	Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease
I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease
I70.1	Atherosclerosis of renal artery
I72.2	Aneurysm of renal artery
K76.7	Hepatorenal syndrome
M10.30	Gout due to renal impairment, unspecified site
M10.311	Gout due to renal impairment, right shoulder
M10.312	Gout due to renal impairment, left shoulder
M10.319	Gout due to renal impairment, unspecified shoulder
M10.321	Gout due to renal impairment, right elbow
M10.322	Gout due to renal impairment, left elbow
M10.329	Gout due to renal impairment, unspecified elbow
M10.331	Gout due to renal impairment, right wrist
M10.332	Gout due to renal impairment, left wrist
M10.339	Gout due to renal impairment, unspecified wrist
M10.341	Gout due to renal impairment, right hand
M10.342	Gout due to renal impairment, left hand
M10.349	Gout due to renal impairment, unspecified hand
M10.351	Gout due to renal impairment, right hip
M10.352	Gout due to renal impairment, left hip
M10.359	Gout due to renal impairment, unspecified hip
M10.361	Gout due to renal impairment, right knee
M10.362	Gout due to renal impairment, left knee
M10.369	Gout due to renal impairment, unspecified knee
M10.371	Gout due to renal impairment, right ankle and foot
M10.372	Gout due to renal impairment, left ankle and foot
M10.379	Gout due to renal impairment, unspecified ankle and foot
M10.38	Gout due to renal impairment, vertebrae
M10.39	Gout due to renal impairment, multiple sites
M32.14	Glomerular disease in systemic lupus erythematosus
M32.15	Tubulo-interstitial nephropathy in systemic lupus erythematosus
M35.04	Sicca syndrome with tubulo-interstitial nephropathy

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
N00.0	Acute nephritic syndrome with minor glomerular abnormality
N00.1	Acute nephritic syndrome with focal and segmental glomerular lesions
N00.2	Acute nephritic syndrome with diffuse membranous glomerulonephritis
N00.3	Acute nephritic syndrome with diffuse mesangial proliferative glomerulonephritis
N00.4	Acute nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis
N00.5	Acute nephritic syndrome with diffuse mesangiocapillary glomerulonephritis
N00.6	Acute nephritic syndrome with dense deposit disease
N00.7	Acute nephritic syndrome with diffuse crescentic glomerulonephritis
N00.8	Acute nephritic syndrome with other morphologic changes
N00.9	Acute nephritic syndrome with unspecified morphologic changes
N01.0	Rapidly progressive nephritic syndrome with minor glomerular abnormality
N01.1	Rapidly progressive nephritic syndrome with focal and segmental glomerular lesions
N01.2	Rapidly progressive nephritic syndrome with diffuse membranous glomerulonephritis
N01.3	Rapidly progressive nephritic syndrome with diffuse mesangial proliferative glomerulonephritis
N01.4	Rapidly progressive nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis
N01.5	Rapidly progressive nephritic syndrome with diffuse mesangiocapillary glomerulonephritis
N01.6	Rapidly progressive nephritic syndrome with dense deposit disease
N01.7	Rapidly progressive nephritic syndrome with diffuse crescentic glomerulonephritis
N01.8	Rapidly progressive nephritic syndrome with other morphologic changes
N01.9	Rapidly progressive nephritic syndrome with unspecified morphologic changes
N02.0	Recurrent and persistent hematuria with minor glomerular abnormality
N02.1	Recurrent and persistent hematuria with focal and segmental glomerular lesions
N02.2	Recurrent and persistent hematuria with diffuse membranous glomerulonephritis
N02.3	Recurrent and persistent hematuria with diffuse mesangial proliferative glomerulonephritis
N02.4	Recurrent and persistent hematuria with diffuse endocapillary proliferative glomerulonephritis
N02.5	Recurrent and persistent hematuria with diffuse mesangiocapillary glomerulonephritis
N02.6	Recurrent and persistent hematuria with dense deposit disease
N02.7	Recurrent and persistent hematuria with diffuse crescentic glomerulonephritis
N02.8	Recurrent and persistent hematuria with other morphologic changes
N02.9	Recurrent and persistent hematuria with unspecified morphologic changes
N03.0	Chronic nephritic syndrome with minor glomerular abnormality
N03.1	Chronic nephritic syndrome with focal and segmental glomerular lesions
N03.2	Chronic nephritic syndrome with diffuse membranous glomerulonephritis
N03.3	Chronic nephritic syndrome with diffuse mesangial proliferative glomerulonephritis
N03.4	Chronic nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis
N03.5	Chronic nephritic syndrome with diffuse mesangiocapillary glomerulonephritis
N03.6	Chronic nephritic syndrome with dense deposit disease
N03.7	Chronic nephritic syndrome with diffuse crescentic glomerulonephritis
N03.8	Chronic nephritic syndrome with other morphologic changes
N03.9	Chronic nephritic syndrome with unspecified morphologic changes
N04.0	Nephrotic syndrome with minor glomerular abnormality
N04.1	Nephrotic syndrome with focal and segmental glomerular lesions
N04.2	Nephrotic syndrome with diffuse membranous glomerulonephritis
N04.3	Nephrotic syndrome with diffuse mesangial proliferative glomerulonephritis

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
N04.4	Nephrotic syndrome with diffuse endocapillary proliferative glomerulonephritis
N04.5	Nephrotic syndrome with diffuse mesangiocapillary glomerulonephritis
N04.6	Nephrotic syndrome with dense deposit disease
N04.7	Nephrotic syndrome with diffuse crescentic glomerulonephritis
N04.8	Nephrotic syndrome with other morphologic changes
N04.9	Nephrotic syndrome with unspecified morphologic changes
N05.0	Unspecified nephritic syndrome with minor glomerular abnormality
N05.1	Unspecified nephritic syndrome with focal and segmental glomerular lesions
N05.2	Unspecified nephritic syndrome with diffuse membranous glomerulonephritis
N05.3	Unspecified nephritic syndrome with diffuse mesangial proliferative glomerulonephritis
N05.4	Unspecified nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis
N05.5	Unspecified nephritic syndrome with diffuse mesangiocapillary glomerulonephritis
N05.6	Unspecified nephritic syndrome with dense deposit disease
N05.7	Unspecified nephritic syndrome with diffuse crescentic glomerulonephritis
N05.8	Unspecified nephritic syndrome with other morphologic changes
N05.9	Unspecified nephritic syndrome with unspecified morphologic changes
N06.0	Isolated proteinuria with minor glomerular abnormality
N06.1	Isolated proteinuria with focal and segmental glomerular lesions
N06.2	Isolated proteinuria with diffuse membranous glomerulonephritis
N06.3	Isolated proteinuria with diffuse mesangial proliferative glomerulonephritis
N06.4	Isolated proteinuria with diffuse endocapillary proliferative glomerulonephritis
N06.5	Isolated proteinuria with diffuse mesangiocapillary glomerulonephritis
N06.6	Isolated proteinuria with dense deposit disease
N06.7	Isolated proteinuria with diffuse crescentic glomerulonephritis
N06.8	Isolated proteinuria with other morphologic lesion
N06.9	Isolated proteinuria with unspecified morphologic lesion
N07.0	Hereditary nephropathy, not elsewhere classified with minor glomerular abnormality
N07.1	Hereditary nephropathy, not elsewhere classified with focal and segmental glomerular lesions
N07.2	Hereditary nephropathy, not elsewhere classified with diffuse membranous glomerulonephritis
N07.3	Hereditary nephropathy, not elsewhere classified with diffuse mesangial proliferative glomerulonephritis
N07.4	Hereditary nephropathy, not elsewhere classified with diffuse endocapillary proliferative glomerulonephritis
N07.5	Hereditary nephropathy, not elsewhere classified with diffuse mesangiocapillary glomerulonephritis
N07.6	Hereditary nephropathy, not elsewhere classified with dense deposit disease
N07.7	Hereditary nephropathy, not elsewhere classified with diffuse crescentic glomerulonephritis
N07.8	Hereditary nephropathy, not elsewhere classified with other morphologic lesions
N07.9	Hereditary nephropathy, not elsewhere classified with unspecified morphologic lesions
N08	Glomerular disorders in diseases classified elsewhere
N13.1	Hydronephrosis with ureteral stricture, not elsewhere classified
N13.2	Hydronephrosis with renal and ureteral calculous obstruction
N13.30	Unspecified hydronephrosis
N13.39	Other hydronephrosis
N14.0	Analgesic nephropathy

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
N14.1	Nephropathy induced by other drugs, medicaments and biological substances
N14.2	Nephropathy induced by unspecified drug, medicament or biological substance
N14.3	Nephropathy induced by heavy metals
N14.4	Toxic nephropathy, not elsewhere classified
N15.0	Balkan nephropathy
N15.8	Other specified renal tubulo-interstitial diseases
N15.9	Renal tubulo-interstitial disease, unspecified
N16	Renal tubulo-interstitial disorders in diseases classified elsewhere
N17.0	Acute kidney failure with tubular necrosis
N17.1	Acute kidney failure with acute cortical necrosis
N17.2	Acute kidney failure with medullary necrosis
N17.8	Other acute kidney failure
N17.9	Acute kidney failure, unspecified
N18.1	Chronic kidney disease, stage 1
N18.2	Chronic kidney disease, stage 2 (mild)
N18.3	Chronic kidney disease, stage 3 (moderate)
N18.4	Chronic kidney disease, stage 4 (severe)
N18.5	Chronic kidney disease, stage 5
N18.6	End stage renal disease
N18.9	Chronic kidney disease, unspecified
N19	Unspecified kidney failure
N25.0	Renal osteodystrophy
N25.1	Nephrogenic diabetes insipidus
N25.81	Secondary hyperparathyroidism of renal origin
N25.89	Other disorders resulting from impaired renal tubular function
N25.9	Disorder resulting from impaired renal tubular function, unspecified
N26.1	Atrophy of kidney (terminal)
N26.9	Renal sclerosis, unspecified
Q61.02	Congenital multiple renal cysts
Q61.11	Cystic dilatation of collecting ducts
Q61.19	Other polycystic kidney, infantile type
Q61.2	Polycystic kidney, adult type
Q61.3	Polycystic kidney, unspecified
Q61.4	Renal dysplasia
Q61.5	Medullary cystic kidney
Q61.8	Other cystic kidney diseases
Q62.0	Congenital hydronephrosis
Q62.2	Congenital megaureter
Q62.10	Congenital occlusion of ureter, unspecified
Q62.11	Congenital occlusion of ureteropelvic junction
Q62.12	Congenital occlusion of ureterovesical orifice
Q62.31	Congenital ureterocele, orthotopic
Q62.32	Cecoureterocele
Q62.39	Other obstructive defects of renal pelvis and ureter

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
R94.4	Abnormal results of kidney function studies
Chronic obstructive pulmonary disease (COPD) and asthma	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient, SNF, HHA or 2 HOP or Carrier claims with DX codes during the 1-year period	
J40	Bronchitis, not specified as acute or chronic
J41.0	Simple chronic bronchitis
J41.1	Mucopurulent chronic bronchitis
J41.8	Mixed simple and mucopurulent chronic bronchitis
J42	Unspecified chronic bronchitis
J43.0	Unilateral pulmonary emphysema [MacLeod's syndrome]
J43.1	Panlobular emphysema
J43.2	Centrilobular emphysema
J43.8	Other emphysema
J43.9	Emphysema, unspecified
J44.0	Chronic obstructive pulmonary disease with acute lower respiratory infection
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation
J44.9	Chronic obstructive pulmonary disease, unspecified
J47.0	Bronchiectasis with acute lower respiratory infection
J47.1	Bronchiectasis with (acute) exacerbation
J47.9	Bronchiectasis, uncomplicated
Depression	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient, SNF, HHA, HOP or Carrier claim with DX codes during the 1-year period	
F31.30	Bipolar disorder, current episode depressed, mild or moderate severity, unspecified
F31.31	Bipolar disorder, current episode depressed, mild
F31.32	Bipolar disorder, current episode depressed, moderate
F31.4	Bipolar disorder, current episode depressed, severe, without psychotic features
F31.5	Bipolar disorder, current episode depressed, severe, with psychotic features
F31.60	Bipolar disorder, current episode mixed, unspecified
F31.61	Bipolar disorder, current episode mixed, mild
F31.62	Bipolar disorder, current episode mixed, moderate
F31.63	Bipolar disorder, current episode mixed, severe, without psychotic features
F31.64	Bipolar disorder, current episode mixed, severe, with psychotic features
F31.75	Bipolar disorder, in partial remission, most recent episode depressed
F31.76	Bipolar disorder, in full remission, most recent episode depressed
F31.77	Bipolar disorder, in partial remission, most recent episode mixed
F31.78	Bipolar disorder, in full remission, most recent episode mixed
F31.81	Bipolar II disorder
F32.0	Major depressive disorder, single episode, mild
F32.1	Major depressive disorder, single episode, moderate
F32.2	Major depressive disorder, single episode, severe without psychotic features
F32.3	Major depressive disorder, single episode, severe with psychotic features

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
F32.4	Major depressive disorder, single episode, in partial remission
F32.5	Major depressive disorder, single episode, in full remission
F32.9	Major depressive disorder, single episode, unspecified
F33.0	Major depressive disorder, recurrent, mild
F33.1	Major depressive disorder, recurrent, moderate
F33.2	Major depressive disorder, recurrent severe without psychotic features
F33.3	Major depressive disorder, recurrent, severe with psychotic symptoms
F33.40	Major depressive disorder, recurrent, in remission, unspecified
F33.41	Major depressive disorder, recurrent, in partial remission
F33.42	Major depressive disorder, recurrent, in full remission
F33.9	Major depressive disorder, recurrent, unspecified
F34.1	Dysthymic disorder
F43.21	Adjustment disorder with depressed mood
Heart failure	
Years prior to measurement year from which codes are used: 2 years	
Number/types of claims to qualify: At least 1 inpatient, HOP or Carrier claim with DX codes during the 1-year period	
I09.81	Rheumatic heart failure
I11.0	Hypertensive heart disease with heart failure
I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease
I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease
I50.1	Left ventricular failure
I50.20	Unspecified systolic (congestive) heart failure
I50.21	Acute systolic (congestive) heart failure
I50.22	Chronic systolic (congestive) heart failure
I50.23	Acute on chronic systolic (congestive) heart failure
I50.30	Unspecified diastolic (congestive) heart failure
I50.31	Acute diastolic (congestive) heart failure
I50.32	Chronic diastolic (congestive) heart failure
I50.33	Acute on chronic diastolic (congestive) heart failure
I50.40	Unspecified combined systolic (congestive) and diastolic (congestive) heart failure
I50.41	Acute combined systolic and diastolic heart failure
I50.42	Chronic combined systolic (congestive) and diastolic
I50.43	Acute on chronic combined systolic (congestive) and diastolic heart failure
I50.9	Heart failure, unspecified
Stroke and transient ischemic attack (TIA)	
Years prior to measurement year from which codes are used: 1 year	
Number/types of claims to qualify: At least 1 inpatient claim or 2 HOP or Carrier claims with DX codes during the 1-year period	
G45.0	Vertebro-basilar artery syndrome
G45.1	Carotid artery syndrome (hemispheric)
G45.2	Multiple and bilateral precerebral artery syndromes
G45.8	Other transient cerebral ischemic attacks and related syndromes

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
G45.9	Transient cerebral ischemic attack, unspecified
G46.0	Middle cerebral artery syndrome
G46.1	Anterior cerebral artery syndrome
G46.2	Posterior cerebral artery syndrome
G97.31	Intraoperative hemorrhage and hematoma of a nervous system organ or structure complicating a nervous system procedure
G97.32	Intraoperative hemorrhage and hematoma of a nervous system organ or structure complicating other procedure
I60.00	Nontraumatic subarachnoid hemorrhage from unspecified carotid siphon and bifurcation
I60.01	Nontraumatic subarachnoid hemorrhage from right carotid siphon and bifurcation
I60.02	Nontraumatic subarachnoid hemorrhage from left carotid siphon and bifurcation
I60.10	Nontraumatic subarachnoid hemorrhage from unspecified middle cerebral artery
I60.12	Nontraumatic subarachnoid hemorrhage from left middle cerebral artery
I60.20	Nontraumatic subarachnoid hemorrhage from unspecified anterior communicating artery
I60.21	Nontraumatic subarachnoid hemorrhage from right anterior communicating artery
I60.22	Nontraumatic subarachnoid hemorrhage from left anterior communicating artery
I60.30	Nontraumatic subarachnoid hemorrhage from unspecified posterior communicating artery
I60.31	Nontraumatic subarachnoid hemorrhage from right posterior communicating artery
I60.32	Nontraumatic subarachnoid hemorrhage from left posterior communicating artery
I60.4	Nontraumatic subarachnoid hemorrhage from basilar artery
I60.50	Nontraumatic subarachnoid hemorrhage from unspecified vertebral artery
I60.51	Nontraumatic subarachnoid hemorrhage from right vertebral artery
I60.52	Nontraumatic subarachnoid hemorrhage from left vertebral artery
I60.6	Nontraumatic subarachnoid hemorrhage from other intracranial arteries
I60.7	Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery
I60.8	Other nontraumatic subarachnoid hemorrhage
I60.9	Nontraumatic subarachnoid hemorrhage, unspecified
I61.0	Nontraumatic intracerebral hemorrhage in hemisphere, subcortical
I61.1	Nontraumatic intracerebral hemorrhage in hemisphere, cortical
I61.2	Nontraumatic intracerebral hemorrhage in hemisphere, unspecified
I61.3	Nontraumatic intracerebral hemorrhage in brain stem
I61.4	Nontraumatic intracerebral hemorrhage in cerebellum
I61.5	Nontraumatic intracerebral hemorrhage, intraventricular
I61.6	Nontraumatic intracerebral hemorrhage, multiple localized
I61.8	Other nontraumatic intracerebral hemorrhage
I61.9	Nontraumatic intracerebral hemorrhage, unspecified
I63.00	Cerebral infarction due to thrombosis of unspecified precerebral artery
I63.02	Cerebral infarction due to thrombosis of basilar artery
I63.011	Cerebral infarction due to thrombosis of right vertebral artery
I63.012	Cerebral infarction due to thrombosis of left vertebral artery
I63.019	Cerebral infarction due to thrombosis of unspecified vertebral artery
I63.031	Cerebral infarction due to thrombosis of right carotid artery
I63.032	Cerebral infarction due to thrombosis of left carotid artery
I63.039	Cerebral infarction due to thrombosis of unspecified carotid artery

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
I63.09	Cerebral infarction due to thrombosis of other precerebral artery
I63.10	Cerebral infarction due to embolism of unspecified precerebral artery
I63.111	Cerebral infarction due to embolism of right vertebral artery
I63.112	Cerebral infarction due to embolism of left vertebral artery
I63.119	Cerebral infarction due to embolism of unspecified vertebral artery
I63.12	Cerebral infarction due to embolism of basilar artery
I63.131	Cerebral infarction due to embolism of right carotid artery
I63.132	Cerebral infarction due to embolism of left carotid artery
I63.139	Cerebral infarction due to embolism of unspecified carotid artery
I63.19	Cerebral infarction due to embolism of other precerebral artery
I63.20	Cerebral infarction due to unspecified occlusion or stenosis of unspecified
I63.211	Cerebral infarction due to unspecified occlusion or stenosis of right vertebral arteries
I63.212	Cerebral infarction due to unspecified occlusion or stenosis of left vertebral arteries
I63.219	Cerebral infarction due to unspecified occlusion or stenosis of unspecified vertebral arteries
I63.22	Cerebral infarction due to unspecified occlusion or stenosis of basilar arteries
I63.231	Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries
I63.232	Cerebral infarction due to unspecified occlusion or stenosis of left carotid arteries
I63.239	Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid arteries
I63.29	Cerebral infarction due to unspecified occlusion or stenosis of other precerebral arteries
I63.30	Cerebral infarction due to thrombosis of unspecified cerebral artery
I63.311	Cerebral infarction due to thrombosis of right middle cerebral artery
I63.312	Cerebral infarction due to thrombosis of left middle cerebral artery
I63.319	Cerebral infarction due to thrombosis of unspecified middle cerebral artery
I63.321	Cerebral infarction due to thrombosis of right anterior cerebral artery
I63.322	Cerebral infarction due to thrombosis of left anterior cerebral artery
I63.329	Cerebral infarction due to thrombosis of unspecified anterior cerebral artery
I63.331	Cerebral infarction due to thrombosis of right posterior cerebral artery
I63.332	Cerebral infarction due to thrombosis of left posterior cerebral artery
I63.339	Cerebral infarction due to thrombosis of unspecified posterior cerebral artery
I63.341	Cerebral infarction due to thrombosis of right cerebellar artery
I63.342	Cerebral infarction due to thrombosis of left cerebellar artery
I63.349	Cerebral infarction due to thrombosis of unspecified cerebellar artery
I63.39	Cerebral infarction due to thrombosis of other cerebral artery
I63.40	Cerebral infarction due to embolism of unspecified cerebral artery
I63.411	Cerebral infarction due to embolism of right middle cerebral artery
I63.412	Cerebral infarction due to embolism of left middle cerebral artery
I63.419	Cerebral infarction due to embolism of unspecified middle cerebral artery
I63.421	Cerebral infarction due to embolism of right anterior cerebral artery
I63.422	Cerebral infarction due to embolism of left anterior cerebral artery
I63.429	Cerebral infarction due to embolism of unspecified anterior cerebral artery
I63.431	Cerebral infarction due to embolism of right posterior cerebral artery
I63.432	Cerebral infarction due to embolism of left posterior cerebral artery
I63.439	Cerebral infarction due to embolism of unspecified posterior cerebral artery
I63.441	Cerebral infarction due to embolism of right cerebellar artery

(continued)

Table 1. Denominator Details: ICD-10 Diagnostic Codes Used to Define Eight Chronic Disease Groups That Qualify Patients for the MCC Cohort (continued)

ICD-10	Description
I63.442	Cerebral infarction due to embolism of left cerebellar artery
I63.449	Cerebral infarction due to embolism of unspecified cerebellar artery
I63.49	Cerebral infarction due to embolism of other cerebral artery
I63.50	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral artery
I63.511	Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral artery
I63.512	Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery
I63.519	Cerebral infarction due to unspecified occlusion or stenosis of unspecified middle cerebral artery
I63.521	Cerebral infarction due to unspecified occlusion or stenosis of right anterior cerebral artery
I63.522	Cerebral infarction due to unspecified occlusion or stenosis of left anterior cerebral artery
I63.529	Cerebral infarction due to unspecified occlusion or stenosis of unspecified anterior cerebral artery
I63.531	Cerebral infarction due to unspecified occlusion or stenosis of right posterior cerebral artery
I63.532	Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral artery
I63.539	Cerebral infarction due to unspecified occlusion or stenosis of unspecified posterior cerebral artery
I63.541	Cerebral infarction due to unspecified occlusion or stenosis of right cerebellar artery
I63.542	Cerebral infarction due to unspecified occlusion or stenosis of left cerebellar artery
I63.549	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebellar artery
I63.59	Cerebral infarction due to unspecified occlusion or stenosis of other cerebral artery
I63.6	Cerebral infarction due to cerebral venous thrombosis, nonpyogenic
I63.8	Other cerebral infarction
I63.9	Cerebral infarction, unspecified
I66.01	Occlusion and stenosis of right middle cerebral artery
I66.02	Occlusion and stenosis of left middle cerebral artery
I66.03	Occlusion and stenosis of bilateral middle cerebral arteries
I66.09	Occlusion and stenosis of unspecified middle cerebral artery
I66.11	Occlusion and stenosis of right anterior cerebral artery
I66.12	Occlusion and stenosis of left anterior cerebral artery
I66.13	Occlusion and stenosis of bilateral anterior cerebral arteries
I66.19	Occlusion and stenosis of unspecified anterior cerebral artery
I66.21	Occlusion and stenosis of right posterior cerebral artery
I66.22	Occlusion and stenosis of left posterior cerebral artery
I66.23	Occlusion and stenosis of bilateral posterior cerebral arteries
I66.29	Occlusion and stenosis of unspecified posterior cerebral artery
I66.3	Occlusion and stenosis of cerebellar arteries
I66.8	Occlusion and stenosis of other cerebral arteries
I66.9	Occlusion and stenosis of unspecified cerebral artery
I67.841	Reversible cerebrovascular vasoconstriction syndrome
I67.848	Other cerebrovascular vasospasm and vasoconstriction
I67.89	Other cerebrovascular disease
I97.810	Intraoperative cerebrovascular infarction during cardiac surgery
I97.811	Intraoperative cerebrovascular infarction during other surgery
I97.820	Postprocedural cerebrovascular infarction during cardiac surgery
I97.821	Postprocedural cerebrovascular infarction during other surgery
	EXCLUSION: If any of the qualifying claims have: 1) S02.0XXA--S02.91XB or S06.0X0A--S06.0X6A or S06.0X9A--S06.9X9A in any DX position <u>OR</u> 2) Z51.89 as the principal DX code, then EXCLUDE the CLAIM [Note: this exclusion only applies to Stroke/TIA chronic condition]

Table 2. Final ICD-9-CM-to-ICD-10 Crosswalk for the ICD-9-CM Code-Level Risk Adjustment Variables

ICD-9-CM Code	ICD-9-CM Descriptor	ICD-10 Code	ICD-10 Descriptor
42511	Hypertrophic obstructive cardiomyopathy	I421	Obstructive hypertrophic cardiomyopathy
42518	Other hypertrophic cardiomyopathy	I422	Other hypertrophic cardiomyopathy
4252	Other cardiomyopathy	I428	Other cardiomyopathies
4254	Primary cardiomyopathy, NEC	I425	Other restrictive cardiomyopathy
4254	Primary cardiomyopathy, NEC	I420	Dilated cardiomyopathy
		I428	Other cardiomyopathies
		I429	Cardiomyopathy, unspecified
4255	Alcoholic cardiomyopathy	I426	Alcoholic cardiomyopathy
4257	Metabolic cardiomyopathy	I43	Cardiomyopathy in diseases classified elsewhere
4258	Cardiomyopathy in other diseases	I43	Cardiomyopathy in diseases classified elsewhere
4259	Secondary cardiomyopathy, NOS	I427	Cardiomyopathy due to drug and external agent
4290	Myocarditis, NOS	I514	Myocarditis, unspecified
4291	Myocardial degeneration	I515	Myocardial degeneration
27801	Morbid obesity	E6601	Morbid (severe) obesity due to excess calories
V8535	Body Mass Index (BMI) 35.0-35.9, Adult	Z6835	Body mass index (BMI) 35.0-35.9, adult
V8536	BMI 36.0-36.9, Adult	Z6836	Body mass index (BMI) 36.0-36.9, adult
V8537	BMI 37.0-37.9, Adult	Z6837	Body mass index (BMI) 37.0-37.9, adult
V8538	BMI 38.0-38.9, Adult	Z6838	Body mass index (BMI) 38.0-38.9, adult
V8539	BMI 39.0-39.9, Adult	Z6839	Body mass index (BMI) 39.0-39.9, adult
V8541	BMI 40.0-44.9, Adult	Z6841	Body mass index (BMI) 40.0-44.9, adult
V8542	BMI 45.0-49.9, Adult	Z6842	Body mass index (BMI) 45.0-49.9, adult
V8543	BMI 50.0-59.9, Adult	Z6843	Body mass index (BMI) 50-59.9, adult
V8544	BMI 60.0-69.9, Adult	Z6844	Body mass index (BMI) 60.0-69.9, adult
V8545	BMI 70 and over, Adult	Z6845	Body mass index (BMI) 70 or greater, adult
4150	Acute cor pulmonale	I2601	Septic pulmonary embolism with acute cor pulmonale
		I2602	Saddle embolus with acute cor pulmonale
		I2609	Other pulmonary embolism with acute cor pulmonale
4160	Primary pulmonary hypertension	I270	Primary pulmonary hypertension
4161	Kyphoscoliotic heart disease	I271	Kyphoscoliotic heart disease
4168	Other secondary pulmonary hypertension, NEC	I272	Other secondary pulmonary hypertension
4168	Other specified pulmonary heart diseases, NEC	I2789	Other specified pulmonary heart diseases
4169	Chronic cor pulmonale, NOS	I2781	Cor pulmonale (chronic)
4169	Pulmonary heart disease, NOS	I279	Pulmonary heart disease, unspecified
4170	Arteriovenous fistula of pulmonary vessels	I280	Arteriovenous fistula of pulmonary vessels
4171	Aneurysm of pulmonary artery	I281	Aneurysm of pulmonary artery
4178	Other diseases of pulmonary vessels, NEC	I288	Other diseases of pulmonary vessels
4179	Disease of pulmonary vessels, NOS	I289	Disease of pulmonary vessels, unspecified

Table PA1. Final Crosswalk for the Procedure Categories That Are Always Planned in the Planned Admission Algorithm Version 3.0 – MCC Population

Procedure CCS (ICD-9-CM)	Description	Procedure CCS (ICD-10)	Description
64	Bone marrow transplant	64	Bone marrow transplant
105	Kidney transplant	105	Kidney transplant
176	Other organ transplantation	176	Other organ transplantation (other than bone marrow corneal or kidney)

Table PA2. Final Crosswalk for the Diagnosis Categories That Are Always Planned in the Planned Admission Algorithm Version 3.0 – MCC Population

Diagnosis CCS (ICD-9-CM)	Description	Diagnosis CCS (ICD-10)	Description
45	Maintenance Chemotherapy	45	Maintenance Chemotherapy
254	Rehabilitation	254	Rehabilitation

Table PA3: Final Crosswalk for the Potentially Planned Procedure Categories

The ICD-9-CM specification of the planned admission algorithm version 3.0 – MCC Population includes procedure CCS 169 (Debridement of wound; infection or burn). The ICD-10 version no longer includes procedure CCS 169. The codes in that category were moved to the following procedure CCS categories: CCS 170 (Excision of skin), CCS 174 (Other non-OR therapeutic procedures on skin and breast), CCS 175 (Other OR therapeutic procedures on skin and breast), and CCS 231 (Other therapeutic procedures).

Procedure CCS 170 is in version 3.0 – MCC Population of the algorithm; however, upon reviewing the codes in that category, it appears that they are for skin excision procedures that would not require an inpatient hospitalization. While these would not show up as admissions in the measure, we have removed procedure CCS 170 in the ICD-10 version of the algorithm to improve the face validity of the algorithm.

We reviewed the codes in the ICD-10 version of procedure CCS 174, CCS 175, and CCS 231 and determined that it would be appropriate to add CCS 175 to the ICD-10 version of the planned admission algorithm. However, we did not feel that procedure CCS 174 or CCS 231 were appropriate additions to the planned admission algorithm because they contained too many minor procedures that do not require admission to the hospital. The few major surgical procedures in both categories rarely occur in isolation so we felt that it is likely that planned admissions that include those procedures would already be captured by accompanying procedures in other CCS categories in the planned admission algorithm. The one exception is gender reconstruction surgery, which we may consider in future iterations of the planned admission algorithm if we determine that there are enough admissions in the Medicare population to split these codes out from procedure CCS 231.

Table PA3. Final Crosswalk for the Potentially Planned Procedure Categories

ICD-9-CM Procedure CCS	Description	ICD-10 Procedure CCS	Description
3	Laminectomy; excision intervertebral disc	3	Excision, destruction or resection of intervertebral disc
5	Insertion of catheter or spinal stimulator and injection into spinal	5	Insertion of catheter or spinal stimulator and injection into spinal
9	Other OR therapeutic nervous system procedures	9	Other OR therapeutic nervous system procedures
10	Thyroidectomy; partial or complete	10	Thyroidectomy; partial or complete
12	Other therapeutic endocrine procedures	12	Therapeutic endocrine procedures
33	Other OR therapeutic procedures on nose; mouth and pharynx	33	Other OR therapeutic procedures of mouth and throat
36	Lobectomy or pneumonectomy	36	Lobectomy or pneumonectomy
38	Other diagnostic procedures on lung and bronchus	38	Other diagnostic procedures on lung and bronchus
40	Other diagnostic procedures of respiratory tract and mediastinum	40	Other diagnostic procedures of respiratory tract and mediastinum
43	Heart valve procedures	43	Heart valve procedures
44	Coronary artery bypass graft (CABG)	44	Coronary artery bypass graft (CABG)
45	Percutaneous transluminal coronary angioplasty (PTCA)	45	Percutaneous transluminal coronary angioplasty (PTCA) with or without stent
47	Diagnostic cardiac catheterization; coronary arteriography	47	Diagnostic cardiac catheterization; coronary arteriography
48	Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator	48	Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator
49	Other OR heart procedures	49	Other OR heart procedures
51	Endarterectomy; vessel of head and neck	51	Endarterectomy; vessel of head and neck
52	Aortic resection; replacement or anastomosis	52	Aortic resection; replacement or anastomosis
53	Varicose vein stripping; lower limb	53	Varicose vein stripping; lower limb
55	Peripheral vascular bypass	55	Peripheral vascular bypass
56	Other vascular bypass and shunt; not heart	56	Other vascular bypass and shunt; not heart
59	Other OR procedures on vessels of head and neck	59	Other OR procedures on vessels of head and neck
62	Other diagnostic cardiovascular procedures	62	Other diagnostic cardiovascular procedures
66	Procedures on spleen	66	Procedures on spleen
67	Other therapeutic procedures; hemic and lymphatic system	67	Other therapeutic procedures; hemic and lymphatic system
74	Gastrectomy; partial and total	74	Gastrectomy; partial and total
78	Colorectal resection	78	Colorectal resection
79	Local excision of large intestine lesion (not endoscopic)	79	Excision of large intestine lesion (not endoscopic)
84	Cholecystectomy and common duct exploration	84	Cholecystectomy and common duct exploration
85	Inguinal and femoral hernia repair	85	Inguinal and femoral hernia repair
86	Other hernia repair	86	Other hernia repair

(continued)

ICD-9-CM Procedure CCS	Description	ICD-10 Procedure CCS	Description
99	Other OR gastrointestinal therapeutic procedures	99	Other OR gastrointestinal therapeutic procedures
104	Nephrectomy; partial or complete	104	Nephrectomy; partial or complete
106	Genitourinary incontinence procedures	106	Genitourinary incontinence procedures
107	Extracorporeal lithotripsy; urinary	107	Extracorporeal lithotripsy; urinary
109	Procedures on the urethra	109	Procedures on the urethra
112	Other OR therapeutic procedures of urinary tract	112	Other OR therapeutic procedures of urinary tract
113	Transurethral resection of prostate (TURP)	113	Transurethral resection of prostate (TURP)
114	Open prostatectomy	114	Open prostatectomy
119	Oophorectomy; unilateral and bilateral	119	Oophorectomy; unilateral and bilateral
120	Other operations on ovary	120	Other operations on ovary
124	Hysterectomy; abdominal and vaginal	124	Hysterectomy; abdominal and vaginal
129	Repair of cystocele and rectocele; obliteration of vaginal vault	129	Repair of cystocele and rectocele; obliteration of vaginal vault
132	Other OR therapeutic procedures; female organs	132	Other OR therapeutic procedures; female organs
142	Partial excision bone	142	Partial excision bone
152	Arthroplasty knee	152	Arthroplasty knee
153	Hip replacement; total and partial	153	Hip replacement; total and partial
154	Arthroplasty other than hip or knee	154	Arthroplasty other than hip or knee
157	Amputation of lower extremity	157	Amputation of lower extremity
158	Spinal fusion	158	Spinal fusion
159	Other diagnostic procedures on musculoskeletal system	159	Other diagnostic procedures on musculoskeletal system
166	Lumpectomy; quadrantectomy of breast	166	Lumpectomy; quadrantectomy of breast
167	Mastectomy	167	Mastectomy
169	Debridement of wound; infection or burn	—	Codes were split among proc CCS 170, 174, 175, and 231; Proc CCS 170 is already in the algorithm but should be removed due to the new codes; Proc CCS 175 has been added in the ICD-10 version; Proc CCS 174 and 231 were not deemed appropriate for this algorithm
170	Excision of skin lesion	—	Excision of skin - This Proc CCS should be removed in the ICD-10 version of the algorithm
172	Skin graft	172	Skin graft
—	—	175	Other OR therapeutic procedures on skin subcutaneous tissue fascia and breast

(continued)

ICD-9-CM Codes	Description	ICD-10 Codes	Description
30.1	Hemilaryngectomy	0CBS0ZZ	Excision of Larynx, Open Approach
		0CBS3ZZ	Excision of Larynx, Percutaneous Approach
		0CBS4ZZ	Excision of Larynx, Percutaneous Endoscopic Approach
		0CBS7ZZ	Excision of Larynx, Via Natural or Artificial Opening
		0CBS8ZZ	Excision of Larynx, Via Natural or Artificial Opening Endoscopic
30.29	Other partial laryngectomy	0CBS0ZZ	Excision of Larynx, Open Approach
		0CBS3ZZ	Excision of Larynx, Percutaneous Approach
		0CBS4ZZ	Excision of Larynx, Percutaneous Endoscopic Approach
		0CBS7ZZ	Excision of Larynx, Via Natural or Artificial Opening
		0CBS8ZZ	Excision of Larynx, Via Natural or Artificial Opening Endoscopic
30.3	Complete laryngectomy	0B110F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Open Approach
		0B110Z4	Bypass Trachea to Cutaneous, Open Approach
		0B113F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Percutaneous Approach
		0B113Z4	Bypass Trachea to Cutaneous, Percutaneous Approach
		0B114F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Percutaneous Endoscopic Approach
		0B114Z4	Bypass Trachea to Cutaneous, Percutaneous Endoscopic Approach
		0CTS0ZZ	Resection of Larynx, Open Approach
		0CTS4ZZ	Resection of Larynx, Percutaneous Endoscopic Approach
		0CTS7ZZ	Resection of Larynx, Via Natural or Artificial Opening
		0CTS8ZZ	Resection of Larynx, Via Natural or Artificial Opening Endoscopic
30.4	Radical laryngectomy	0B110F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Open Approach
		0B110Z4	Bypass Trachea to Cutaneous, Open Approach
		0B113F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Percutaneous Approach
		0B113Z4	Bypass Trachea to Cutaneous, Percutaneous Approach
		0B114F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Percutaneous Endoscopic Approach
		0B114Z4	Bypass Trachea to Cutaneous, Percutaneous Endoscopic Approach
		0CTS0ZZ	Resection of Larynx, Open Approach
		0CTS4ZZ	Resection of Larynx, Percutaneous Endoscopic Approach
		0CTS7ZZ	Resection of Larynx, Via Natural or Artificial Opening
		0CTS8ZZ	Resection of Larynx, Via Natural or Artificial Opening Endoscopic
		0GTG0ZZ	Resection of Left Thyroid Gland Lobe, Open Approach
		0GTG4ZZ	Resection of Left Thyroid Gland Lobe, Percutaneous Endoscopic Approach
		0GTH0ZZ	Resection of Right Thyroid Gland Lobe, Open Approach
		0GTH4ZZ	Resection of Right Thyroid Gland Lobe, Percutaneous Endoscopic Approach
		0GTK0ZZ	Resection of Thyroid Gland, Open Approach
		0GTK4ZZ	Resection of Thyroid Gland, Percutaneous Endoscopic Approach
		0WB60ZZ	Excision of Neck, Open Approach
		0WB63ZZ	Excision of Neck, Percutaneous Approach
0WB64ZZ	Excision of Neck, Percutaneous Endoscopic Approach		
0WB6XZZ	Excision of Neck, External Approach		

(continued)

ICD-9-CM Codes	Description	ICD-10 Codes	Description
31.74	Revision of tracheostomy	0BW10FZ	Revision of Tracheostomy Device in Trachea, Open Approach
		0BW13FZ	Revision of Tracheostomy Device in Trachea, Percutaneous Approach
		0BW14FZ	Revision of Tracheostomy Device in Trachea, Percutaneous Endoscopic Approach
		0WB6XZZ	Excision of Neck, Stoma, External Approach
		0WQ6XZZ	Repair Neck, Stoma, External Approach
34.6	Scarification of pleura	0B5N0ZZ	Destruction of Right Pleura, Open Approach
		0B5N3ZZ	Destruction of Right Pleura, Percutaneous Approach
		0B5N4ZZ	Destruction of Right Pleura, Percutaneous Endoscopic Approach
		0B5P0ZZ	Destruction of Left Pleura, Open Approach
		0B5P3ZZ	Destruction of Left Pleura, Percutaneous Approach
		0B5P4ZZ	Destruction of Left Pleura, Percutaneous Endoscopic Approach
38.18	Endarterectomy, lower limb arteries	04CK0ZZ	Extirpation of Matter from Right Femoral Artery, Open Approach
		04CK3ZZ	Extirpation of Matter from Right Femoral Artery, Percutaneous Approach
		04CK4ZZ	Extirpation of Matter from Right Femoral Artery, Percutaneous Endoscopic Approach
		04CL0ZZ	Extirpation of Matter from Left Femoral Artery, Open Approach
		04CL3ZZ	Extirpation of Matter from Left Femoral Artery, Percutaneous Approach
		04CL4ZZ	Extirpation of Matter from Left Femoral Artery, Percutaneous Endoscopic Approach
		04CM0ZZ	Extirpation of Matter from Right Popliteal Artery, Open Approach
		04CM3ZZ	Extirpation of Matter from Right Popliteal Artery, Percutaneous Approach
		04CM4ZZ	Extirpation of Matter from Right Popliteal Artery, Percutaneous Endoscopic Approach
		04CN0ZZ	Extirpation of Matter from Left Popliteal Artery, Open Approach
		04CN3ZZ	Extirpation of Matter from Left Popliteal Artery, Percutaneous Approach
		04CN4ZZ	Extirpation of Matter from Left Popliteal Artery, Percutaneous Endoscopic Approach
		04CP0ZZ	Extirpation of Matter from Right Anterior Tibial Artery, Open Approach
		04CP3ZZ	Extirpation of Matter from Right Anterior Tibial Artery, Percutaneous Approach
		04CP4ZZ	Extirpation of Matter from Right Anterior Tibial Artery, Percutaneous Endoscopic Approach
		04CQ0ZZ	Extirpation of Matter from Left Anterior Tibial Artery, Open Approach
		04CQ3ZZ	Extirpation of Matter from Left Anterior Tibial Artery, Percutaneous Approach
		04CQ4ZZ	Extirpation of Matter from Left Anterior Tibial Artery, Percutaneous Endoscopic Approach
		04CR0ZZ	Extirpation of Matter from Right Posterior Tibial Artery, Open Approach
		04CR3ZZ	Extirpation of Matter from Right Posterior Tibial Artery, Percutaneous Approach
		04CR4ZZ	Extirpation of Matter from Right Posterior Tibial Artery, Percutaneous Endoscopic Approach
04CS0ZZ	Extirpation of Matter from Left Posterior Tibial Artery, Open Approach		

(continued)

ICD-9-CM Codes	Description	ICD-10 Codes	Description
38.18	Endarterectomy, lower limb arteries (continued)	04CS3ZZ	Extirpation of Matter from Left Posterior Tibial Artery, Percutaneous Approach
		04CS4ZZ	Extirpation of Matter from Left Posterior Tibial Artery, Percutaneous Endoscopic Approach
		04CT0ZZ	Extirpation of Matter from Right Peroneal Artery, Open Approach
		04CT3ZZ	Extirpation of Matter from Right Peroneal Artery, Percutaneous Approach
		04CT4ZZ	Extirpation of Matter from Right Peroneal Artery, Percutaneous Endoscopic Approach
		04CU0ZZ	Extirpation of Matter from Left Peroneal Artery, Open Approach
		04CU3ZZ	Extirpation of Matter from Left Peroneal Artery, Percutaneous Approach
		04CU4ZZ	Extirpation of Matter from Left Peroneal Artery, Percutaneous Endoscopic Approach
		04CV0ZZ	Extirpation of Matter from Right Foot Artery, Open Approach
		04CV3ZZ	Extirpation of Matter from Right Foot Artery, Percutaneous Approach
		04CV4ZZ	Extirpation of Matter from Right Foot Artery, Percutaneous Endoscopic Approach
		04CW0ZZ	Extirpation of Matter from Left Foot Artery, Open Approach
		04CW3ZZ	Extirpation of Matter from Left Foot Artery, Percutaneous Approach
		04CW4ZZ	Extirpation of Matter from Left Foot Artery, Percutaneous Endoscopic Approach
		04CY0ZZ	Extirpation of Matter from Lower Artery, Open Approach
		04CY3ZZ	Extirpation of Matter from Lower Artery, Percutaneous Approach
04CY4ZZ	Extirpation of Matter from Lower Artery, Percutaneous Endoscopic Approach		
55.03	Percutaneous nephrostomy without fragmentation	0T9030Z	Drainage of Right Kidney with Drainage Device, Percutaneous Approach
		0T9040Z	Drainage of Right Kidney with Drainage Device, Percutaneous Endoscopic Approach
		0T9130Z	Drainage of Left Kidney with Drainage Device, Percutaneous Approach
		0T9140Z	Drainage of Left Kidney with Drainage Device, Percutaneous Endoscopic Approach
		0TC03ZZ	Extirpation of Matter from Right Kidney, Percutaneous Approach
		0TC04ZZ	Extirpation of Matter from Right Kidney, Percutaneous Endoscopic Approach
		0TC13ZZ	Extirpation of Matter from Left Kidney, Percutaneous Approach
		0TC14ZZ	Extirpation of Matter from Left Kidney, Percutaneous Endoscopic Approach
		0TC33ZZ	Extirpation of Matter from R Kidney Pelvis, Perc Approach
		0TC34ZZ	Extirpate of Matter from R Kidney Pelvis, Perc Endo Approach
		0TC43ZZ	Extirpation of Matter from Left Kidney Pelvis, Perc Approach
0TC44ZZ	Extirpate of Matter from L Kidney Pelvis, Perc Endo Approach		
55.04	Percutaneous nephrostomy with fragmentation	0TF33ZZ	Fragmentation in Right Kidney Pelvis, Percutaneous Approach
		0TF34ZZ	Fragmentation in Right Kidney Pelvis, Percutaneous Endoscopic Approach
		0TF43ZZ	Fragmentation in Left Kidney Pelvis, Percutaneous Approach
		0TF44ZZ	Fragmentation in Left Kidney Pelvis, Percutaneous Endoscopic Approach

(continued)

ICD-9-CM Codes	Description	ICD-10 Codes	Description
94.26	Subconvulsive electroshock therapy	GZB4ZZZ	Other Electroconvulsive Therapy
94.27	Other electroshock therapy	GZB0ZZZ	Electroconvulsive Therapy, Unilateral-Single Seizure
		GZB1ZZZ	Electroconvulsive Therapy, Unilateral-Multiple Seizure
		GZB2ZZZ	Electroconvulsive Therapy, Bilateral-Single Seizure
		GZB3ZZZ	Electroconvulsive Therapy, Bilateral-Multiple Seizure
		GZB4ZZZ	Other Electroconvulsive Therapy

Table PA4. Final Crosswalk for the Acute Diagnosis Categories

ICD-9-CM Diagnosis CCS	Description	ICD-10 Diagnosis CCS	Description
1	Tuberculosis	1	Tuberculosis
2	Septicemia (except in labor)	2	Septicemia (except in labor)
3	Bacterial infection; unspecified site	3	Bacterial infection; unspecified site
4	Mycoses	4	Mycoses
5	HIV infection	5	HIV infection
7	Viral infection	7	Viral infection
8	Other infections; including parasitic	8	Other infections; including parasitic
9	Sexually transmitted infections (not HIV or hepatitis)	9	Sexually transmitted infections (not HIV or hepatitis)
54	Gout and other crystal arthropathies	54	Gout and other crystal arthropathies
55	Fluid and electrolyte disorders	55	Fluid and electrolyte disorders
60	Acute posthemorrhagic anemia	60	Acute posthemorrhagic anemia
61	Sickle cell anemia	61	Sickle cell anemia
63	Diseases of white blood cells	63	Diseases of white blood cells
76	Meningitis (except that caused by tuberculosis or sexually transmitted disease)	76	Meningitis (except that caused by tuberculosis or sexually transmitted disease)
77	Encephalitis (except that caused by tuberculosis or sexually transmitted disease)	77	Encephalitis (except that caused by tuberculosis or sexually transmitted disease)
78	Other CNS infection and poliomyelitis	78	Other CNS infection and poliomyelitis
82	Paralysis	82	Paralysis
83	Epilepsy; convulsions	83	Epilepsy; convulsions
84	Headache; including migraine	84	Headache; including migraine
85	Coma; stupor; and brain damage	85	Coma; stupor; and brain damage
87	Retinal detachments; defects; vascular occlusion; and retinopathy	87	Retinal detachments; defects; vascular occlusion; and retinopathy
89	Blindness and vision defects	89	Blindness and vision defects
90	Inflammation; infection of eye (except that caused by tuberculosis or sexually transmitted disease)	90	Inflammation; infection of eye (except that caused by tuberculosis or sexually transmitted disease)
91	Other eye disorders	91	Other eye disorders
92	Otitis media and related conditions	92	Otitis media and related conditions
93	Conditions associated with dizziness or vertigo	93	Conditions associated with dizziness or vertigo

(continued)

ICD-9-CM Diagnosis CCS	Description	ICD-10 Diagnosis CCS	Description
99	Hypertension with complications and secondary hypertension	99	Hypertension with complications and secondary hypertension
100	Acute myocardial infarction (with the exception of ICD-9 codes 410.x2)	100	Acute myocardial infarction
102	Nonspecific chest pain	102	Nonspecific chest pain
104	Other and ill-defined heart disease	104	Other and ill-defined heart disease
107	Cardiac arrest and ventricular fibrillation	107	Cardiac arrest and ventricular fibrillation
109	Acute cerebrovascular disease	109	Acute cerebrovascular disease
112	Transient cerebral ischemia	112	Transient cerebral ischemia
116	Aortic and peripheral arterial embolism or thrombosis	116	Aortic and peripheral arterial embolism or thrombosis
118	Phlebitis; thrombophlebitis/thromboembolism	118	Phlebitis; thrombophlebitis and thromboembolism
120	Hemorrhoids	120	Hemorrhoids
122	Pneumonia (except that caused by TB or sexually transmitted disease)	122	Pneumonia (except that caused by TB or sexually transmitted disease)
123	Influenza	123	Influenza
124	Acute and chronic tonsillitis	124	Acute and chronic tonsillitis
125	Acute bronchitis	125	Acute bronchitis
126	Other upper respiratory infections	126	Other upper respiratory infections
127	Chronic obstructive pulmonary disease and bronchiectasis	127	Chronic obstructive pulmonary disease and bronchiectasis
128	Asthma	128	Asthma
129	Aspiration pneumonitis; food/vomitus	129	Aspiration pneumonitis; food/vomitus
130	Pleurisy; pneumothorax; pulmonary collapse	130	Pleurisy; pneumothorax; pulmonary collapse
131	Respiratory failure; insufficiency; arrest (adult)	131	Respiratory failure; insufficiency; arrest (adult)
135	Intestinal infection	135	Intestinal infection
137	Diseases of mouth; excluding dental	137	Diseases of mouth; excluding dental
139	Gastroduodenal ulcer (except hemorrhage)	139	Gastroduodenal ulcer (except hemorrhage)
140	Gastritis and duodenitis	140	Gastritis and duodenitis
142	Appendicitis and other appendiceal conditions	142	Appendicitis and other appendiceal conditions
145	Intestinal obstruction without hernia	145	Intestinal obstruction without hernia
146	Diverticulosis and diverticulitis	146	Diverticulosis and diverticulitis
148	Peritonitis and intestinal abscess	148	Peritonitis and intestinal abscess
153	Gastrointestinal hemorrhage	153	Gastrointestinal hemorrhage
154	Noninfectious gastroenteritis	154	Noninfectious gastroenteritis
157	Acute and unspecified renal failure	157	Acute and unspecified renal failure
159	Urinary tract infections	159	Urinary tract infections
165	Inflammatory conditions of male genital organs	165	Inflammatory conditions of male genital organs
168	Inflammatory diseases of female pelvic organs	168	Inflammatory diseases of female pelvic organs
172	Ovarian cyst	172	Ovarian cyst
197	Skin and subcutaneous tissue infections	197	Skin and subcutaneous tissue infections
198	Other inflammatory condition of skin	198	Other inflammatory condition of skin
225	Joint disorders and dislocations; trauma-related	225	Joint disorders and dislocations; trauma-related

(continued)

ICD-9-CM Diagnosis CCS	Description	ICD-10 Diagnosis CCS	Description
226	Fracture of neck of femur (hip)	226	Fracture of neck of femur (hip)
227	Spinal cord injury	227	Spinal cord injury
228	Skull and face fractures	228	Skull and face fractures
229	Fracture of upper limb	229	Fracture of upper limb
230	Fracture of lower limb	230	Fracture of lower limb
232	Sprains and strains	232	Sprains and strains
233	Intracranial injury	233	Intracranial injury
234	Crushing injury or internal injury	234	Crushing injury or internal injury
235	Open wounds of head; neck; and trunk	235	Open wounds of head; neck; and trunk
237	Complication of device; implant or graft	237	Complication of device; implant or graft
238	Complications of surgical procedures or medical care	238	Complications of surgical procedures or medical care
239	Superficial injury; contusion	239	Superficial injury; contusion
240	Burns	240	Burns
241	Poisoning by psychotropic agents	241	Poisoning by psychotropic agents
242	Poisoning by other medications and drugs	242	Poisoning by other medications and drugs
243	Poisoning by nonmedicinal substances	243	Poisoning by nonmedicinal substances
244	Other injuries and conditions due to external causes	244	Other injuries and conditions due to external causes
245	Syncope	245	Syncope
246	Fever of unknown origin	246	Fever of unknown origin
247	Lymphadenitis	247	Lymphadenitis
249	Shock	249	Shock
250	Nausea and vomiting	250	Nausea and vomiting
251	Abdominal pain	251	Abdominal pain
252	Malaise and fatigue	252	Malaise and fatigue
253	Allergic reactions	253	Allergic reactions
259	Residual codes; unclassified	259	Residual codes; unclassified
650	Adjustment disorders	650	Adjustment disorders
651	Anxiety disorders	651	Anxiety disorders
652	Attention-deficit, conduct, and disruptive behavior disorders	652	Attention-deficit
653	Delirium, dementia, and amnestic and other cognitive disorders	653	Delirium
656	Impulse control disorders, NEC	656	Impulse control disorders
658	Personality disorders	658	Personality disorders
660	Alcohol-related disorders	660	Alcohol-related disorders
661	Substance-related disorders	661	Substance-related disorders
662	Suicide and intentional self-inflicted injury	662	Suicide and intentional self-inflicted injury
663	Screening and history of mental health and substance abuse codes	663	Screening and history of mental health and substance abuse codes
670	Miscellaneous disorders	670	Miscellaneous disorders

(continued)

ICD-9-CM Codes	Description	ICD-10 Codes	Description
Acute ICD-9 Codes Within Dx CCS 97: Peri-, Endo-, and Myocarditis; Cardiomyopathy		Acute ICD-10 Codes Within Dx CCS 97: Peri-, Endo-, and Myocarditis; Cardiomyopathy	
03282	Diphtheritic myocarditis	A3681	Diphtheritic cardiomyopathy
03640	Meningococcal carditis nos	A3950	Meningococcal carditis, unspecified
03641	Meningococcal pericarditis	A3953	Meningococcal pericarditis
03642	Meningococcal endocarditis	A3951	Meningococcal endocarditis
03643	Meningococcal myocarditis	A3952	Meningococcal myocarditis
07420	Coxsackie carditis nos	B3320	Viral carditis, unspecified
07421	Coxsackie pericarditis	B3323	Viral pericarditis
07422	Coxsackie endocarditis	B3321	Viral endocarditis
07423	Coxsackie myocarditis	B3322	Viral myocarditis
11281	Candidal endocarditis	B376	Candidal endocarditis
11503	Histoplasma capsulatum pericarditis	B394	Histoplasmosis capsulati, unspecified
		I32	Pericarditis in diseases classified elsewhere
11504	Histoplasma capsulatum endocarditis	B394	Histoplasmosis capsulati, unspecified
		I39	Endocarditis and heart valve disorders in diseases classified elsewhere
11513	Histoplasma duboisii pericarditis	B395	Histoplasmosis duboisii
		I32	Pericarditis in diseases classified elsewhere
11514	Histoplasma duboisii endocarditis	B395	Histoplasmosis duboisii
		I39	Endocarditis and heart valve disorders in diseases classified elsewhere
11593	Histoplasmosis pericarditis	B399	Histoplasmosis, unspecified
		I32	Pericarditis in diseases classified elsewhere
11594	Histoplasmosis endocarditis	I39	Endocarditis and heart valve disorders in diseases classified elsewhere
		B399	Histoplasmosis, unspecified
1303	Toxoplasma myocarditis	B5881	Toxoplasma myocarditis
3910	Acute rheumatic pericarditis	I010	Acute rheumatic pericarditis
3911	Acute rheumatic endocarditis	I011	Acute rheumatic endocarditis
3912	Acute rheumatic myocarditis	I012	Acute rheumatic myocarditis
3918	Acute rheumatic heart disease nec	I018	Other acute rheumatic heart disease
3919	Acute rheumatic heart disease nos	I019	Acute rheumatic heart disease, unspecified
3920	Rheumatic chorea w heart involvement	I020	Rheumatic chorea with heart involvement
3980	Rheumatic myocarditis	I090	Rheumatic myocarditis
39890	Rheumatic heart disease nos	I099	Rheumatic heart disease, unspecified
39899	Rheumatic heart disease nec	I0989	Other specified rheumatic heart diseases
4200	Acute pericarditis in other disease	I32	Pericarditis in diseases classified elsewhere
		M3212	Pericarditis in systemic lupus erythematosus
42090	Acute pericarditis nos	I301	Infective pericarditis
		I309	Acute pericarditis, unspecified
42091	Acute idiopath pericarditis	I300	Acute nonspecific idiopathic pericarditis
42099	Acute pericarditis nec	I308	Other forms of acute pericarditis
		I309	Acute pericarditis, unspecified
4210	Acute/subacute bacterial endocarditis	I330	Acute and subacute infective endocarditis

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ICD-9-CM Codes	Description	ICD-10 Codes	Description
4211	Acute endocarditis in other diseases	I39	Endocarditis and heart valve disorders in diseases classified elsewhere
4219	Acute/subacute endocarditis nos	I339	Acute and subacute endocarditis, unspecified
4220	Acute myocarditis in other diseases	I41	Myocarditis in diseases classified elsewhere
42290	Acute myocarditis nos	I409	Acute myocarditis, unspecified
42291	Idiopathic myocarditis	I400	Infective myocarditis
		I401	Isolated myocarditis
42292	Septic myocarditis	I400	Infective myocarditis
42293	Toxic myocarditis	I408	Other acute myocarditis
42299	Acute myocarditis nec	I408	Other acute myocarditis
4230	Hemopericardium	I312	Hemopericardium, not elsewhere classified
4231	Adhesive pericarditis	I310	Chronic adhesive pericarditis
4232	Constrictive pericarditis	I311	Chronic constrictive pericarditis
4233	Cardiac tamponade	I314	Cardiac tamponade
4290	Myocarditis nos	I514	Myocarditis, unspecified
Acute ICD-9 Codes Within Dx CCS 105: Conduction Disorders		Acute ICD-10 Codes Within Dx CCS 105: Conduction Disorders	
4260	Atrioventricular	I442	Atrioventricular block, complete
42610	Atrioventricular block nos	I4430	Unspecified atrioventricular block
42611	Atrioventricular block-1st degree	I440	Atrioventricular block, first degree
42612	Atrioventricular block-mobitz ii	I441	Atrioventricular block, second degree
42613	Atrioventricular block-2nd degree nec	I441	Atrioventricular block, second degree
4262	Left bundle branch hemiblock	I4469	Other fascicular block
		I444	Left anterior fascicular block
		I445	Left posterior fascicular block
		I4460	Unspecified fascicular block
4263	Left bundle branch block nec	I447	Left bundle-branch block, unspecified
4264	Right bundle branch block	I450	Right fascicular block
		I4510	Unspecified right bundle-branch block
		I4519	Other right bundle-branch block
42650	Bundle branch block nos	I4430	Unspecified atrioventricular block
		I4439	Other atrioventricular block
		I454	Nonspecific intraventricular block
42651	Right bundle branch block/left posterior fascicular block	I452	Bifascicular block
42652	Right bundle branch block/left ant fascicular block	I452	Bifascicular block
42653	Bilateral bundle branch block nec	I452	Bifascicular block
42654	Trifascicular block	I453	Trifascicular block
4266	Other heart block	I455	Other specified heart block
4267	Anomalous atrioventricular excitation	I456	Pre-excitation syndrome
42681	Lown-ganong-levine syndrome	I456	Pre-excitation syndrome
42682	Long qt syndrome	I4581	Long QT syndrome
4269	Conduction disorder nos	I459	Conduction disorder, unspecified

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ICD-9-CM Codes	Description	ICD-10 Codes	Description
Acute ICD-9 Codes Within Dx CCS 106: Dysrhythmia		Acute ICD-10 Codes Within Dx CCS 106: Dysrhythmia	
4272	Paroxysmal tachycardia nos	I479	Paroxysmal tachycardia, unspecified
7850	Tachycardia nos	R000	Tachycardia, unspecified
42789	Cardiac dysrhythmias nec	I498	Other specified cardiac arrhythmias
		R001	Bradycardia, unspecified
4279	Cardiac dysrhythmia nos	I499	Cardiac arrhythmia, unspecified
42769	Premature beats nec	I493	Ventricular premature depolarization
		I4949	Other premature depolarization
Acute ICD-9-CM Codes Within Dx CCS 108: Congestive Heart Failure; Nonhypertensive		Acute ICD-10 Codes Within Dx CCS 108: Congestive Heart Failure; Nonhypertensive	
39891	Rheumatic heart failure	I0981	Rheumatic heart failure
4280	Congestive heart failure	I509	Heart failure, unspecified
		I5022	Chronic systolic (congestive) heart failure
		I5032	Chronic diastolic (congestive) heart failure
		I5042	Chronic combined systolic/diastolic hrt failure
4281	Left heart failure	I501	Left ventricular failure
42820	Unspecified systolic heart failure	I5020	Unspecified systolic (congestive) heart failure
42821	Acute systolic heart failure	I5021	Acute systolic (congestive) heart failure
42823	Acute on chronic systolic heart failure	I5023	Acute on chronic systolic (congestive) heart failure
42830	Unspecified diastolic heart failure	I5030	Unspecified diastolic (congestive) heart failure
42831	Acute diastolic heart failure	I5031	Acute diastolic (congestive) heart failure
42833	Acute on chronic diastolic heart failure	I5033	Acute on chronic diastolic (congestive) heart failure
42840	Unspec combined syst & dias heart failure	I5040	Unsp combined systolic and diastolic (congestive) hrt fail
42841	Acute combined systolic & diastolic heart failure	I5041	Acute combined systolic (congestive) and diastolic (congestive) heart failure
42843	Acute on chronic combined systolic & diastolic heart failure	I5043	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
4289	Heart failure nos	I509	Heart failure, unspecified
Acute ICD-9-CM Codes Within Dx CCS 149: Biliary Tract Disease		Acute ICD-10 Codes Within Dx CCS 149: Biliary Tract Disease	
57400	Calculus of gallbladder with acute cholecystitis without mention of obstruction	K8000	Calculus of gallbladder w acute cholecyst w/o obstruction
		K8012	Calculus of GB w acute and chronic cholecyst w/o obstruction
57401	Calculus of gallbladder with acute cholecystitis with obstruction	K8001	Calculus of gallbladder w acute cholecystitis w obstruction
		K8013	Calculus of GB w acute and chronic cholecyst w obstruction

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ICD-9-CM Codes	Description	ICD-10 Codes	Description
57430	Calculus of bile duct with acute cholecystitis without mention of obstruction	K8042	Calculus of bile duct w acute cholecystitis w/o obstruction
		K8046	Calculus of bile duct w acute and chronic cholecyst w/o obst
57431	Calculus of bile duct with acute cholecystitis with obstruction	K8043	Calculus of bile duct w acute cholecystitis with obstruction
		K8047	Calculus of bile duct w acute and chronic cholecyst w obst
57460	Calculus of gallbladder and bile duct with acute cholecystitis w/o obstruction	K8062	Calculus of GB and bile duct w acute cholecyst w/o obst
57461	Calculus of gallbladder and bile duct with acute cholecystitis with obstruction	K8063	Calculus of GB and bile duct w acute cholecyst w obstruction
57480	Calculus of gallbladder and bile duct with acute and chronic cholecystitis without mention of obstruction	K8066	Calculus of GB and bile duct w ac and chr cholecyst w/o obst
57481	Calculus of gallbladder and bile duct with acute and chronic cholecystitis with obstruction	K8067	Calculus of GB and bile duct w ac and chr cholecyst w obst
5750	Acute cholecystitis	K810	Acute cholecystitis
57512	Acute and chronic cholecystitis	K812	Acute cholecystitis with chronic cholecystitis
5761	Cholangitis	K8030	Calculus of bile duct w cholangitis, unsp, w/o obstruction
		K8031	Calculus of bile duct w cholangitis, unsp, with obstruction
		K8032	Calculus of bile duct with acute cholangitis w/o obstruction
		K8033	Calculus of bile duct w acute cholangitis with obstruction
		K8034	Calculus of bile duct w chronic cholangitis w/o obstruction
		K8035	Calculus of bile duct w chronic cholangitis with obstruction
		K8036	Calculus of bile duct w acute and chr cholangitis w/o obst
		K8037	Calculus of bile duct w acute and chronic cholangitis w obst
		K830	Cholangitis
Acute ICD-9-CM Codes Within Dx CCS 152: Pancreatic Disorders		Acute ICD-10 Codes Within Dx CCS 152: Pancreatic Disorders	
5770	Acute Pancreatitis	K859	Acute pancreatitis, unspecified
		B252	Cytomegaloviral pancreatitis
		K850	Idiopathic acute pancreatitis
		K851	Biliary acute pancreatitis
		K852	Alcohol induced acute pancreatitis
		K853	Drug induced acute pancreatitis
		K858	Other acute pancreatitis