

Measure Information for the Risk-Standardized Acute Cardiovascular-Related Hospital Admission Rates for Patients with Heart Failure under the Merit-based Incentive Payment System (MIPS) Groups

Performance Year (PY) 2023 Heart Failure Measure Code Specifications

January 1 – December 31, 2023

A. Version History

PY 2023 MIPS HF MIF v1 – Posted 12/9/2022

PY 2023 MIPS HF MIF v2 – Posted 9/5/2024

- Updated to clarify the measure is available only for MIPS groups, subgroups, virtual groups, and APM Entities that include at least 1 cardiologist and have at least 21 cases.

B. Measure Name

Risk-Standardized Acute Cardiovascular-Related Admission Rates for Patients with Heart Failure under the Merit-based Incentive Payment System

C. Measure Description

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.

This measure was endorsed by the National Quality Forum (NQF) (ID: #3612).





D. Rationale

Patients with heart failure (HF) or cardiomyopathy are vulnerable to a range of complications that may put them at risk for cardiovascular-related hospitalizations, including worsening of HF symptoms and destabilization due to other conditions, such as respiratory disease or infection. The risk for hospitalization may relate to an individual's clinical and social/community risk factors but is also affected by the quality of care received, including adoption of guideline-directed medical therapy, early intervention for acute symptoms, care coordination across providers, and support for self-management.

Acute unplanned cardiovascular-related admission rates are an effective marker of ambulatory care quality for patients with HF or cardiomyopathy. Patients receiving optimal care should use fewer unplanned inpatient services than those who do not or those who receive fragmented care. There is strong evidence supporting the assertion that ambulatory care clinicians can influence acute unplanned admission rates by providing high quality of care [1-13]. These studies highlighted several features of care delivery that were associated with lower admission rates: strong care coordination across providers, provision of evidence-based care and education for patients, strong medication management, comprehensive and timely transitional care after hospitalization, and continuity of care [1-13].

Thus, the anticipated net benefits of this cardiovascular-related 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 taxpayers.

Overall, this measure will provide the Centers for Medicare & Medicaid Services (CMS) with a valuable tool for assessing the performance of groups (Taxpayer Identification Numbers (TINs)) in MIPS.

E. Measure Outcome (Numerator)

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.

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. Admissions 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 left ventricular assist device (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). 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. [14,15]. 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.

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.

F. Population Measured (Denominator)

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 (HF) or cardiomyopathy. The inclusion criteria are:

1. Patient has one principal discharge diagnosis of HF/cardiomyopathy from inpatient codes 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. The codes that define the cohort are in table 1 of the data dictionary.
2. Patient is aged ≥ 65 years at the start of the year prior to the measurement period.

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

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. The measure does not include advanced heart failure/transplant specialists for attribution given that patients with most severe heart failure may be concentrated among these provider types.

For PY 2023, the measure is available only for MIPS groups, subgroups, virtual groups, and APM Entities that include at least 1 cardiologist and have a minimum of 21 cases.

G. Exclusions

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.
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.
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) or chronic kidney disease (CKD) Stage 5.
5. Patients who had no E&M visits with a MIPS eligible clinician.

H. Data Collection Approach and Measure Collection

This measure is calculated from Medicare inpatient claims, Medicare outpatient claims (hospital outpatient and Part B Carrier claims), Medicare beneficiary enrollment data, Durable Medical Equipment claims, the American Community Survey, and the Area Health Resource Files.

The measure is available only for MIPS groups, subgroups, virtual groups, and APM Entities that include at least 1 cardiologist and have a minimum of 21 cases.

I. Methodological Information and Measure Construction

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 only one visit with a cardiologist and has seen the PCP at least twice, 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 Medicare Taxpayer Identification Number (TIN) level, which includes solo clinicians and clinician groups who have chosen to report their quality measure under a common TIN. At the TIN level, patients are first assigned to the



clinician, most responsible for their care (using the algorithm for individual clinician-level attribution above). For this step, clinicians are identified by their National Provider Identifier (NPI)/TIN. 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.

Calculation Algorithm/Measure Logic:

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 clinician groups. 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 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 (see Risk Adjustment below). 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.



Risk Adjustment:

The final patient-level risk-adjustment model includes 30 risk-adjustment variables, including 29 demographic and clinical variables and one social risk factor. We used a negative binomial regression model with linear variance (NB-1) to risk adjust the measure.

The risk adjustment variables are as follows:

1. Age
2. Advanced cancer
3. Advanced cardiopulmonary failure
4. Arrhythmia
5. Diabetes and metabolic conditions
6. Heart rhythm and conduction disorders
7. High risk cardiovascular conditions
8. History of coronary artery bypass graft
9. Hospital bed
10. Iron deficiency anemia
11. Kidney disease
12. Liver disease
13. Low risk cardiovascular conditions
14. Marked disability/frailty
15. Medicare Entitlement Reason: disability
16. Morbid obesity
17. Neurological disease
18. Other disability and paralysis

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19. Other organ transplants and implants
 20. Oxygen
 21. Pacemaker/cardiac resynchronization therapy/implantable cardiac device
 22. Psychiatric disorders
 23. Pulmonary disease
 24. Structural heart disease
 25. Substance abuse
 26. Systolic HF
 27. Urinary disorders
 28. Ventricular tachycardia/ventricular fibrillation
 29. Wheelchairs
 30. Low socioeconomic status (AHRQ SES Index Score <25%)

See data dictionary for specific codes and definitions for each risk factor, as well as risk factor frequencies and rate ratios.

J. Further Information

To access additional measure specifications, please visit <https://qpp.cms.gov/about/resource-library>.

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