ACO # 37 Risk-Standardized Acute Admission Rates for Patients With Heart Failure

Measure Information Form (MIF)

Data Source

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

Measure Set ID

- ACO #37

Version Number and Effective Date

- Version 2017a, effective 01/01/2017

CMS Approval Date

- 09/14/2017

NQF ID

- #2886

Date Endorsed

- The National Quality Forum (NQF) endorsed the measure in December 2016.

Care Setting

- Hospital

Unit of Measurement

- Accountable Care Organization (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 heart failure who are assigned to the Accountable Care Organization (ACO).

Rationale

The goal of this measure is to evaluate and to improve the quality of care for patients with heart failure cared for by ACOs. These patients account for a significant proportion of Medicare beneficiaries and they experience high morbidity and costs associated with their disease. These patients need efficient, coordinated, and patient-centered care management. They also benefit from provider support and infrastructure that facilitate effective chronic disease management. This measure is focused on hospital admissions for acute illness as the outcome because these admissions are often sentinel events associated with high morbidity as well as physical and emotional stress; they also result in high costs for both the patient and the ACO. Research shows that effective health care can lower the risk of admission for these vulnerable groups of patients.

This measure is intended to incentivize ACOs to provide high-quality, coordinated care that focuses on the whole patient. ACOs were conceptualized and created to achieve the goals of improved care, improved population health, and lower cost. Consistent with this mission, we envision that the measure will incentivize providers participating in ACOs to collaborate to provide the best system of clinical care and to partner with health and non-health related organizations in their communities, as appropriate, to improve the health of their patient population.

Clinical Recommendation Statement

Research shows that effective health care can lower the risk of admission for patients with heart failure [1-4]. For example, efforts to improve coordination and navigation of the healthcare system, along with home-based interventions and exercise-based rehabilitation therapy among patients with heart failure may reduce the risk of hospitalization [1, 5-8].

It is our vision that these measures will illuminate variation among ACOs 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. This vision is 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 [9].

References

1. Patient Protection and Affordable Care Act, 42 U.S.C., §3022 (2010).
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Release Notes / Summary of Changes

- The definition for the risk factor for pacemaker/ICD/CRT has been updated as follows:
    - removed three ICD-10-PCS codes in the pacemaker/ICD/CRT risk factor code set for 'repair heart' (02QA0ZZ, 02QA3ZZ, 02QA4ZZ) because they do not uniquely identify pacemaker history.

Technical Specifications

- Target Population

  ACO-assigned or aligned Medicare beneficiaries with heart failure

Denominator

- Denominator Statement

  The target population is ambulatory Medicare FFS beneficiaries aged 65 years and older assigned to the ACO with a diagnosis of heart failure.

- Denominator Details

  The targeted patient population is Medicare FFS beneficiaries aged 65 years and older assigned to the ACO during the measurement period with a diagnosis of heart failure. To be included in the cohort, patients must have one inpatient principal discharge diagnosis code of heart failure or two heart failure diagnosis codes in any position (Medicare Part A inpatient/outpatient and Part B Carrier claims) within one or two years prior to the measurement period. We allowed for prior year claims to define the cohort since there is no specified optimal frequency of follow-up visits among ambulatory, stable patients (i.e., patients without a change in their symptoms may never be hospitalized and may only be seen annually). To be included in the cohort, patients must be enrolled full-time in both Part A and B during the year prior to the measurement period. We excluded patients who were not enrolled full-time in Part A during the measurement period.

Heart failure is defined using the International Classification of Diseases, Tenth Revision, (ICD-10) diagnosis codes identified in Medicare Part A inpatient/outpatient and Part B carrier claims data. Patients excluded from the cohort are identified using ICD-10 procedure codes in Medicare Part A outpatient claims and with a Medicare Denominator File. The ICD-10 codes that define the cohort are listed in Table 1 and cohort exclusions are listed in Table 2.

Table 1. Denominator Details: ICD-10 Diagnosis Codes Used to Identify Heart Failure Cohort

ICD-10 Code	Description
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 (congestive) and diastolic (congestive) heart failure
I50.42	Chronic combined systolic (congestive) and diastolic (congestive) heart failure
I50.43	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
I50.9	Heart failure, unspecified

- Denominator Exceptions and Exclusions

  1. Patients with left ventricular assist devices (LVADs).
     Rationale: We exclude these patients because while they have a high risk of admission, they are low in prevalence and are clustered among a few ACOs.
  2. 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.
  3. 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. Patients with LVADs (see Table 2 for codes to identify exclusion).
     We identify patients as having an LVAD based on ICD-10 procedure codes in Medicare Part A inpatient/outpatient claims or Part B Carrier claims within one year prior to the measurement year.

Table 2. Risk-Standardized Acute Admission Rates for Patients with Heart Failure: Exclusion Criterion (LVAD)

ICD-10 Code	Description
02HA0RS	Insertion of Biventricular External Heart Assist System into Heart, Open Approach
02HA3RS	Insertion of Biventricular External Heart Assist System into Heart, Percutaneous Approach
02HA4RS	Insertion of Biventricular External Heart Assist System into Heart, Percutaneous Endoscopic Approach
02HA0RZ	Insertion of External Heart Assist System into Heart, Open Approach
02HA3RZ	Insertion of External Heart Assist System into Heart, Percutaneous Approach
02HA4RZ	Insertion of External Heart Assist System into Heart, Percutaneous Endoscopic Approach
02HA0QZ	Insertion of Implantable Heart Assist System into Heart, Open Approach
02HA3QZ	Insertion of Implantable Heart Assist System into Heart, Percutaneous Approach
02HA4QZ	Insertion of Implantable Heart Assist System into Heart, Percutaneous Endoscopic Approach

2. 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.
3. 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.

- 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 4.0, 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 (i.e., those where the principal discharge diagnosis or procedure is major organ transplant or maintenance chemotherapy; see Appendix Table PA1 and PA2) as well as those admissions with a potentially planned procedure (e.g., total hip replacement or cholecystectomy; See Appendix Table 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.

Outcome Attribution
The outcome is attributed to the Accountable Care Organization (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.

Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for Statistical Models Used for Public Reporting of Health Outcomes" [1-2]. The risk-standardization model includes age and 22 clinical variables. We define clinical variables using CMS condition categories version 22 (CCs), which are clinically meaningful groupings of ICD-10 diagnosis codes.

Model Variables

The risk-adjustment variables are:

1. Age Category (65-70, 70-80, 80-90, 90+)
2. Pulmonary disease (CC 110, 111, 112, 113, 117, 118)
3. Disability/frailty (CC 21, 70, 71, 72, 103, 119, 157, 158, 159, 160, 161, 169, 189, 190)
4. Advanced cardiopulmonary failure (CC 82, 84)
5. Arrhythmia (CC 96, 97)
6. Psychiatric illness/substance abuse (CC 54, 55, 56, 57, 58, 59, 60, 61, 62, 63)
7. Kidney disease (CC 132, 135-140, 141)
8. Dialysis status (CC 134)
9. Advanced cancer (CC 8, 9, 10, 13)
10. High risk cardiovascular conditions (CC 86, 87, 106, 107)
11. Low risk cardiovascular conditions (CC 88, 89, 98, 108, 109)
12. Structural heart disease (CC 91, 92, 93)
13. Dementia (CC 51, 52, 53)
14. Diabetes with complications (CC 17, 18, 19, 122, 123)
15. Gastrointestinal and genitourinary disorders (CC 31, 32, 33, 35, 36, 142, 188)
16. Hematologic diseases (CC 46, 48)
17. Infectious and immunologic disorders (CC 1, 3, 4, 5, 6, 47, 90)
18. Liver disease (CC 27, 28, 29, 30)
19. Neurological disease (CC 50, 64, 68, 74, 75, 76, 77, 78, 79, 80, 81, 99, 100, 101, 102, 104, 105, 167)
20. Pacemaker/cardiac resynchronization therapy/implantable cardiac device (See Appendix Tables 1 and 2 for ICD-10 diagnosis and procedure codes)
21. Iron deficiency anemia (CC 49)
22. Major organ transplant (CC 186)
23. Other organ transplant (CC 187)

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 RSAAR for each ACO is calculated as the number of "predicted" to the number of "expected" admissions per person-year, multiplied by the national rate of admissions per 100 person-years among all ACO beneficiaries with heart failure – i.e., all eligible ACO beneficiaries with heart failure 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 with a log offset since our outcome is a count of the number of admissions. The first level of the model adjusts for patient factors by accounting for the association between patient risk factors and the outcome of admission estimated using all fee-for-service heart failure patients. 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 from the model and based on the ACO's case mix and national average intercept.
3. The predicted number of admissions is calculated from the model and based on the ACO's case mix and the estimated ACO-specific intercept term.
4. The measure score is the ratio of predicted number of admissions over the expected number of 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. Risk-Standardized Acute Admission Rates for Patients with Heart Failure: Risk-Adjustment Diagnosis Codes (Pacemaker/Cardiac Resynchronization Therapy/Implantable Cardiac Device)

ICD-10 Code	ICD-10 Descriptor
Z45010	Encounter for checking and testing of cardiac pacemaker
Z45018	Encounter for adjustment and management of other pacemaker
Z4502	Encounter for adjustment and management of automatic implantable cardiac defibrillator
Z4509	Encounter for adjustment and management of cardiac device (Encounter for adjustment and management of other cardiac device)
Z950	Presence of cardiac pacemaker
Z95810	Presence of automatic (implantable) cardiac defibrillator

Table 2. Risk-Standardized Acute Admission Rates for Patients with Heart Failure: Risk -Adjustment Procedure Codes (Pacemaker/Cardiac Resynchronization Therapy/Implantable Cardiac Device)

ICD-10 Code	ICD-10 Descriptor
02H40JZ	Insertion of Pacemaker Lead into Coronary Vein, Open Approach
02H40MZ	Insertion of Cardiac Lead into Coronary Vein, Open Approach
02PA4MZ	Removal of Cardiac Lead from Heart, Percutaneous Endoscopic Approach
02H43JZ	Insertion of Pacemaker Lead into Coronary Vein, Percutaneous Approach
02H44JZ	Insertion of Pacemaker Lead into Coronary Vein, Percutaneous Endoscopic Approach
02H60JZ	Insertion of Pacemaker Lead into Right Atrium, Open Approach
02H63JZ	Insertion of Pacemaker Lead into Right Atrium, Percutaneous Approach
02H64JZ	Insertion of Pacemaker Lead into Right Atrium, Percutaneous Endoscopic Approach
02HK0JZ	Insertion of Pacemaker Lead into Right Ventricle, Open Approach
02HK3JZ	Insertion of Pacemaker Lead into Right Ventricle, Percutaneous Approach
02HK4JZ	Insertion of Pacemaker Lead into Right Ventricle, Percutaneous Endoscopic Approach
02HL0JZ	Insertion of Pacemaker Lead into Left Ventricle, Open Approach
02HL3JZ	Insertion of Pacemaker Lead into Left Ventricle, Percutaneous Approach
02HL4JZ	Insertion of Pacemaker Lead into Left Ventricle, Percutaneous Endoscopic Approach
0JH607Z	Insertion of Cardiac Resynchronization Pacemaker Pulse Generator into Chest Subcutaneous Tissue and Fascia, Open Approach
0JH637Z	Insertion of Cardiac Resynchronization Pacemaker Pulse Generator into Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH807Z	Insertion of Cardiac Resynchronization Pacemaker Pulse Generator into Abdomen Subcutaneous Tissue, and Fascia, Open Approach
02HK3KZ	Insertion of Defibrillator Lead into Right Ventricle, Percutaneous Approach
02HK4KZ	Insertion of Defibrillator Lead into Right Ventricle, Percutaneous Endoscopic Approach
02HL0KZ	Insertion of Defibrillator Lead into Left Ventricle, Open Approach
02HL3KZ	Insertion of Defibrillator Lead into Left Ventricle, Percutaneous Approach
02HL4KZ	Insertion of Defibrillator Lead into Left Ventricle, Percutaneous Endoscopic Approach
0JH609Z	Insertion of Cardiac Resynchronization Defibrillator Pulse Generator into Chest Subcutaneous Tissue, and Fascia, Open Approach
0JH639Z	Insertion of Cardiac Resynchronization Defibrillator Pulse Generator into Chest Subcutaneous Tissue, Tissue and Fascia, Percutaneous Approach

(continued)

Table 2. Risk-Standardized Acute Admission Rates for Patients with Heart Failure: Risk-Adjustment Procedure Codes (Pacemaker/Cardiac Resynchronization Therapy/Implantable Cardiac Device) (continued)

ICD-10 Code	ICD-10 Descriptor
0JH809Z	Insertion of Cardiac Resynchronization Defibrillator Pulse Generator into Abdomen Subcutaneous Tissue and Fascia, Open Approach
0JH839Z	Insertion of Cardiac Resynchronization Defibrillator Pulse Generator into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
02H43KZ	Insertion of Defibrillator Lead into Coronary Vein, Percutaneous Approach
02H43MZ	Insertion of Cardiac Lead into Coronary Vein, Percutaneous Approach
02PA0MZ	Removal of Cardiac Lead from Heart, Open Approach
02PA3MZ	Removal of Cardiac Lead from Heart, Percutaneous Approach
02PAXMZ	Removal of Cardiac Lead from Heart, External Approach
0JH837Z	Insertion of Cardiac Resynchronization Pacemaker Pulse Generator into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
0JPT0PZ	Removal of Cardiac Rhythm Related Device from Trunk Subcutaneous Tissue and Fascia, Open Approach
0JPT3PZ	Removal of Cardiac Rhythm Related Device from Trunk Subcutaneous Tissue and Fascia, Percutaneous Approach
02H44MZ	Insertion of Cardiac Lead into Coronary Vein, Percutaneous Endoscopic Approach
02H60MZ	Insertion of Cardiac Lead into Right Atrium, Open Approach
02H64MZ	Insertion of Cardiac Lead into Right Atrium, Percutaneous Endoscopic Approach
02H70JZ	Insertion of Pacemaker Lead into Left Atrium, Open Approach
02H70MZ	Insertion of Cardiac Lead into Left Atrium, Open Approach
02H73JZ	Insertion of Pacemaker Lead into Left Atrium, Percutaneous Approach
02H74JZ	Insertion of Pacemaker Lead into Left Atrium, Percutaneous Endoscopic Approach
02H74MZ	Insertion of Cardiac Lead into Left Atrium, Percutaneous Endoscopic Approach
02HK0MZ	Insertion of Cardiac Lead into Right Ventricle, Open Approach
02HK4MZ	Insertion of Cardiac Lead into Right Ventricle, Percutaneous Endoscopic Approach
02HL0MZ	Insertion of Cardiac Lead into Left Ventricle, Open Approach
02HL4MZ	Insertion of Cardiac Lead into Left Ventricle, Percutaneous Endoscopic Approach
02HK3MZ	Insertion of Cardiac Lead into Right Ventricle, Percutaneous Approach
02HL3MZ	Insertion of Cardiac Lead into Left Ventricle, Percutaneous Approach
02HN0JZ	Insertion of Pacemaker Lead into Pericardium, Open Approach
02HN0MZ	Insertion of Cardiac Lead into Pericardium, Open Approach
02HN3JZ	Insertion of Pacemaker Lead into Pericardium, Percutaneous Approach
02HN3MZ	Insertion of Cardiac Lead into Pericardium, Percutaneous Approach
02HN4JZ	Insertion of Pacemaker Lead into Pericardium, Percutaneous Endoscopic Approach
02HN4MZ	Insertion of Cardiac Lead into Pericardium, Percutaneous Endoscopic Approach
02WA0MZ	Revision of Cardiac Lead in Heart, Open Approach
02WA3MZ	Revision of Cardiac Lead in Heart, Percutaneous Approach
02WA4MZ	Revision of Cardiac Lead in Heart, Percutaneous Endoscopic Approach
02H63MZ	Insertion of Cardiac Lead into Right Atrium, Percutaneous Approach
02H73MZ	Insertion of Cardiac Lead into Left Atrium, Percutaneous Approach
5A1213Z	Performance of Cardiac Pacing, Intermittent
5A1223Z	Performance of Cardiac Pacing, Continuous
0JWT0PZ	Revision of Cardiac Rhythm Related Device in Trunk Subcutaneous Tissue and Fascia, Open Approach
0JWT3PZ	Revision of Cardiac Rhythm Related Device in Trunk Subcutaneous Tissue and Fascia, Percutaneous Approach

(continued)

Table 2. Risk-Standardized Acute Admission Rates for Patients with Heart Failure: Risk-Adjustment Procedure Codes (Pacemaker/Cardiac Resynchronization Therapy/Implantable Cardiac Device) (continued)

ICD-10 Code	ICD-10 Descriptor
0JH60PZ	Insertion of Cardiac Rhythm Related Device into Chest Subcutaneous Tissue and Fascia, Open Approach
0JH63PZ	Insertion of Cardiac Rhythm Related Device into Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH80PZ	Insertion of Cardiac Rhythm Related Device into Abdomen Subcutaneous Tissue and Fascia, Open Approach
0JH83PZ	Insertion of Cardiac Rhythm Related Device into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH604Z	Insertion of Pacemaker, Single Chamber into Chest Subcutaneous Tissue and Fascia, Open Approach
0JH634Z	Insertion of Pacemaker, Single Chamber into Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH804Z	Insertion of Pacemaker, Single Chamber into Abdomen Subcutaneous Tissue and Fascia, Open Approach
0JH834Z	Insertion of Pacemaker, Single Chamber into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH605Z	Insertion of Pacemaker, Single Chamber Rate Responsive into Chest Subcutaneous Tissue and Fascia, Open Approach
0JH805Z	Insertion of Pacemaker, Single Chamber Rate Responsive into Abdomen Subcutaneous Tissue and Fascia, Open Approach
0JH835Z	Insertion of Pacemaker, Single Chamber Rate Responsive into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH606Z	Insertion of Pacemaker, Dual Chamber into Chest Subcutaneous Tissue and Fascia, Open Approach
0JH636Z	Insertion of Pacemaker, Dual Chamber into Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH806Z	Insertion of Pacemaker, Dual Chamber into Abdomen Subcutaneous Tissue and Fascia, Open Approach
0JH836Z	Insertion of Pacemaker, Dual Chamber into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH635Z	Insertion of Pacemaker, Single Chamber Rate Responsive into Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH836Z	Insertion of Pacemaker, Dual Chamber into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
02H60KZ	Insertion of Defibrillator Lead into Right Atrium, Open Approach
02H63KZ	Insertion of Defibrillator Lead into Right Atrium, Percutaneous Approach
02H64KZ	Insertion of Defibrillator Lead into Right Atrium, Percutaneous Endoscopic Approach
02H70KZ	Insertion of Defibrillator Lead into Left Atrium, Open Approach
02H73KZ	Insertion of Defibrillator Lead into Left Atrium, Percutaneous Approach
02H74KZ	Insertion of Defibrillator Lead into Left Atrium, Percutaneous Endoscopic Approach
02HK0KZ	Insertion of Defibrillator Lead into Right Ventricle, Open Approach
0JH608Z	Insertion of Defibrillator Generator into Chest Subcutaneous Tissue and Fascia, Open Approach
0JH638Z	Insertion of Defibrillator Generator into Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0JH808Z	Insertion of Defibrillator Generator into Abdomen Subcutaneous Tissue and Fascia, Open Approach
0JH838Z	Insertion of Defibrillator Generator into Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach
02HN0KZ	Insertion of Defibrillator Lead into Pericardium, Open Approach
02HN4KZ	Insertion of Defibrillator Lead into Pericardium, Percutaneous Endoscopic Approach
02H40KZ	Insertion of Defibrillator Lead into Coronary Vein, Open Approach

(continued)

Table 2. Risk-Standardized Acute Admission Rates for Patients with Heart Failure: Risk-Adjustment Procedure Codes (Pacemaker/Cardiac Resynchronization Therapy/Implantable Cardiac Device) (continued)

ICD-10 Code	ICD-10 Descriptor
02H44KZ	Insertion of Defibrillator Lead into Coronary Vein, Percutaneous Endoscopic Approach
02HN3KZ	Insertion of Defibrillator Lead into Pericardium, Percutaneous Approach

Table PA1. Procedure Categories That Are Always Planned in the Planned Admission Algorithm Version 4.0

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

Table PA2. Diagnosis Categories That Are Always Planned in the Planned Admission Algorithm Version 4.0

AHRQ Diagnosis CCS (ICD-10-CM)	Description
45	Maintenance chemotherapy
254	Rehabilitation

Table PA3. Procedure Categories That Are Potentially Planned in the Planned Admission Algorithm Version 4.0

AHRQ Procedure CCS (ICD-10-PCS)	Description
1	Incision and excision of the Central Nervous System [CNS]
3	Excision, destruction or resection of intervertebral disc
5	Insertion of catheter or spinal stimulator and injection into spinal
9	Other OR therapeutic nervous system procedures
10	Thyroidectomy; partial or complete
12	Therapeutic endocrine procedures
33	Other OR therapeutic procedures of mouth and throat
36	Lobectomy or pneumonectomy
38	Other diagnostic procedures on lung and bronchus
40	Other diagnostic procedures of respiratory tract and mediastinum
43	Heart valve procedures
44	Coronary artery bypass graft (CABG)
45	Percutaneous transluminal coronary angioplasty (PTCA) with or without stent
49	Other OR heart procedures
51	Endarterectomy; vessel of head and neck
52	Aortic resection; replacement or anastomosis
53	Varicose vein stripping; lower limb
55	Peripheral vascular bypass
56	Other vascular bypass and shunt; not heart
59	Other OR procedures on vessels of head and neck
66	Procedures on spleen
67	Other therapeutic procedures; hemic and lymphatic system

(continued)

Table PA3. Procedure Categories That Are Potentially Planned in the Planned Admission Algorithm Version 4.0 (continued)

AHRQ Procedure CCS (ICD-10-PCS)	Description
74	Gastrectomy; partial and total
78	Colorectal resection
79	Excision of large intestine lesion (not endoscopic)
84	Cholecystectomy and common duct exploration
85	Inguinal and femoral hernia repair
86	Other hernia repair
99	Other OR gastrointestinal therapeutic procedures
104	Nephrectomy; partial or complete
106	Genitourinary incontinence procedures
107	Extracorporeal lithotripsy; urinary
109	Procedures on the urethra
112	Other OR therapeutic procedures of urinary tract
113	Transurethral resection of prostate (TURP)
114	Open prostatectomy
119	Oophorectomy; unilateral and bilateral
120	Other operations on ovary
124	Hysterectomy; abdominal and vaginal
129	Repair of cystocele and rectocele; obliteration of vaginal vault
132	Other OR therapeutic procedures; female organs
142	Partial excision bone
152	Arthroplasty knee
153	Hip replacement; total and partial
154	Arthroplasty other than hip or knee
157	Amputation of lower extremity
158	Spinal fusion
159	Other diagnostic procedures on musculoskeletal system
166	Lumpectomy; quadrantectomy of breast
167	Mastectomy
172	Skin graft
175	Other OR therapeutic procedures on skin subcutaneous tissue fascia and breast
ICD-10-PCS	**Description**
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
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
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

(continued)

Table PA3. Procedure Categories That Are Potentially Planned in the Planned Admission Algorithm Version 4.0 (continued)

AHRQ Procedure CCS (ICD-10-PCS)	Description
0T9030Z	Drainage of Right Kidney with Drainage Device, Percutaneous Approach
0T9130Z	Drainage of Left Kidney with Drainage Device, Percutaneous 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 Right Kidney Pelvis, Percutaneous Approach
0TC34ZZ	Extirpation of Matter from Right Kidney Pelvis, Percutaneous Endoscopic Approach
0TC43ZZ	Extirpation of Matter from Left Kidney Pelvis, Percutaneous Approach
0TC44ZZ	Extirpation of Matter from Left Kidney Pelvis, Percutaneous Endoscopic Approach
GZB4ZZZ	Other Electroconvulsive 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

Table PA4. Acute Diagnosis Categories in the Planned Admission Algorithm Version 4.0

AHRQ Diagnosis CCS (ICD-10-CM)	Description
1	Tuberculosis
2	Septicemia (except in labor)
3	Bacterial infection; unspecified site
4	Mycoses
5	HIV infection
7	Viral infection
8	Other infections; including parasitic
9	Sexually transmitted infections (not HIV or hepatitis)
54	Gout and other crystal arthropathies
55	Fluid and electrolyte disorders
60	Acute posthemorrhagic anemia
61	Sickle cell anemia
63	Diseases of white blood cells
76	Meningitis (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
82	Paralysis
83	Epilepsy; convulsions
84	Headache; including migraine
85	Coma; stupor; and brain damage
87	Retinal detachments; defects; vascular occlusion; and retinopathy
89	Blindness and vision defects

(continued)

Table PA4. Acute Diagnosis Categories in the Planned Admission Algorithm Version 4.0 (continued)

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

(continued)

Table PA4. Acute Diagnosis Categories in the Planned Admission Algorithm Version 4.0 (continued)

AHRQ Diagnosis CCS (ICD-10-CM)	Description
228	Skull and face fractures
229	Fracture of upper limb
230	Fracture of lower limb
232	Sprains and strains
233	Intracranial injury
234	Crushing injury or internal injury
235	Open wounds of head; neck; and trunk
237	Complication of device; implant or graft
238	Complications of surgical procedures or medical care
239	Superficial injury; contusion
240	Burns
241	Poisoning by psychotropic agents
242	Poisoning by other medications and drugs
243	Poisoning by nonmedicinal substances
244	Other injuries and conditions due to external causes
245	Syncope
246	Fever of unknown origin
247	Lymphadenitis
249	Shock
250	Nausea and vomiting
251	Abdominal pain
252	Malaise and fatigue
253	Allergic reactions
259	Residual codes; unclassified
650	Adjustment disorders
651	Anxiety disorders
652	Attention-deficit
653	Delirium
656	Impulse control disorders
658	Personality disorders
660	Alcohol-related disorders
661	Substance-related disorders
662	Suicide and intentional self-inflicted injury
663	Screening and history of mental health and substance abuse codes
670	Miscellaneous disorders
Acute ICD-10 Codes Within Dx CCS 97: Peri-; Endo-; and Myocarditis; Cardiomyopathy	
A3681	Diphtheritic cardiomyopathy
A3950	Meningococcal carditis, unspecified
A3953	Meningococcal pericarditis
A3951	Meningococcal endocarditis
A3952	Meningococcal myocarditis
B3320	Viral carditis, unspecified
B3323	Viral pericarditis
B3321	Viral endocarditis

(continued)

Table PA4. Acute Diagnosis Categories in the Planned Admission Algorithm Version 4.0 (continued)

AHRQ Diagnosis CCS (ICD-10-CM)	Description
B3322	Viral myocarditis
B376	Candidal endocarditis
B5881	Toxoplasma myocarditis
I010	Acute rheumatic pericarditis
I011	Acute rheumatic endocarditis
I012	Acute rheumatic myocarditis
I018	Other acute rheumatic heart disease
I019	Acute rheumatic heart disease, unspecified
I020	Rheumatic chorea with heart involvement
I090	Rheumatic myocarditis
I099	Rheumatic heart disease, unspecified
I0989	Other specified rheumatic heart diseases
I32	Pericarditis in diseases classified elsewhere
I301	Infective pericarditis
I309	Acute pericarditis, unspecified
I300	Acute nonspecific idiopathic pericarditis
I308	Other forms of acute pericarditis
I330	Acute and subacute infective endocarditis
I39	Endocarditis and heart valve disorders in diseases classified elsewhere
I339	Acute and subacute endocarditis, unspecified
I41	Myocarditis in diseases classified elsewhere
I409	Acute myocarditis, unspecified
I401	Isolated myocarditis
I400	Infective myocarditis
I408	Other acute myocarditis
I312	Hemopericardium, not elsewhere classified
I310	Chronic adhesive pericarditis
I311	Chronic constrictive pericarditis
I314	Cardiac tamponade
I514	Myocarditis, unspecified
Acute ICD-10 Codes Within Dx CCS 100: Acute myocardial infarction (without subsequent MI)	
I2109	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall
I2101	ST elevation (STEMI) myocardial infarction involving left main coronary artery
I2102	ST elevation (STEMI) myocardial infarction involving left anterior descending coronary artery
I2119	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall
I2111	ST elevation (STEMI) myocardial infarction involving right coronary artery
I214	Non-ST elevation (NSTEMI) myocardial infarction
I2129	ST elevation (STEMI) myocardial infarction involving other sites
I2121	ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery
I213	ST elevation (STEMI) myocardial infarction of unspecified site
Acute ICD-10 Codes Within Dx CCS 105: Conduction Disorders	
I442	Atrioventricular block, complete
I4430	Unspecified atrioventricular block
I440	Atrioventricular block, first degree

(continued)

Table PA4. Acute Diagnosis Categories in the Planned Admission Algorithm Version 4.0 (continued)

AHRQ Diagnosis CCS (ICD-10-CM)	Description
I441	Atrioventricular block, second degree
I4469	Other fascicular block
I444	Left anterior fascicular block
I445	Left posterior fascicular block
I4460	Unspecified fascicular block
I447	Left bundle-branch block, unspecified
I450	Right fascicular block
I4510	Unspecified right bundle-branch block
I4519	Other right bundle-branch block
I4439	Other atrioventricular block
I454	Nonspecific intraventricular block
I452	Bifascicular block
I453	Trifascicular block
I455	Other specified heart block
I456	Pre-excitation syndrome
I4581	Long QT syndrome
I459	Conduction disorder, unspecified
Acute ICD-10 Codes Within Dx CCS 106: Dysrhythmia	
I479	Paroxysmal tachycardia, unspecified
R000	Tachycardia, unspecified
I498	Other specified cardiac arrhythmias
R001	Bradycardia, unspecified
I499	Cardiac arrhythmia, unspecified
I493	Ventricular premature depolarization
I4949	Other premature depolarization
Acute ICD-10 Codes Within Dx CCS 108: Congestive Heart Failure; Nonhypertensive	
I0981	Rheumatic heart failure
I509	Heart failure, unspecified
I501	Left ventricular failure
I5020	Unspecified systolic (congestive) heart failure
I5021	Acute systolic (congestive) heart failure
I5023	Acute on chronic systolic (congestive) heart failure
I5030	Unspecified diastolic (congestive) heart failure
I5031	Acute diastolic (congestive) heart failure
I5033	Acute on chronic diastolic (congestive) heart failure
I5040	Unspecified combined systolic and diastolic (congestive) heart fail
I5041	Acute combined systolic (congestive) and diastolic (congestive) heart failure
I5043	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
Acute ICD-10 Codes Within Dx CCS 149: Biliary Tract Disease	
K8000	Calculus of gallbladder with acute cholecystitis without obstruction
K8012	Calculus of gallbladder with acute and chronic cholecystitis without obstruction
K8001	Calculus of gallbladder with acute cholecystitis with obstruction
K8013	Calculus of gallbladder with acute and chronic cholecystitis with obstruction
K8042	Calculus of bile duct with acute cholecystitis without obstruction

(continued)

Table PA4. Acute Diagnosis Categories in the Planned Admission Algorithm Version 4.0 (continued)

AHRQ Diagnosis CCS (ICD-10-CM)	Description
K8046	Calculus of bile duct with acute and chronic cholecystitis without obstruction
K8043	Calculus of bile duct with acute cholecystitis with obstruction
K8047	Calculus of bile duct with acute and chronic cholecystitis with obstruction
K8062	Calculus of GB and bile duct with acute cholecystitis without obstruction
K8063	Calculus of GB and bile duct with acute cholecystitis with obstruction
K8066	Calculus of GB and bile duct with acute and chronic cholecystitis without obstruction
K8067	Calculus of GB and bile duct with acute and chronic cholecystitis with obstruction
K810	Acute cholecystitis
K812	Acute cholecystitis with chronic cholecystitis
K8030	Calculus of bile duct with cholangitis, unspecified, without obstruction
K8031	Calculus of bile duct with cholangitis, unspecified, with obstruction
K8032	Calculus of bile duct with acute cholangitis without obstruction
K8033	Calculus of bile duct with acute cholangitis with obstruction
K8036	Calculus of bile duct with acute and chronic cholangitis without obstruction
K8037	Calculus of bile duct with acute and chronic cholangitis with obstruction
K830	Cholangitis
Acute ICD-10 Codes Within Dx CCS 152: Pancreatic Disorders	
K859	Acute pancreatitis, unspecified
K850	Idiopathic acute pancreatitis
K851	Biliary acute pancreatitis
K852	Alcohol induced acute pancreatitis
K853	Drug induced acute pancreatitis
K858	Other acute pancreatitis
K8500	Idiopathic acute pancreatitis without necrosis or infection
K8501	Idiopathic acute pancreatitis with uninfected necrosis
K8502	Idiopathic acute pancreatitis with infected necrosis
K8510	Biliary acute pancreatitis without necrosis or infection
K8511	Biliary acute pancreatitis with uninfected necrosis
K8512	Biliary acute pancreatitis with infected necrosis
K8520	Alcohol induced acute pancreatitis without necrosis or infection
K8521	Alcohol induced acute pancreatitis with uninfected necrosis
K8522	Alcohol induced acute pancreatitis with infected necrosis
K8530	Drug induced acute pancreatitis without necrosis or infection
K8531	Drug induced acute pancreatitis with uninfected necrosis
K8532	Drug induced acute pancreatitis with infected necrosis
K8580	Other acute pancreatitis without necrosis or infection
K8581	Other acute pancreatitis with uninfected necrosis
K8582	Other acute pancreatitis with infected necrosis
K8590	Acute pancreatitis without necrosis or infection, unspecified
K8591	Acute pancreatitis with uninfected necrosis, unspecified
K8592	Acute pancreatitis with infected necrosis, unspecified