



## Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

### Brief Measure Information

**NQF #: 3612**

**Corresponding Measures:**

**De.2. Measure Title:** Risk-Standardized Acute Cardiovascular-Related Hospital Admission Rates for Patients with Heart Failure under the Merit-based Incentive Payment System

**Co.1.1. Measure Steward:** Centers for Medicare & Medicaid Services (CMS)

**De.3. Brief Description of Measure:** Risk-standardized rate of acute, unplanned cardiovascular-related hospital admissions among Medicare Fee-for-Service (FFS) patients aged 65 years and older with heart failure (HF) or cardiomyopathy.

**1b.1. Developer Rationale:** Hospital admission rates are an effective marker of ambulatory care quality. Hospital admissions from the outpatient setting reflect a deterioration in patients' clinical status and as such reflect an outcome that is meaningful to both patients and providers. In addition, hospitalization increases potential exposure to iatrogenic injury and there are a number of increasingly recognized toxic effects of hospitalization (for example, sleep deprivation; poor nourishment; deconditioning from inactivity; confusion from medications; stress from mental exhaustion) leading to "post hospitalization syndrome [1]," which may contribute to the risk of readmission. Patients receiving optimal, coordinated high-quality care should use fewer inpatient services than patients receiving fragmented, low-quality care. Thus, high rates of hospitalization may, at least to some extent, signal poor quality of care or inefficiency in health system performance. There is evidence that outpatient clinicians can reduce HF patients' risk of hospitalizations in a variety of ways, including but not limited to accessible primary care, coordination across providers and across care settings, early attention to changes in clinical status, adoption of guideline-directed medical therapy, careful prescribing in patients with comorbidities, patient education, and support for self-management [2].

There is strong evidence that ambulatory care clinicians can influence admission rates by providing high quality of care [3-9]. For example, Brown et al. pointed to four ambulatory care focused Medicare Coordinated Care Demonstration programs that reduced hospitalizations for high-risk patients by 13-30 events per 100 beneficiaries per year (8-33% of hospitalizations). Brown et al. highlighted six program features that were associated with successfully reducing hospitalizations: 1) supplementing patient telephone calls with in-person meetings; 2) occasionally meeting in-person with providers; 3) acting as a communication hub for providers; 4) providing patients with evidence-based education; 5) providing strong medication management; and 6) providing comprehensive and timely transitional care after hospitalizations [3]. In addition, van Loenen et al. found that higher levels of provider continuity decreased the risk of avoidable hospitalizations for ambulatory care-sensitive conditions (ACSCs) and chronic diseases [8]. Hussey et al. [10] found that among Medicare beneficiaries, greater continuity of care was associated with lower odds of hospitalization (OR=0.94, CI=0.93-0.95). Moreover, several studies have demonstrated positive impact of early follow-up after hospitalization to reduce readmissions for HF [11-14].

Thus, the anticipated net benefits of this unplanned hospital admission measure include, but are not limited to:

- Improved patient experience through harm prevention and reduction.
- Better education about HF management for patients and caregivers.
- Improved support for self-management of HF and efforts to build capacity to carry out treatment plans.
- Reduced emergency visits, observation stays, and hospital admissions for events caused by HF.
- Reduced rates of poor outcomes associated with HF (falls, pneumonia, mortality, cardiovascular events).
- Potential cost savings to Medicare, patients, and tax payers.

Overall, this measure will provide the Centers for Medicare & Medicaid Services (CMS) with a valuable tool for assessing the performance of outpatient clinicians and groups of clinicians in the MIPS program.

## References

1. Krumholz HM. Post-Hospital Syndrome — An Acquired, Transient Condition of Generalized Risk. *New England Journal of Medicine*. 2013;368(2):100-102.
2. Jackevicius CA, de Leon NK, Lu L, Chang DS, Warner AL, Mody FV. Impact of a Multidisciplinary Heart Failure Post-Hospitalization Program on Heart Failure Readmission Rates. *The Annals of pharmacotherapy*. 2015;49(11):1189-1196.
3. 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;31(6):1156-1166.
4. Dorr DA, Wilcox AB, Brunker 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*. 2008;56(12):2195-2202.
5. Levine S, Steinman BA, Attaway K, Jung T, Enguidanos S. Home care program for patients at high risk of hospitalization. *The American journal of managed care*. 2012;18(8):e269-e276.
6. 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.
7. Sommers LS, Marton KI, Barbaccia JC, Randolph J. Physician, Nurse, and Social Worker Collaboration in Primary Care for Chronically Ill Seniors. *Archives of Internal Medicine*. 2000;160(12):1825-1833.
8. Van Loenen T, Faber MJ, Westert GP, Van den Berg MJ. The impact of primary care organization on avoidable hospital admissions for diabetes in 23 countries. *Scandinavian journal of primary health care*. 2016;34(1):5-12.
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10. Hussey PS, Schneider EC, Rudin RS, Fox DS, Lai J, Pollack CE. Continuity and the Costs of Care for Chronic Disease Care Continuity and Costs for Chronic Disease Care Continuity and Costs for Chronic Disease. *JAMA Internal Medicine*. 2014;174(5):742-748.
11. Donaho EK, Hall AC, Gass JA, et al. Protocol-Driven Allied Health Post-Discharge Transition Clinic to Reduce Hospital Readmissions in Heart Failure. *Journal of the American Heart Association*. 2015;4(12):e002296.
12. Lee KK, Yang J, Hernandez AF, Steimle AE, Go AS. Post-discharge Follow-up Characteristics Associated With 30-Day Readmission After Heart Failure Hospitalization. *Medical Care*. 2016;54(4):365-372.
13. Murtaugh CM, Deb P, Zhu C, et al. Reducing Readmissions among Heart Failure Patients Discharged to Home Health Care: Effectiveness of Early and Intensive Nursing Services and Early Physician Follow-Up. *Health Services Research*. 2017;52(4):1445-1472.
14. Ryan J, Kang S, Dolack S, Ingrassia J, Ganeshan R. Change in Readmissions and Follow-up Visits as Part of a Heart Failure Readmission Quality Improvement Initiative. *The American Journal of Medicine*. 2013;126(11):989-994.e981.

**S.4. Numerator Statement:** The outcome for this measure is the number of acute cardiovascular-related admissions per 100 person-years at risk for admission during the measurement year.

**S.6. Denominator Statement:** This measure assesses the care provided to patients with heart failure by primary care providers and cardiologists.

Patients included in the measure (target patient population)

The target patient population for the outcome includes Medicare FFS patients aged 65 years and older with heart failure or cardiomyopathy.

Provider types included for measurement

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- Primary care providers (PCPs): CMS designates PCPs as physicians who practice internal medicine, family medicine, general medicine, or geriatric medicine, and non-physician providers, including nurse practitioners, certified clinical nurse specialists, and physician assistants.
- Cardiologists: Cardiologists are covered by the measure because they provide overall coordination of care for patients with HF and manage the conditions that put HF patients at risk for admission due to acute cardiovascular-related conditions.

#### Outcome attribution

The measure begins by assigning each patient to the clinician most responsible for the patient's care, based on the pattern of outpatient visits with PCPs and relevant specialists. The patient can be assigned to a PCP, a cardiologist, or can be left unassigned. Patients who have had no Evaluation and Management (E&M) visits with a MIPS eligible clinician are excluded.

Step 1: A patient who is eligible for attribution is assigned to a cardiologist only if the cardiologist has been identified as "dominant." A cardiologist is considered "dominant" if they have two or more visits with the patient, regardless of how many visits that patient has with a PCP.

- There are two scenarios where a patient can be assigned to a PCP. First, if the patient has seen the PCP at least once but has no visits with a cardiologist, the patient is assigned to the PCP. The patient will then be assigned to the PCP with the highest number of visits as long as there are no relevant specialists who are considered "dominant." Second, if the patient has seen the PCP more than two or more times and has only one visit with a cardiologist, the patient is assigned to the PCP.
- If the patient has one visit each with a cardiologist and a PCP, the patient is assigned to the cardiologist.
- If the patient has one visit with a cardiologist and no visit with a PCP, the patient is assigned to the cardiologist.
- Finally, the patient will be unassigned if they only saw non-relevant specialists, if the patient has not seen a PCP and no "dominant" specialist can be identified, or if the patient has not had more than one visit with any individual PCP.

Step 2: Patients are then assigned at the Taxpayer Identification Number (TIN) level, which includes solo clinicians and groups of clinicians who have chosen to report their quality under a common TIN.

At the TIN level, patients are first assigned to the clinician (NPI/TIN) most responsible for their care (using the algorithm for individual clinician-level attribution above). Then, patients "follow" their attributed clinician to the TIN of that clinician. Patients unassigned at the individual clinician level continue to be unassigned at the TIN level.

#### S.8. Denominator Exclusions: The measure excludes:

1. Patients without continuous enrollment in Medicare Part A and B for the duration of the measurement period.
2. Patients in hospice during the year prior to the measurement year or in hospice at the start of the measurement year.
3. Patients who have had a heart transplant, been on home inotropic therapy, or who have had a left ventricular assist device (LVAD) placed.
4. Patients with end stage renal disease (ESRD), defined as chronic kidney disease stage 5 or on dialysis.
5. Patients who had no E&M visits with MIPS eligible clinician.

**De.1. Measure Type:** Outcome

**S.17. Data Source:** Claims, Other

**S.20. Level of Analysis:** Clinician : Group/Practice, Clinician : Individual

**IF Endorsement Maintenance – Original Endorsement Date: Most Recent Endorsement Date:**

**IF this measure is included in a composite, NQF Composite#/title:**

**IF this measure is paired/grouped, NQF#/title:**

**De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?** Not applicable (N/A); this measure is not formally paired with another measure.

## 1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.**

**1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form**

[MIPSHFNQFEvidenceAttachDraft04022021.docx](#), [MIPSHFMethodologyRptSupplement08142020-637535642749749038.xlsx](#)

**1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?**

Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.

**1b. Performance Gap**

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

**1b.1. Briefly explain the rationale for this measure** (e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)

*If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.*

Hospital admission rates are an effective marker of ambulatory care quality. Hospital admissions from the outpatient setting reflect a deterioration in patients' clinical status and as such reflect an outcome that is meaningful to both patients and providers. In addition, hospitalization increases potential exposure to iatrogenic injury and there are a number of increasingly recognized toxic effects of hospitalization (for example, sleep deprivation; poor nourishment; deconditioning from inactivity; confusion from medications; stress from mental exhaustion) leading to "post hospitalization syndrome [1]," which may contribute to the risk of readmission. Patients receiving optimal, coordinated high-quality care should use fewer inpatient services than patients receiving fragmented, low-quality care. Thus, high rates of hospitalization may, at least to some extent, signal poor quality of care or inefficiency in health system performance. There is evidence that outpatient clinicians can reduce HF patients' risk of hospitalizations in a variety of ways, including but not limited to accessible primary care, coordination across providers and across care settings, early attention to changes in clinical status, adoption of guideline-directed medical therapy, careful prescribing in patients with comorbidities, patient education, and support for self-management [2].

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**References**

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**1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.** *(This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*

In the performance period, a total of 1,846,193 Medicare FFS HF patients were attributed to 45,093 MIPS-eligible TINs. Acute unplanned cardiovascular-related hospital admissions were identified using 2017/2018 Medicare FFS institutional inpatient claims. Overall, across TINs, risk-standardized acute cardiovascular-related admission rate (RSCAR) measure scores ranged from 9.6 to 62.4 per 100 person-years, with a median of 24.8 and an interquartile range (IQR) of 24.0 to 25.9. The mean RSCAR and standard deviation were  $25.1 \pm 2.4$  admissions per 100 person-years. Generally similar distributions in measure scores were found across TINs with different provider composition.

Below shows the range of RSCARs (number of admissions per 100 person-years) within each decile:

Decile	Range of RSCAR
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1	[9.6 – 22.9]
2	(22.9 – 23.8]
3	(23.8 – 24.3]
4	(24.3 – 24.6]
5	(24.6 – 24.8]
6	(24.8 – 24.9]
7	(24.9 – 25.5]
8	(25.5 – 26.3]
9	(26.3 – 27.6]
10	(27.7 – 62.4]

**1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.**

N/A; we provide performance data in 1b.2.

**1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. (*This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.*) For measures that show high levels of performance, i.e., “topped out”, disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.**

Please note that this is a new measure, not a maintenance measure.

Using Q4 2017 – Q3 2018 Medicare claims data for 1,846,193 Medicare FFS beneficiaries with HF, the patient-level model includes one social risk factor: the Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) Index (lowest quartile vs. upper three quartiles). In the multivariable model that included this social risk factor, along with the demographic and clinical risk adjusters, relatively modest effects for the social risk factor variables were found. The AHRQ SES Index variable’s rate ratio (RR) and 95% confidence interval (CI) was 1.12 (1.11, 1.13).

The measure was not adjusted for Medicare-Medicaid dual eligibility status but was evaluated with respect to this social risk factor. In the multivariable model that included dual eligibility along with the demographic and clinical risk adjusters and the AHRQ SES Index, relatively modest effects for dual eligibility were found (RR 1.11 [1.10, 1.12]). The distributions of risk-standardized cardiovascular acute hospital admission rates by deciles were generally similar across quartiles of the proportion of Medicare-Medicaid dual-eligible beneficiaries across TINs (see below).

Distribution of risk-standardized cardiovascular acute hospital admission rates by deciles, all TINs

Decile / Q1 of % dual (0.0 - 0.0) / Q2 of % dual (0.5 - 12.5) / Q3 of % dual (12.5 - 38.4) / Q4 of % dual (38.5 - 100.0)

1 / 17.3 - 23.7 / 9.6 - 21.3 / 13.3 - 22.5 / 13.8 - 23.2
2 / 23.7 - 24.2 / 21.3 - 22.5 / 22.5 - 23.4 / 23.2 - 24.0
3 / 24.2 - 24.5 / 22.5 - 23.2 / 23.4 - 23.9 / 24.0 - 24.4
4 / 24.5 - 24.6 / 23.2 - 23.9 / 23.9 - 24.3 / 24.4 - 24.6
5 / 24.6 - 24.8 / 23.9 - 24.6 / 24.3 - 24.8 / 24.6 - 24.8
6 / 24.8 - 24.8 / 24.6 - 25.4 / 24.8 - 25.5 / 24.8 - 24.9
7 / 24.8 - 24.9 / 25.4 - 26.4 / 25.5 - 26.1 / 24.9 - 25.5
8 / 24.9 - 25.5 / 26.4 - 27.7 / 26.1 - 27.1 / 25.5 - 26.3
9 / 25.5 - 26.3 / 27.7 - 29.8 / 27.1 - 28.9 / 26.3 - 27.3
10 / 26.3 - 36.0 / 29.8 - 55.5 / 28.9 - 49.6 / 27.3 - 62.4

Distribution of risk-standardized cardiovascular acute hospital admission rates by deciles, TINs with >= 32 patients (min. reliability=0.5)

Decile / Q1 of % dual (0.0 - 0.0) / Q1 of % dual (0.0 - 7.7) / Q2 of % dual (7.7 - 15.1) / Q3 of % dual (15.2 - 28.9) / Q4 of % dual (28.9 - 100.0)

1 / 17.3 - 23.7 / 9.6 - 20.1 / 15.1 - 20.8 / 14.5 - 21.0 / 13.3 - 20.4  
 2 / 23.7 - 24.2 / 20.1 - 21.4 / 20.8 - 22.4 / 21.0 - 22.3 / 20.4 - 22.0  
 3 / 24.2 - 24.5 / 21.4 - 22.4 / 22.4 - 23.6 / 22.3 - 23.4 / 22.0 - 23.1  
 4 / 24.5 - 24.6 / 22.4 - 23.2 / 23.6 - 24.8 / 23.4 - 24.4 / 23.1 - 24.0  
 5 / 24.6 - 24.8 / 23.2 - 24.3 / 24.8 - 25.9 / 24.4 - 25.4 / 24.0 - 25.0  
 6 / 24.8 - 24.8 / 24.3 - 25.4 / 25.9 - 27.1 / 25.5 - 26.6 / 25.0 - 26.1  
 7 / 24.8 - 24.9 / 25.4 - 26.6 / 27.1 - 28.3 / 26.6 - 28.1 / 26.1 - 27.4  
 8 / 24.9 - 25.5 / 26.6 - 28.3 / 28.3 - 29.8 / 28.1 - 29.5 / 27.5 - 29.0  
 9 / 25.5 - 26.3 / 28.3 - 30.5 / 29.9 - 32.5 / 29.6 - 32.2 / 29.0 - 31.5  
 10 / 26.3 - 36.0 / 30.5 - 50.7 / 32.5 - 55.5 / 32.2 - 49.6 / 31.5 - 62.4

For more information about the testing of disparities data, please review section 1.8 and section 2b3.3 in the testing attachment.

**1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**

Please see testing described in section 1b.4 above and in sections 1.8 and 2b3.3 of the testing attachment.

## 2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

**2a.1. Specifications** The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

**De.5. Subject/Topic Area** (check all the areas that apply):

**De.6. Non-Condition Specific**(check all the areas that apply):

**De.7. Target Population Category** (Check all the populations for which the measure is specified and tested if any):

**S.1. Measure-specific Web Page** (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

N/A

**S.2a. If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

This is not an eMeasure Attachment: MIPS\_HFMethodologyRptSupplement08142020.xlsx

**S.2b. Data Dictionary, Code Table, or Value Sets** (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment Attachment: MIPS\_HFNQFDataDictionary\_v1.0.XLSX

**S.2c. Is this an instrument-based measure** (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

No, this is not an instrument-based measure Attachment:



**S.2d.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Not an instrument-based measure

**S.3.1. For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

No

**S.3.2. For maintenance of endorsement,** please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

N/A

**S.4. Numerator Statement** (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

The outcome for this measure is the number of acute cardiovascular-related admissions per 100 person-years at risk for admission during the measurement year.

**S.5. Numerator Details** (All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Outcome Definition

The outcome for this measure is the number of acute unplanned cardiovascular-related admissions per 100 person-years at risk for admission during the measurement period. Acute cardiovascular-related admissions are defined using individual International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes and the Agency for Healthcare Research and Quality's (AHRQ) Clinical Classification Software (CCS) diagnosis categories, which group clinically similar codes together. See Tabs 3 and 4 of the data dictionary for a full list of CCSs and ICD-10-CM codes.

AHRQ CCS diagnosis categories used to define outcome:

55: Fluid and electrolyte disorders

96: Heart valve disorders

97: Peri-; endo-; and myocarditis; cardiomyopathy (except that caused by tuberculosis or sexually transmitted disease)

98: Essential hypertension

100: Acute myocardial infarction

102: Nonspecific chest pain

104: Other and ill-defined heart disease

105: Conduction disorders

106: Cardiac dysrhythmias

107: Cardiac arrest and ventricular fibrillation

108: Congestive heart failure; non-hypertensive

110: Occlusion or stenosis of precerebral arteries

112: Transient cerebral ischemia

115: Aortic; peripheral; and visceral artery aneurysms

116: Aortic and peripheral arterial embolism or thrombosis

157: Acute and unspecified renal failure

245: Syncope

Subsets of the following AHRQ CCS diagnosis categories used to define outcome:



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99: Hypertension with complications and secondary hypertension  
101: Coronary atherosclerosis and other heart disease  
103: Pulmonary heart disease  
109: Acute cerebrovascular disease  
114: Peripheral and visceral atherosclerosis  
117: Other circulatory disease  
130: Pleurisy; pneumothorax; pulmonary collapse  
131: Respiratory failure; insufficiency; arrest (adult)  
133: Other lower respiratory disease  
237: Complication of device; implant or graft  
249: Cardiogenic shock

#### Time Period

The outcome includes inpatient admissions to an acute care hospital during the measurement year.

#### Excluded Admissions

This measure does not include the following types of admissions in the outcome because they do not reflect the quality of care provided by ambulatory care clinicians who are managing the care of HF patients:

1. Planned cardiovascular-related hospital admissions.
2. Admission that occur directly from a skilled nursing facility (SNF) or acute rehabilitation facility.
3. Admissions that occur within a 10-day “buffer period” of time after discharge from a hospital, SNF, or acute rehabilitation facility.
4. Admissions that occur after the patient has entered hospice.
5. Admissions before first visit to provider if no visit in year prior to measure period.
6. Admissions following LVAD implantation, start of home inotropic therapy, or heart transplant.

#### Clarification regarding the 10-day “buffer period”

The 10-day “buffer period” is a numerator (or outcome) exclusion but it also affects the denominator (person-time at risk); see below in Section S.6 and S.7. The 10-day buffer period (10 days following discharge from a hospital) is a period of transition back to community-based care, and other factors in addition to ambulatory care, including care received in the hospital and post-discharge planning, contribute to the risk of admission; therefore, the measure does not hold clinicians accountable for admissions in this timeframe. This buffer period allows time for patients to be seen within 7 days of discharge as recommended in CMS’s Transitional Care Management (TCM) service guidelines and for the ambulatory care provider’s care plan to take effect. CMS’s TCM service guidelines encourage providers to have a face-to-face visit within 7 days of discharge for Medicare patients with high medical decision complexity.

#### Identification of planned admissions

To identify planned cardiovascular-related admissions, the measure modified an algorithm CORE previously developed for CMS’s hospital readmission measures, CMS’s Planned Readmission Algorithm Version 4.0. [1,2]. In brief, the algorithm uses the procedure codes and principal discharge diagnosis code on each hospital claim to identify admissions that are typically planned. A few specific, limited types of care are always considered planned (for example, major organ transplant, rehabilitation, and maintenance chemotherapy). Otherwise, a planned admission is defined as a non-acute admission for a scheduled procedure (for example, total hip replacement or cholecystectomy). Admissions for an acute illness are never considered planned. For specific codes included in the planned admissions algorithm modified for this measure, please see Tabs PAA1, PAA2, PAA3, and PAA4 of the accompanying data dictionary.

#### Identification of admissions that occur directly from an SNF or acute rehabilitation facility

Information on SNF and acute rehabilitation facility stays, which factor into the outcome definition, was obtained using CMS’s Integrated Data Repository (IDR) and Medicare Provider Analysis and Review (MedPAR) files, respectively.

#### Identification of admissions that occur after the patient has entered hospice

The status of enrollment in Medicare Parts A and B and Medicare’s hospice benefit for 2017-2018 were obtained from the CMS Medicare Enrollment Database (EDB).

#### Person-time at risk

Persons are considered at risk for hospital admission if they are alive, enrolled in FFS Medicare, and not in the hospital. In addition to time spent in the hospital, the measure also excludes from at-risk time: 1) time spent in a SNF or acute rehabilitation facility; 2) the time within 10 days following discharge from a hospital, SNF, or acute rehabilitation facility; and 3) time after entering hospice care.

#### References

1. Yale New Haven Health Services Corporation – Center for Outcomes Research & Evaluation (YNHHSC/CORE). 2018 All-Cause Hospital Wide Measure Updates and Specifications Report - Hospital-Level 30-Day Risk-Standardized Readmission Measure – Version 7.0. Centers for Medicare & Medicaid Services; March 2018, 2018.
2. Horwitz L, Grady J, Cohen D, et al. Development and validation of an algorithm to identify planned readmissions from claims data. Journal of Hospital Medicine. Oct 2015;10(10):670-677.

#### **S.6. Denominator Statement** *(Brief, narrative description of the target population being measured)*

This measure assesses the care provided to patients with heart failure by primary care providers and cardiologists.

Patients included in the measure (target patient population)

The target patient population for the outcome includes Medicare FFS patients aged 65 years and older with heart failure or cardiomyopathy.

Provider types included for measurement

- Primary care providers (PCPs): CMS designates PCPs as physicians who practice internal medicine, family medicine, general medicine, or geriatric medicine, and non-physician providers, including nurse practitioners, certified clinical nurse specialists, and physician assistants.
- Cardiologists: Cardiologists are covered by the measure because they provide overall coordination of care for patients with HF and manage the conditions that put HF patients at risk for admission due to acute cardiovascular-related conditions.

Outcome attribution

The measure begins by assigning each patient to the clinician most responsible for the patient's care, based on the pattern of outpatient visits with PCPs and relevant specialists. The patient can be assigned to a PCP, a cardiologist, or can be left unassigned. Patients who have had no Evaluation and Management (E&M) visits with a MIPS eligible clinician are excluded.

Step 1: A patient who is eligible for attribution is assigned to a cardiologist only if the cardiologist has been identified as "dominant." A cardiologist is considered "dominant" if they have two or more visits with the patient, regardless of how many visits that patient has with a PCP.

- There are two scenarios where a patient can be assigned to a PCP. First, if the patient has seen the PCP at least once but has no visits with a cardiologist, the patient is assigned to the PCP. The patient will then be assigned to the PCP with the highest number of visits as long as there are no relevant specialists who are considered "dominant." Second, if the patient has seen the PCP more than two or more times and has only one visit with a cardiologist, the patient is assigned to the PCP.
- If the patient has one visit each with a cardiologist and a PCP, the patient is assigned to the cardiologist.
- If the patient has one visit with a cardiologist and no visit with a PCP, the patient is assigned to the cardiologist.
- Finally, the patient will be unassigned if they only saw non-relevant specialists, if the patient has not seen a PCP and no "dominant" specialist can be identified, or if the patient has not had more than one visit with any individual PCP.

Step 2: Patients are then assigned at the Taxpayer Identification Number (TIN) level, which includes solo clinicians and groups of clinicians who have chosen to report their quality under a common TIN.

At the TIN level, patients are first assigned to the clinician (NPI/TIN) most responsible for their care (using the algorithm for individual clinician-level attribution above). Then, patients "follow" their attributed clinician to the TIN of that clinician. Patients unassigned at the individual clinician level continue to be unassigned at the TIN level.

**S.7. Denominator Details** *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

*IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be*

*described in the calculation algorithm (S.14).*

Patients included in the measure (target patient population)

The cohort, or group of patients included in the measure, is comprised of patients with HF or cardiomyopathy who are at high risk of admission and whose admission rates could be lowered through better care.

The specific inclusion and exclusion criteria are as follows:

1. Patient has one primary HF/cardiomyopathy inpatient diagnoses or at least two outpatient or inpatient HF/cardiomyopathy diagnoses (if no primary inpatient HF/cardiomyopathy diagnoses) in any coding position (for example, primary or secondary position) within the two years prior to the measurement year.

Rationale: Cardiomyopathy codes were included based on feedback received from the TEP and Clinician Committee that these patients are similar to HF patients, though they may not have (yet) had the clinical syndrome of HF – potentially because of good ambulatory care. Since hospitalizations are an important quality outcome in this cohort, and care is often similar as in patients with established HF, providers could reasonably be held accountable for their outcomes. Patients with cardiomyopathy (and no co-occurring HF diagnoses) comprise about 11% of the cohort.

2. Patient is aged  $\geq 65$  years at the start of the year prior to the measurement period.

Rationale: Younger Medicare patients represent a distinct population with dissimilar characteristics and outcomes. Additionally, these patients tend to cluster among certain providers. These factors make risk adjustment difficult.

3. Patient is a Medicare FFS beneficiary with continuous enrollment in Medicare Parts A and B during the year prior to the measurement period.

Rationale: Enrollment is necessary to provide clinical information for cohort identification and risk adjustment.

Provider types included for measurement

Because the measure uses the outcome of acute cardiovascular-related admissions to assess quality, the measure limits the clinicians covered (those to whom CMS will attribute patients for measure score calculation) to two categories of providers for whom this outcome reflects care quality. This includes primary care providers (PCPs) and cardiologists.

Primary care providers (PCPs): CMS designates PCPs as physicians who practice internal medicine, family medicine, general medicine, or geriatric medicine, and non-physician providers, including nurse practitioners, certified clinical nurse specialists, and physician assistants.

Cardiologists: Cardiologists are covered by the measure because they provide overall coordination of care for patients with HF and manage the conditions that put HF patients at risk for admission due to acute cardiovascular-related conditions.

#### **S.8. Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*

The measure excludes:

1. Patients without continuous enrollment in Medicare Part A and B for the duration of the measurement period.
2. Patients in hospice during the year prior to the measurement year or in hospice at the start of the measurement year.
3. Patients who have had a heart transplant, been on home inotropic therapy, or who have had a left ventricular assist device (LVAD) placed.
4. Patients with end stage renal disease (ESRD), defined as chronic kidney disease stage 5 or on dialysis.
5. Patients who had no E&M visits with MIPS eligible clinician.

**S.9. Denominator Exclusion Details** *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

The measure excludes patients from the cohort for five reasons.

- 1) Patients without continuous enrollment in Medicare Part A or B during the measurement period.

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Rationale: These patients are excluded to ensure full data availability for outcome assessment and attribution.

2) Patients who were in hospice at any time during the year prior to the measurement year or at the start of the measurement year.

Rationale: The measure excludes these patients even though once a patient enters hospice care, a goal of care is to prevent the need for hospital care. However, ambulatory care providers may have relatively little influence on end-of-life care once a patient is enrolled in hospice and served by a hospice team.

3) Patients who have had a heart transplant, been on home inotropic therapy, or who have had a left ventricular assist device (LVAD) placed.

Rationale: These patients have advanced HF and are at the end of life, often receiving palliative care; thus, the goals of care are typically different, with different levels of threshold for admitting patients. In the case of patients with LVADs, who are at high risk for hospitalization, the threshold for admission is low. Typically, these patients cluster among a few highly specialized providers, making risk adjustment challenging.

4) Patients with end stage renal disease (ESRD) or chronic kidney disease (CKD) Stage 5.

Rationale: These patients are primarily cared for by nephrologists. Additionally, managing their HF and related cardiovascular conditions can be complex and traditional medical prevention and therapy are not as effective.

5) Patients who had no E&M visits with a MIPS eligible clinician.

Rationale: These patients are excluded because they could not be attributed to a provider using the visit-based attribution algorithm.

**S.10. Stratification Information** (Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)

N/A - this measure is not stratified.

**S.11. Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)

Statistical risk model

If other:

**S.12. Type of score:**

Rate/proportion

If other:

**S.13. Interpretation of Score** (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)

Better quality = Lower score

**S.14. Calculation Algorithm/Measure Logic** (Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)

The measure first identifies the cohort of HF patients by applying the inclusion/exclusion criteria. The measure then uses the attribution algorithm to assign patients to MIPS providers. Patients are assigned to the individual clinician (PCP or cardiologist) most responsible for their care, and then subsequently to the TIN designated by the clinician, using our visit-based attribution algorithm. Attribution is done in the measurement period and only patients assigned to a MIPS-eligible clinician will be included in the measure score calculation. The number of admissions and time at risk in the measurement period are then calculated for each patient based on our outcome definition. Factors to be used in risk adjustment are determined in the risk-adjustment period. For the score calculation, the measure uses a hierarchical (two-level) statistical model that accounts for the clustering of patients within MIPS providers and accommodates the varying patient sample sizes of different providers. The measure uses a negative binomial with

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linear variance (NB-1) model since the measure's outcome is a count of the number of admissions for HF patients during the measurement period. The first level of the model adjusts for patient factors. The relationship between patient risk factors and the outcome of admissions is determined based on all patients attributed to MIPS-eligible clinicians. Therefore, the "expected" number of admissions (described below) for each provider is based on the performance of all eligible MIPS providers nationwide.

The second level of the model estimates a random-intercept term that reflects the provider's contribution to admission risk, based on their actual admission rate, the performance of other providers, their case mix, and their sample size.

The measure score is a risk-standardized acute unplanned cardiovascular-related admission rate (RSCAR), calculated as the ratio of the number of predicted admissions to the number of expected admissions multiplied by the crude national rate. The predicted to expected ratio of admissions is analogous to an observed over expected ratio, but the numerator accounts for clustering, sample-size variation, and provider-specific performance. The expected number of admissions is calculated based on the provider's case mix and average intercept among all MIPS providers. The predicted number of admissions is calculated based on the provider's case mix and the estimated provider-specific random intercept term. The algorithm multiplies the predicted to expected ratio for each provider by a constant – the crude rate of acute, unplanned cardiovascular-related admissions among all MIPS providers – for ease of interpretation.

**S.15. Sampling** (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.

N/A

**S.16. Survey/Patient-reported data** (If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)

Specify calculation of response rates to be reported with performance measure results.

N/A

**S.17. Data Source** (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.18.

Claims, Other

**S.18. Data Source or Collection Instrument** (Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)

IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.

2015-2018 Medicare administrative claims and enrollment data, 2013-2017 American Community Survey, 2016 Area Health Resource File

**S.19. Data Source or Collection Instrument** (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

No data collection instrument provided

**S.20. Level of Analysis** (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Clinician : Group/Practice, Clinician : Individual

**S.21. Care Setting** (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Outpatient Services

If other:

**S.22. COMPOSITE Performance Measure** - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)

N/A; this measure is not a composite measure

**2. Validity – See attached Measure Testing Submission Form**

MIPSHFNQFTestingAttachment\_v1.0\_4.19.21.docx

**2.1 For maintenance of endorsement**

*Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

## **2.2 For maintenance of endorsement**

*Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

## **2.3 For maintenance of endorsement**

*Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.*

## **3. Feasibility**

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

### **3a. Byproduct of Care Processes**

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

#### **3a.1. Data Elements Generated as Byproduct of Care Processes.**

*Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims)*

If other:

### **3b. Electronic Sources**

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

**3b.1. To what extent are the specified data elements available electronically in defined fields (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields)** Update this field for **maintenance of endorsement**.

*ALL data elements are in defined fields in a combination of electronic sources*

**3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources. For **maintenance of endorsement**,** if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

*N/A*

**3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.**

**Attachment:**

### **3c. Data Collection Strategy**

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements

and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

**3c.1. Required for maintenance of endorsement.** Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

**IF instrument-based,** consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

*This measure uses administrative claims data and, as such, imposes no data collection burden to measure entities.*

**3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified** (e.g., value/code set, risk model, programming code, algorithm).

*N/A; there are no fees, licensing, or other requirements to use any aspect of this measure as specified.*

## 4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

### 4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

#### 4.1. Current and Planned Use

*NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.*

Specific Plan for Use	Current Use (for current use provide URL)
Public Reporting	
Payment Program	
Not in use	

#### 4a1.1 For each CURRENT use, checked above (update for maintenance of endorsement), provide:

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

*N/A; the measure is not yet in use.*

#### 4a1.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

*N/A; the measure is not currently publicly reported or used in an accountability application. CMS may propose this measure for use under the Merit-based Incentive Payment System.*

#### 4a1.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)



N/A; the measure is not currently publicly reported or used in an accountability application. The measure's purpose is to incentivize high quality care for complex patients with heart failure and cardiomyopathy. The intended audience are primary care and cardiology ambulatory care practices. The timeline for implementation has not been finalized at this time. CMS may propose this measure for use under the Merit-based Incentive Payment System.

**4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.**

**How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.**

1) Technical Expert Panel (TEP): CORE recruited and met with a national TEP throughout measure development. TEP members and commenters included representatives of the measured entities and patients covered by the measure to ensure the measure is as meaningful as possible to all stakeholders. CORE provided performance results and data to TEP members periodically for their review and input. CORE reviewed, considered, and responded to all TEP input.

2) Clinician Committee: In addition to the TEP, CORE assembled a Clinician Committee to provide more detailed input during the measure development process. Specifically, CORE convened a Clinician Committee of professional society representatives and front-line clinicians from rural and/or underserved communities. The Clinician Committee members collectively brought expertise in providing ambulatory care to people with heart failure nationally.

3) Public Comment: CORE hosted a public comment after reviewing the measure with the TEP and the Clinician Committee. We notified CMS listservs, CORE's stakeholders and stakeholder organization listservs including:

? Business and consumer advocacy organizations.

? Condition-related registries.

? Electronic Health Record vendors.

? Healthcare quality-focused organizations.

? Insurance and purchaser organizations.

? National professional associations and clinician societies.

? Patient advocacy groups and patient safety organizations.

? Quality improvement and measurement organizations.

? Research organizations.

? State medical societies.

? Topic knowledge-related organizations.

? The project's national Technical Expert Panel (TEP).

? TEPs and Clinician Committees for related MIPS cost or quality measures under development not covered by this project.

CORE solicited public comments on the measure, and we took all comments into consideration, addressing them individually.

Therefore, performance results and data were provided to members of the TEP and then made public through public comment.

4) CMS included the measure in pre-rulemaking (MAP) processes. CMS added the measure to the 2020 Measures Under Consideration list for NQF Measures Application Partnership (MAP) review. The NQF MAP reviewed the measure in January 2021 as part of the Spring 2021 pre-rulemaking cycle and included it in their public comment processes as well. CORE and CMS reviewed all comments received on the measure and addressed them through the MAP review and CMS regulatory processes, respectively.

**4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**

CORE met with the TEP and Clinician Committee periodically and hosted a public comment period during measure development. CORE provided data and results to the TEP and obtained TEP input during four teleconference meetings throughout the measure development process and solicited TEP input via email. CORE provided data and results to the Clinician Committee and obtained Clinician Committee input during teleconference meetings and one in-person meeting during measure development. Additional input was solicited via email.

**4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**

**Describe how feedback was obtained.**

N/A; the measure has not yet been implemented. During measure development, feedback was obtained as described above in

4a2.1.1.

**4a2.2.2. Summarize the feedback obtained from those being measured.**

N/A; the measure has not yet been implemented. During measure development, feedback was obtained with respect to cohort definition (e.g., exclusion of patients with heart transplant or on home inotropic therapy, exclusion of patients with end stage renal disease), attribution algorithm (e.g., single versus multiple providers), outcome definition (e.g., 10-day buffer period after admission), and risk adjustment (e.g., adjustment for AHRQ SES Index but not for dual eligibility).

**4a2.2.3. Summarize the feedback obtained from other users**

N/A; the measure has not yet been used. Feedback from the MAP included support for the measure concept but the MAP recommended: 1) NQF endorsement and 2) analysis of the appropriateness of the risk adjustment for clinicians with higher caseloads of patients with more complicated or severe heart failure. The MAP noted that while the measure raises concerns that the risk adjustment may not adequately account for advanced heart failure stages, the measure also centers on an important need.

**4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**

In response to TEP and Clinician Committee feedback, the measure was revised with respect to cohort definition, outcome, and risk adjustment. Some of the changes specifically made included exclusion of patients with end stage renal disease and exclusion of patients on home inotropic therapy from the cohort, and adjustment for systolic heart failure. Based on the MAP feedback described above, the measure is being submitted for NQF endorsement. The measure accounts for case-mix and heart failure severity in several ways: 1) excludes patients at advanced stages of heart failure, such as those with implanted left ventricular assist device (LVAD), those who receive home inotropic therapy, or those with prior heart transplant or with end stage renal disease; 2) risk adjusts for AICDs (defibrillators); 3) risk adjusts for systolic heart failure (which portends a poor prognosis); 4) risk adjusts for comorbidities including chronic kidney disease, and for frailty/disability. CORE will continue to evaluate the risk model during regular measure maintenance; notably, the model performs well as currently specified.

**Improvement**

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

**4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)**

If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

N/A. This is a new measure and there is no information available on performance improvement. This measure is not currently used in a program, but the primary goal of the measure is to provide information necessary to implement focused quality improvement efforts. Providers could use the measure information to implement practice improvements, such as those outlined in the Evidence attachment. Practice features that are associated with successfully reducing cardiovascular-related hospitalization include 1) supplementing patient telephone calls with in-person meetings; 2) occasionally meeting in person with providers; 3) acting as a communication hub for providers; 4) providing patients with evidence-based education; 5) providing strong medication management, including guideline-directed therapies; 6) providing comprehensive and timely transitional care after hospitalizations.

Once the measure is implemented, we plan to examine trends in improvements by comparing RSCARs over time.

**4b2. Unintended Consequences**

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

**4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**

N/A. This measure has not yet been implemented.

**4b2.2. Please explain any unexpected benefits from implementation of this measure.**

N/A. This measure has not yet been implemented.

## 5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

### 5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

#### 5.1a. List of related or competing measures (selected from NQF-endorsed measures)

2886 : Risk-Standardized Acute Admission Rates for Patients with Heart Failure

#### 5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

N/A

### 5a. Harmonization of Related Measures

The measure specifications are harmonized with related measures;

**OR**

The differences in specifications are justified

#### 5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications harmonized to the extent possible?

Yes

#### 5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

The MIPS HF admission measure is adapted from the ACO HF admission measure, which was implemented in the Medicare Shared Savings Program in 2015. There are three main ways that the newly developed measure differs from its predecessor. • Cohort: Added cardiomyopathy as a cohort-qualifying condition. • Rationale: Cardiomyopathy codes were included based on feedback received from the TEP and Clinician Committee that these patients are similar to patients with HF, though they may not have (yet) the clinical syndrome for HF – potentially because of good ambulatory care. Since hospitalizations are an important quality outcome in this cohort, and guideline-based care is often similar as in patients with established HF, providers could reasonably be held accountable for their outcomes. Patients with cardiomyopathy (and no co-occurring HF diagnoses) comprise about 11% of the cohort. • Outcome: Narrowed the outcome to focus on admissions whose risk can be reduced by clinicians/groups providing high-quality ambulatory care, so that the measure can be used to assess ambulatory (rather than ACO-wide) care quality. As such, the outcome (acute cardiovascular-related admissions) is narrower and felt to be more in scope with individual and group providers; this is different than the ACO HF measure's outcome of all-cause acute unplanned admissions, which may be more feasible to address in an integrated health system. • Rationale: Although patients with HF and/or cardiomyopathy are vulnerable to a broad range of admission types, focusing on cardiovascular-related admissions reduces overlap with other MIPS measures. Furthermore, cardiologists and PCPs can influence cardiovascular outcomes for these patients. These providers are actively working to reduce volume overload, ischemia, and arrhythmias for this cohort and to improve cardiovascular risk factors like hypertension, diabetes, and lifestyle behaviors. • Risk-adjustment: Added a social risk factor to the risk-adjustment model – namely, the AHRQ SES Index. •

Rationale: Unlike the ACO setting in which participation in ACOs is voluntary and ACOs have an explicit mission to optimize care for patients at risk through traditional and novel strategies, individual MIPS-eligible clinicians and groups of clinicians are less able to mitigate the risk of admission associated with social risk factors, particularly broader residential and community factors. In addition, there are potential unintended consequences of not adjusting. In a mandatory program, such as MIPS, if these factors strongly influence the outcome, not adjusting for them could result in measure scores that translate into downward Medicare payment adjustments for providers serving patients with social risk factors. If the lower scores reflected case mix rather than

quality, it would not advance MIPS policy goals. Further, not adjusting might reduce resources among the providers already facing the largest resource constraints. Moreover, if providers anticipate a poor score on the measure may further reduce their Medicare payments, the measure could create an incentive to reduce access to care for vulnerable patients.

#### 5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

**5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):**

**Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)**

N/A. There are no competing measures.

## Appendix

**A.1 Supplemental materials may be provided in an appendix.** All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

[Attachment Attachment: MIPS\\_HFMethodologyRptSupplement08142020-637534047573679630.xlsx](#)

## Contact Information

**Co.1 Measure Steward (Intellectual Property Owner):** Centers for Medicare & Medicaid Services (CMS)

**Co.2 Point of Contact:** Janis, Grady, Janis.Grady@cms.hhs.gov, 410-786-7217-

**Co.3 Measure Developer if different from Measure Steward:** Yale/Yale New Haven Health Center for Outcomes Research and Evaluation (CORE)

**Co.4 Point of Contact:** Elizabeth, Drye, elizabeth.drye@yale.edu, 203-764-7500-

## Additional Information

**Ad.1 Workgroup/Expert Panel involved in measure development**

**Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.**

The CORE measure development team met regularly and is comprised of experts in epidemiology, internal medicine, quality outcomes measurement, and measure development. CORE convened surgical and statistical consultants with expertise relevant to outpatient surgery and quality measurement to provide input on key methodological decisions.

CORE Measure Development Team:

Erica S. Spatz, MD, MHS – Project Lead

Alexandra Harris, MPH – Project Coordinator

Andrea G. Barbo, MS – Lead Analyst

Shengfan Zhou, MS – Supporting Analyst

Craig S. Parzynski, MS – Supervising Analyst

Zhenqiu Lin, PhD – Analytic Director

Alexander Ferrante, BS – Research Assistant

Julia McMahon, BS – Research Assistant

Faseeha K. Altaf – Project Manager

Megan LoDolce, MA – Contract Manager

Harlan M. Krumholz, MD, SM\* - Contract Principal Investigator

Elizabeth E. Drye, MD, SM\* – Project Director

Jeph Herrin, PhD+ – Statistical Consultant

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+Flying Buttress Associates  
\*Yale School of Medicine

CORE convened a Technical Expert Panel (TEP) comprised of 20 members, including clinicians, patients, and experts in quality improvement to provide input on key methodological decisions.

TEP members:

1. Mary Barton, MD, MPP; Vice President, Performance Measurement; National Committee for Quality Assurance; Washington, D.C.
2. Larry Becker, BS; Director, Strategic Partnerships, Alliances and Analytics (Retired); Xerox; Rochester, NY
3. Jacob Berman, MD, MPH; Medical Director; General Internal Medicine Center, University of Washington; Seattle, WA
4. Jane Brock, MD, MSPH; Clinical Director; Quality Innovation Network – Quality Improvement Organization National Coordinating Center, Telligen; Greenwood Village, CO
5. Brenda Cook, MSN, RN, NEA-BC; Nursing Director; Southcentral Foundation; Anchorage, AK
6. Namirah Jamshed, MBBS; Associate Professor, Division of Geriatric Medicine; University of Texas Southwestern Medical Center; Dallas, TX
7. Lorie Joseph; Patient
8. David Kraus, MD; Advanced Heart Failure and Cardiac Transplant Specialist; Stern Cardiovascular Center; Memphis, TN
9. Rozalina McCoy, MD, MS; Assistant Professor of Medicine; Mayo Clinic; Rochester, MN
10. J. Michael McWilliams, MD, PHD; Associate Professor, Health Care Policy; Harvard Medical School; Cambridge, MA
11. Amy Mullins, MD, CPE, FAAFP; Medical Director, Quality Improvement; American Academy of Family Physicians; Leawood, KS
12. Diane Padden, PhD, CRNP, FAANP; Vice President, Professional Practice & Partnerships; American Association of Nurse Practitioners; Austin, TX
13. Robert Roca, MD, MPH, MBA; Vice President/Medical Director; Sheppard Pratt Health System/American Psychiatric Association; Baltimore, MD
14. Jason Sico, MD, MHS, FAHA, FACP; Assistant Professor of Neurology and Internal Medicine; Yale School of Medicine; New Haven, CT
15. Mary Smith, DNP, FNP-BC, ONP-C, RNFA; Nurse Practitioner; Starkville Orthopedic Clinic; Starkville, MS
16. Barbara Spivak, MD; President; Mount Auburn Cambridge Independent Practice Association; Brighton, MA
17. Jennefer Watson, Patient Caregiver; Jacksonville, FL
18. Daniel Weiner, MD, MS; Associate Professor of Medicine; Tufts University School of Medicine; Boston, MA
19. Roger Wells, PA-C; Family Practice and Emergency Medicine Physician Assistant; Howard County Medical Center; St. Paul, NE
20. Stephanie Wolf-Rosenblum, MD, MMM, FACP, FCCP; Physician Administrator and Vice President of Development and External Affairs; Southern New Hampshire Health System; Nashua, NH
21. Patient; Participation was confidential

CORE also convened a Clinician Committee comprised of 14 members, including front-line clinicians from rural and/or underserved communities, professional/specialty society representatives, as well as other clinicians caring for patients with heart failure. If a Committee member represented a professional/specialty society, it is denoted in brackets after their name and credentials.

1. Scott Baute, MS, PA-C; Cardiology Physician Assistant; George Washington Hospital; Washington D.C. [American Academy of Physician Assistants]
2. Margaret Bowers, DNP, FNP-BC, AACC, CHSE, FAANP; Nurse Practitioner; Duke University School of Nursing; Durham, NC [American Association of Nurse Practitioners]
3. Sara Collins, MD, FACC; Attending Physician; Capital Cardiology Consultants, P.C.; Medical Director, Cardiology – Heart Failure Rehabilitation Program; BridgePoint Hospital National Harbor; Washington, D.C.
4. Patricia Davidson, MD, FACP; Physician; MedStar Health; Washington, D.C.
5. Bhargavi Degapudi, MD; Medical Director, Care Transitions and Palliative Care; AtlantiCare; Atlantic City, NJ
6. John Duane Heick, PT, PhD, DPT; Associate Professor; Northern Arizona University; Physical Therapist; Select/Physiotherapy Associates; Flagstaff, AZ [American Physical Therapy Association]
7. L.E. Gomez, MD, MBA; Assistant Professor of Emergency Medicine; Howard University School of Medicine; Physician Quality Improvement Advisor; HealthCare Dynamics International; Annapolis, MD
8. Paul A. Heidenreich, MD, MS; Professor of Medicine, Vice-Chair Clinical Quality and Analytics; Stanford University School of Medicine; Physician, Director of Echocardiography; VA Palo Alto Health Care System; Palo Alto, CA [Heart Failure Society of America]
9. Barbara Hutchinson, MD, PhD, FACC; Physician and Managing Partner; Chesapeake Cardiac Care, PA; Instructor in Medicine; University of Maryland Hospital; Annapolis, MD
10. Michelle Kittleson, MD, PhD; Director, Post Graduate Medical Education in Heart Failure and Transplantation; Associate

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<p>Professor of Medicine; Director, Heart Failure Research; Cedars-Sinai Medical Center; Los Angeles, CA [American Heart Association]</p> <p>11. Mary Krebs, MD; Family Medicine Physician; HealthSource of Ohio; Family Medicine Faculty; Soin Medical Center; Xenia, OH [American Academy of Family Physicians]</p> <p>12. Joel Rosen, MD, FAAFP, FHM; Medical Director; Christus St. Vincent Regional Medical Center; Santa Fe, NM</p> <p>13. Michael Steinman, MD; Professor of Medicine; University of California at San Francisco School of Medicine; Attending physician; San Francisco Veteran Affairs Medical Center; San Francisco, CA [American Geriatrics Society]; and</p> <p>14. John Teeters, MD Chief of Cardiology; University of Rochester Medical Center; Executive Medical Director; Accountable Health Partners; Director; Heart Failure Center at Highland Hospital; Rochester, NY [American College of Cardiology].</p>
<p><b>Measure Developer/Steward Updates and Ongoing Maintenance</b></p> <p><b>Ad.2 Year the measure was first released:</b></p> <p><b>Ad.3 Month and Year of most recent revision:</b></p> <p><b>Ad.4 What is your frequency for review/update of this measure?</b> N/A</p> <p><b>Ad.5 When is the next scheduled review/update for this measure?</b></p>
<p><b>Ad.6 Copyright statement:</b> N/A</p> <p><b>Ad.7 Disclaimers:</b> N/A</p>
<p><b>Ad.8 Additional Information/Comments:</b> N/A</p>