



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 #: 2886

Corresponding Measures:

De.2. Measure Title: Risk-Standardized Acute Admission Rates for Patients with Heart Failure

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

De.3. Brief Description of Measure: Rate of risk-standardized acute, unplanned hospital admissions among Medicare fee-for-service (FFS) beneficiaries 65 years and older with heart failure who are assigned to an Accountable Care Organization (ACO).

1b.1. Developer Rationale: The goal of this measure is to evaluate and to improve the quality of care for patients with heart failure cared for by ACOs. These patients account for a significant proportion of Medicare beneficiaries and they experience high morbidity and costs associated with their disease. These patients need efficient, coordinated, and patient-centered care management. They also benefit from provider support and infrastructure that facilitate effective chronic disease management. This measure is focused on hospital admissions for acute illness as the outcome because these admissions are often sentinel events associated with high morbidity as well as physical and emotional stress; they also result in high costs for both the patient and the ACO. Research shows that effective health care can lower the risk of admission for this vulnerable group of patients. For example, efforts to improve coordination and navigation of the healthcare system, along with home-based interventions and exercise-based rehabilitation therapy among patients with heart failure may reduce the risk of hospitalization.

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

References:

Centers for Medicare & Medicaid Services (CMS). Medicare Health Support. 2012; <https://www.cms.gov/Medicare/Medicare-General-Information/CCIP/>. Accessed March 27, 2014.

Brown RS, Peikes D, Peterson G, Schore J, Razafindrakoto CM. Six features of Medicare coordinated care demonstration programs that cut hospital admissions of high-risk patients. *Health Affairs*. 2012 Jun 2012;31(6):1156-1166.

McCarthy D, Cohen A, Johnson MB. Gaining Ground: Care Management Programs to Reduce Hospital Admissions and Readmissions Among Chronically Ill and Vulnerable Patients. The Commonwealth Fund, New York. 2013.

Patient Protection and Affordable Care Act, 42 U.S.C., §3022 (2010).

Zhang NJ, Wan TT, Rossiter LF, Murawski MM, Patel UB. Evaluation of chronic disease management on outcomes and cost of care for Medicaid beneficiaries. *Health policy (Amsterdam, Netherlands)*. May 2008;86(2-3):345-354.

Inglis SC, Pearson S, Treen S, Gallasch T, Horowitz JD, Stewart S. Extending the horizon in chronic heart failure: effects of multidisciplinary, home-based intervention relative to usual care. *Circulation*. Dec 5 2006;114(23):2466-2473.

Austin J, Williams WR, Ross L, Hutchison S. Five-year follow-up findings from a randomized controlled trial of cardiac rehabilitation for heart failure. *European journal of cardiovascular prevention and rehabilitation: official journal of the European Society of*

Cardiology, Working Groups on Epidemiology & Prevention and Cardiac Rehabilitation and Exercise Physiology. Apr 2008;15(2):162-167.

Taylor RS, Sagar VA, Davies EJ, et al. Exercise-based rehabilitation for heart failure. The Cochrane database of systematic reviews. 2014;4:Cd003331.

S.4. Numerator Statement: The outcome for this measure is the number of acute unplanned admissions per 100 person-years at risk for admission. Persons are considered at risk for admission if they are alive, enrolled in Medicare FFS, and not currently admitted to an acute care hospital. (See S.5, Numerator Details, for more information.)

S.6. Denominator Statement: The target population is ambulatory Medicare FFS beneficiaries aged 65 years and older assigned to the ACO with a diagnosis of heart failure.

S.8. Denominator Exclusions: The measure excludes:

1. Patients with left ventricular assist devices (LVADs).

2. Beneficiaries who are alive during the measurement year and do not have 12 months of continuous enrollment in Medicare Part A during the measurement year, or beneficiaries who die during the measurement year and are not continuously enrolled for the time period up until their date of death.

De.1. Measure Type: Outcome

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

S.20. Level of Analysis: Integrated Delivery System

IF Endorsement Maintenance – Original Endorsement Date: Dec 09, 2016 **Most Recent Endorsement Date:** Dec 09, 2016

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.

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

[Heart_Failure_ACO_Admission_Measure_NQF_Evidence_Form_01-29-16_v1.0.docx](#)

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.

The goal of this measure is to evaluate and to improve the quality of care for patients with heart failure cared for by ACOs. These patients account for a significant proportion of Medicare beneficiaries and they experience high morbidity and costs associated with

their disease. These patients need efficient, coordinated, and patient-centered care management. They also benefit from provider support and infrastructure that facilitate effective chronic disease management. This measure is focused on hospital admissions for acute illness as the outcome because these admissions are often sentinel events associated with high morbidity as well as physical and emotional stress; they also result in high costs for both the patient and the ACO. Research shows that effective health care can lower the risk of admission for this vulnerable group of patients. For example, efforts to improve coordination and navigation of the healthcare system, along with home-based interventions and exercise-based rehabilitation therapy among patients with heart failure may reduce the risk of hospitalization.

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

References:

Centers for Medicare & Medicaid Services (CMS). Medicare Health Support. 2012; <https://www.cms.gov/Medicare/Medicare-General-Information/CCIP/>. Accessed March 27, 2014.

Brown RS, Peikes D, Peterson G, Schore J, Razafindrakoto CM. Six features of Medicare coordinated care demonstration programs that cut hospital admissions of high-risk patients. *Health Affairs*. 2012 Jun 2012;31(6):1156-1166.

McCarthy D, Cohen A, Johnson MB. Gaining Ground: Care Management Programs to Reduce Hospital Admissions and Readmissions Among Chronically Ill and Vulnerable Patients. The Commonwealth Fund, New York. 2013.

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Zhang NJ, Wan TT, Rossiter LF, Murawski MM, Patel UB. Evaluation of chronic disease management on outcomes and cost of care for Medicaid beneficiaries. *Health policy (Amsterdam, Netherlands)*. May 2008;86(2-3):345-354.

Inglis SC, Pearson S, Treen S, Gallasch T, Horowitz JD, Stewart S. Extending the horizon in chronic heart failure: effects of multidisciplinary, home-based intervention relative to usual care. *Circulation*. Dec 5 2006;114(23):2466-2473.

Austin J, Williams WR, Ross L, Hutchison S. Five-year follow-up findings from a randomized controlled trial of cardiac rehabilitation for heart failure. *European journal of cardiovascular prevention and rehabilitation: official journal of the European Society of Cardiology, Working Groups on Epidemiology & Prevention and Cardiac Rehabilitation and Exercise Physiology*. Apr 2008;15(2):162-167.

Taylor RS, Sagar VA, Davies EJ, et al. Exercise-based rehabilitation for heart failure. *The Cochrane database of systematic reviews*. 2014;4:Cd003331.

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.*

We report the variation in ACO performance score using the 2012 Medicare Full Sample.

There were 2,581,892 patients in the 2012 Medicare Full Sample who met our inclusion and exclusion criteria for the measure cohort. Among these, there were 123,626 patients in 114 ACOs.

The crude US national Medicare FFS rate of acute, unplanned admissions per person-year among patients with heart failure was 85.5 per 100 person-years.

Among ACOs, the mean RSAAR for calendar year 2012 was 81.9 per 100 person-years (standard deviation = 11.6). The median RSAAR was 81.5 per 100 person-years (interquartile range [IQR] 73.6 to 88.8). The minimum RSAAR score was 53.7 per 100 person-years; the 5th percentile was 64.6 per 100 person-years; the 95th percentile was 101.7 per 100 person-years; and maximum score was 120.7 per 100 person-years.

We observed that 61 ACOs (53.5%) had RSAARs that were ‘no different than the national rate’ (of all Medicare FFS beneficiaries with heart failure). An additional 37 ACOs (32.5%) had ‘better than the national rate’ RSAAR scores and 16 (14.0%) were ‘worse than the national rate.’

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.

Not applicable.

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.

We examined disparities in ACO performance based on the proportion of patients of low socioeconomic status (SES) being cared for by each ACO.

Identification of ACOs caring for few and many ‘low SES’ patients

We identified low SES patients using two variables: the Agency for Healthcare Research and Quality (AHRQ) SES Index and patient Medicare and Medicaid dual-eligibility status.

Using the AHRQ SES Index (described in the NQF Testing form, Section 2b4.3 and Appendix E of the attached technical report), which is a continuous variable, we created a dichotomous low-SES variable by assessing the distribution of SES scores across a broad sample of Medicare FFS beneficiaries and labeling patients with the lowest 20% of scores as “low SES” (see Testing Form, Section 1.8, for further details). We then categorized ACOs into quartiles based on the proportion of low SES patients in their cohort (first quartile (Q1) = ‘few’ low SES patients, fourth quartile (Q4) = ‘many’ low SES patients).

Similarly, we categorized ACOs by the proportion of Medicaid dual-eligible patients in their cohort into ACOs caring for ‘few’ (Q1) and ‘many’ (Q4) Medicaid dual-eligible patients.

Results:

AHRQ SES Index Analyses and Medicaid Dual-Eligibility Analyses

Using the AHRQ SES Index, for the 29 ACOs in Q1, the proportion of low SES patients ranged from 0 to 3.9%; for the 28 ACOs in the fourth quartile, the proportion of low SES patients ranged from 27.3% to 97.1%.

Among the 29 ACOs caring for few low SES patients (Q1), 2 (6.9%) performed worse than the national rate, 17 (58.6%) performed ‘no different than the national rate,’ and 10 (34.5%) performed ‘better than the national rate.’ Among the 28 ACOs caring for many low SES patients (Q4), 7 (25.0%) performed ‘worse than the national rate,’ 16 (57.1%) performed ‘no different than the national rate,’ and 5 (17.9%) performed ‘better than the national rate.’ (See attached Technical Report, Table 10).

Using Medicaid dual eligibility as an indicator of low SES, among the 29 ACOs caring for few Medicaid dual-eligible patients (Q1), the proportion of Medicaid dual-eligible patients ranged from 3.2% to 9.7%; among the 29 ACOs caring for the most Medicaid dual-eligible patients (Q4) the proportion of Medicaid dual-eligible patients ranged from 22.5% to 70.9%.

Among the 29 ACOs with few Medicaid dual-eligible patients (Q1), 1 (3.4%) performed worse than the national rate, 14 (48.3%) performed no different than the national rate, and 14 (48.3%) performed better than the national rate. Among the 29 ACOs with many Medicaid dual-eligible patients (Q4), 7 (24.1%) performed ‘worse than the national rate,’ 17 (58.6%) performed ‘no different than the national rate,’ and 5 (17.2%) performed ‘better than the national rate.’ (See attached Technical Report, Table 10).

The distribution of RSAARs across ACOs caring for increasing proportions of low SES patients reveals two patterns: (1) ACOs in Q1 (few low SES patients) tend to have lower RSAARs than ACOs in Q4 (many low SES patients); (2) there is more variation in RSAARs among ACOs in Q4 as compared with ACOs in Q1-Q3. There are small differences in these patterns when analyses are performed using Medicaid dual-eligibility as an indicator of SES status (see Figure 17 of the attached technical report).

Socioeconomic Status Interpretation

Among a group of 114 ACOs, there is substantial variation in performance among ACOs caring for many (Q4) and few (Q1) low SES patients. ACOs serving many low SES patients more often perform worse than the national rate compared with ACOs serving few low SES patients. This was true using either the AHRQ SES index (25.0% vs. 6.9%, respectively) or Medicaid dual-eligibility status (24.1% vs. 3.4%, respectively) as an indicator of patients' SES. However, among ACOs serving many low SES patients, using the AHRQ SES index, 17.9% performed 'better than the national rate;' using Medicaid dual-eligibility status, 17.2% performed 'better than the national rate.'

We also found that performance scores did not change appreciably after adjusting the models for patients' SES. As demonstrated in the Testing Form, Section 2b4.11, the Spearman correlation comparing the ACO measure scores estimated with and without risk adjustment for the AHRQ SES Index was 0.990. Similarly, the Spearman correlation for the scores estimated with and without patients' Medicaid dual eligibility was 0.991. These results demonstrate that adjusting for SES at the patient level has little effect on the measure score.

We did not adjust the measure for patient-level SES. Conceptually, ACOs should and do influence a broad range of patient and community-level factors that can mitigate the risk of admission associated with low SES, and we do not want to adjust for modifiable factors. Empirically, our results indicate that SES status plays little role at the patient level.

References:

Wynn B. Analysis of the Joint Distribution of Disproportionate Share Hospital Payments. 2002.

Bonito A, Bann C, Eicheldinger C, Carpenter L. Creation of new race-ethnicity codes and socioeconomic status (SES) indicators for Medicare beneficiaries. Final Report, Sub-Task. 2008;2.

Krieger N, Chen JT, Waterman PD, Soobader MJ, Subramanian SV, Carson R. Choosing area based socioeconomic measures to monitor social inequalities in low birth weight and childhood lead poisoning: The Public Health Disparities Geocoding Project (US). J Epidemiol Community Health. 2003a Mar;57(3):186-99

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

Not applicable. Data on disparities are presented above.

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):

Cardiovascular, Cardiovascular : Congestive Heart Failure

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

Care Coordination, Health and Functional Status : Change, Health and Functional Status : Total Health, Safety, Safety : Complications

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

Elderly

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.)

<https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/program-guidance-and-specifications.html>

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:

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: [NQF_2886_Heart_Failure_Data_Dictionary_v1.0_12.2018.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.

Not applicable; there are no important changes to the measure specifications.

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 unplanned admissions per 100 person-years at risk for admission. Persons are considered at risk for admission if they are alive, enrolled in Medicare FFS, and not currently admitted to an acute care hospital. (See S.5, Numerator Details, for more information.)

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).

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

Identification of Planned Admissions:

The measure outcome includes only unplanned admissions. Although clinical experts agree that high-quality care in the ambulatory setting should reduce hospital admissions, variation in planned admissions (such as for elective surgery) does not typically reflect quality differences. We based the planned admission algorithm on the Centers for Medicare & Medicaid Services (CMS) Planned Readmission Algorithm Version 3.0, which CMS originally created to identify planned readmissions for the hospital-wide readmission measure. In brief, the algorithm identifies a short list of always planned admissions (i.e., those where the principal discharge diagnosis is major organ transplant, obstetrical delivery, or maintenance chemotherapy), as well as those admissions with a potentially planned procedure (e.g., total hip replacement or cholecystectomy) AND a non-acute principal discharge diagnosis code. Admissions that include potentially planned procedures that might represent complications of ambulatory care, such as cardiac

catheterization, are not considered planned. To adapt the algorithm for this measure, we removed cardiac catheterization and amputation from the potentially planned procedure list because the need for these procedures might reflect progression of clinical conditions that potentially could have been managed in the ambulatory setting to avoid admissions for these procedures. We have since updated the planned admission algorithm to align with Version 4.0_2019 of the planned readmission algorithm to incorporate newly released ICD-10 codes.

For more detail on the planned admission algorithm, please see the following worksheets in the attached Data Dictionary, sheets: 'HF PAA PA1', 'HF PAA PA2', 'HF PAA PA3', and 'HF PAA PA4'.

Outcome Attribution:

The outcome is attributed to the ACO to which the patient is assigned. Patients are assigned to ACOs according to the specific ACO program assignment algorithm. For example, for the Medicare Shared Savings Program (Shared Savings Program), patients are retrospectively assigned to an ACO if they obtained the plurality of their primary care through the ACO's providers during the measurement year. Information on ACO beneficiary assignment can be found here: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/Shared-Savings-Losses-Assignment-Spec-V6.pdf>

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

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

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).

Note: The denominator of the measure score is the expected number of admissions for the ACO given its case mix; we further elaborate on the measure score calculation in section S.14. We use this section to describe the measure cohort (target population).

The targeted patient population is Medicare FFS beneficiaries aged 65 years and older assigned to the ACO during the measurement period with a diagnosis of heart failure. To be included in the cohort, patients must have one inpatient principal discharge diagnosis code of heart failure or two heart failure diagnosis codes in any position (Medicare Part A inpatient/outpatient and Part B Carrier claims) within one or two years prior to the measurement period. We allowed prior year claims to define the cohort since there is no specified optimal frequency of follow-up visits among stable, ambulatory patients (i.e., patients without a change in their symptoms may never be hospitalized and may only be seen annually). To be included in the cohort, patients must be enrolled full-time in both Part A and B during the year prior to the measurement period.

Heart failure is defined using the International Classification of Diseases, Tenth Revision, (ICD-10) diagnosis codes identified in Medicare Part A inpatient/outpatient and Part B Carrier claims data. Patients excluded from the cohort are identified using ICD-10 procedure (PCS) codes in Medicare Part A outpatient claims and with the Medicare Denominator File. The ICD-10 codes that define the cohort are listed in Data Dictionary worksheet 'HF cohort' and cohort exclusions are listed in Data Dictionary worksheet 'HF exclusions.'

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

The measure excludes:

1. Patients with left ventricular assist devices (LVADs).
2. Beneficiaries who are alive during the measurement year and do not have 12 months of continuous enrollment in Medicare Part A during the measurement year, or beneficiaries who die during the measurement year and are not continuously enrolled for the time period up until their date of death.

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.)*

1. Patients with LVADs (see Data Dictionary worksheet 'HF exclusions' for codes to identify exclusion). We identify patients as having an LVAD based on ICD-10 PCS codes in Medicare Part A inpatient/outpatient claims or Part B Carrier claims within one year prior to the measurement year.

2. Beneficiaries who are alive during the measurement year and do not have 12 months of continuous enrollment in Medicare Part A during the measurement year are excluded. Beneficiaries who die during the measurement year are excluded if they do not have continuous enrollment in Medicare Part A up until their date of death (i.e., the 12-month requirement is relaxed for these beneficiaries.) Beneficiaries with continuous enrollment until death are no longer considered at risk for admission after the date of death.

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.)

Not applicable. 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 risk-standardized acute admission rate (RSAAR) for each ACO is calculated as the number of "predicted" to the number of "expected" admissions per 100 person-years, multiplied by the national rate of admissions among all assigned ACO beneficiaries with heart failure—i.e., all assigned ACO beneficiaries with heart failure are used in the measure score calculation, and a score is generated for each ACO.

1. Two-level hierarchical statistical models, accounting for clustering of patients within ACOs and patient-level characteristics, are estimated. The measure uses a negative binomial model with a log offset since our outcome is a count of the number of admissions. The first level of the model adjusts for patient factors by accounting for the association between patient risk factors and the outcome of admission estimated using all assigned fee-for-service heart failure patients. The second level of the model estimates a random-intercept term that reflects the ACO's contribution to admission risk, based on its actual admission rate, the performance of other providers with similar case mix, and its sample size. The ACO-specific random intercept is used in the numerator calculation to derive ACO-specific number of "predicted" admissions per person-year.

2. The expected number of admissions is calculated from the model and based on the ACO's case mix and the ACO national average intercept.

3. The predicted number of admissions is calculated from the model and based on the ACO's case mix and the estimated ACO-specific intercept term.

4. The measure score is the ratio of predicted admissions over the expected number of admissions, multiplied by the national rate of acute, unplanned admissions among all ACO assigned beneficiaries. The predicted to expected ratio of admissions is analogous to an observed/expected ratio, but the numerator accounts for clustering and sample-size variation.

5. We multiply the ratio for each ACO by a constant, the national rate of acute, unplanned admissions per 100 person-years at risk for hospitalization, for ease of interpretation (RSAAR).

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.

Not applicable. This is not based on a sample or survey.

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.

Not applicable. This is not based on a sample or survey.

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

If other, please describe in S.18.

Claims, Enrollment Data, 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.

Medicare administrative claims and enrollment data

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)

Integrated Delivery System

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.)

Not applicable.

2. Validity – See attached Measure Testing Submission Form

Heart_Failure_ACO_Admission_Measure_NQF_Testing_Form_01-29-16_v1.0.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 electronic claims

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).

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.

Administrative data are routinely collected as part of the billing process.

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).

Not applicable. There are no fees, licensing, or other requirements to use any aspect of the 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)
Payment Program	

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

Measure is currently not 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?)

This measure is not currently publicly reported or used in an accountability application because it only recently completed development. However, in the November 13, 2014 Physician Fee Schedule final rule, CMS finalized adding the measure to the Medicare Shared Savings Program quality measure set (see 79 FR 67912; <https://www.gpo.gov/fdsys/pkg/FR-2014-11-13/pdf/2014-26183.pdf>).

The measure is planned for pay-for-reporting in the Medicare Shared Savings Program for 2015 and 2016 reporting periods (79 FR 67912, 67916) and for pay-for-performance in the Medicare Shared Savings Program beginning 2017 reporting period (79 FR 67912, 67916).

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.)

This measure will be used in one or more CMS programs as noted above in 4a.2. The measure has been finalized for use in the Medicare Shared Savings Program. The measure will be pay-for-reporting initially for the 2015 and 2016 reporting periods and then as pay-for-performance beginning in the 2017 reporting period.

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.

The measure has been pay-for-reporting in the Medicare Shared Savings Program (Shared Savings Program) since performance year 2015 and is pay-for-performance in the Shared Savings Program for ACOs in Performance Year 3 of their first agreement period for performance year 2017 reporting period. The measure is also pay for performance in performance year 2018. Performance is shared in annual quality reports with 559 Shared Saving Program ACOs (full population for performance year 2018). Performance is also being calculated and shared quarterly with rolling 12-month utilization windows to assist ACOs in better tracking their performance and the efficacy of quality improvement activities between annual quality reports. Beginning with performance year 2019, the Diabetes and Heart Failure measures will no longer be in the Shared Savings Program measure set; however, CMS will continue to provide information to ACOs on measure performance in quarterly claims-based quality reports initiated for use in ACO quality improvement activities. See 4a.2.1.2 for the provision of information on assistance with interpretation.

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.

CMS provides the following to ACOs:

1. Performance results in Annual Quality Reports; approximately, 500 Shared Savings Program ACOs receive the results each year. These reports also contain the benchmark performance rates, national mean of all ACO performance rates, and whether the ACO's performance rate represents a significant improvement from the prior performance year.
2. Quick Reference Guides to help ACOs better understand how the measure is calculated and how the measure scores are to be interpreted. Updates to the reference guides are made and provided as needed.
3. Detailed specifications on measure calculation and the calculation of benchmarks are on the CMS website (Shared Savings Program: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/program-guidance-and-specifications.html>; Next Generation ACO Connect: <https://app.innovation.cms.gov/NGACOConnect/CommunityLogin>). Measure Information Forms (MIFs) containing detailed information and codes are published and updated annually. Detailed specifications are updated at least once annually, and calculations of benchmarks are updated every other year.
4. Educational webinars: Each year, the production contractor hosts a webinar in the late spring/early summer that covers the content of the quick reference guides and a webinar in the late summer/early fall to review the measure results. During these webinars, ACOs may ask the production contractor and CMS questions about the measures. ACOs may also submit questions to either the Model/Program-specific mailbox or the Quality Payment Program Service Center for a written response.

ACOs are not required to collect/submit data for this measure (beyond their usual billing practices); therefore, it is not necessary for CMS to provide an explanation of the processes of collecting and submitting data.

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.

ACOs may ask the production contractor and CMS questions about the measure during two annual webinars or submit questions to either the Model/Program-specific mailbox. The production contractor and CMS provide responses in writing.

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

CMS has not received feedback on measure performance or implementation of the measure from any recipients of the measures' performance rates. Questions related to interpretation of the measure performance rate have been answered primarily using the Quick Reference Guides.

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

During CMS Learning Collaborative Webinars, successful ACOs gave presentations to peers that included use of admission measures as part of internal quality improvement initiatives. ACOs have expressed that tracking to admission rates is a useful monitoring approach.

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.

Not applicable; no feedback was received.

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.

The measure is not currently used in a quality improvement program, but the primary goal of the measure is to provide ACOs with information necessary to implement focused quality improvement.

This measure was evaluated by a group of clinical experts and a technical expert panel (TEP) throughout the measure development process. We received input and feedback on key methodological, clinical, and other measure decisions as well as on its utility in guiding focused quality improvement within ACOs.

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.

In designing the measure, we sought to minimize the potential of this measure to result in the denial of future care to high-risk individuals. We developed the patient cohort exclusions and risk-adjustment model to ensure providers who care for patients at higher risk of admission will not be disadvantaged in the measure. CMS is committed to monitoring this measure's use and assessing potential unintended consequences over time.

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

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)

0277 : Congestive Heart Failure Rate (PQI 08)

0709 : Proportion of patients with a chronic condition that have a potentially avoidable complication during a calendar year.

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

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?

No

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

The measures listed above are NQF-endorsed. There are several differences between our measure and these two NQF measures. 1.

The cohort populations are different. The NQF measures focus on patients aged 18-65 years and 18+ years, respectively, for the two measures; thus, the cohorts have limited overlap. 2. The risk-adjustment models are different. NQF #0709 is not risk-adjusted; NQF #0277 is risk-adjusted for age and sex only, while our measures are fully risk-adjusted. 3. The outcomes measured

(NQF 0709: potentially avoidable complications; NQF 0277: heart failure admissions) are different from our outcome of acute, all-cause admission rates.

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.)

Not applicable.

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:** [Heart_Failure_ACO_Admission_Measure_NQF_Appendix_01-29-16_v1.0.pdf](#)

Contact Information

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

Co.2 Point of Contact: Vinitha, Meyyur, Vinitha.meyyur@cms.hhs.gov, 410-786-8819-

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

Co.4 Point of Contact: Elizabeth, Drye, Elizabeth.drye@yale.edu, 203-764-5700-

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.

TEP Members:

CORE convened a TEP of clinicians, patients, purchasers, and experts in quality improvement to provide input on key methodological decisions.

Lawrence M. Becker, BS – Xerox Corporation (Director, Strategic Partnerships, Alliances and Analytics)

Alex Blum, MD, MPH – Evergreen Health Cooperative (Chief Medical Officer)

Sanjay Doddamani, MD – Geisinger Health System (System-wide Chief of Advanced Cardiac Disease HF)

Kevin Fiscella, MD, MPH – University of Rochester Medical Center (Professor of Family Medicine)

Elbert Huang, MD, MPH – University of Chicago (Associate Professor of Medicine, Director of the Center for Translational and Policy Research of Chronic Diseases, and Associate Director of the Chicago Center for Diabetes Translation Research)

Bruce Leff, MD – Johns Hopkins University School of Medicine (Professor of Medicine, Division of Geriatric Medicine); The Johns Hopkins University Bloomberg School of Public Health (Faculty, Health Services Research Development Center and Lipitz Center for Integrated Health Care)

Andy Miller, MD, MPH – Healthcare Quality Strategies, Inc. (Medical Director); Colorado Foundation for Medical Care (CMO, Integrating Care for Populations & Communities National Coordinating Center)

Ami Parekh, MD, JD – University of California, San Francisco (Medical Director for Health System Innovation)

Christine Ritchie, MD – University of California, San Francisco (Professor of Medicine, Division of Geriatrics)

Two patients with chronic conditions (anonymous)

CORE Measure Development Team:

<p>Faseeha Altaf, MPH – Research Project Coordinator Haikun Bao, PhD – Lead Analyst, diabetes measure Susannah Bernheim, MD, MHP – Director of CMS Projects; Clinical Investigator Kanchana Bhat, MPH – Senior Project Manager Ying Dai, PhD – Lead Analyst Weiwei Zhang, MPH – Supporting Analyst Elizabeth Drye, MD, SM – Project Director; Project Lead, MCCs measure Elizabeth Eddy, BA – Research Project Coordinator Leora Horwitz, MD, MHS – Clinical Investigator Erin Joyce, BA – Research Assistant Zhenqiu Lin, PhD – Managing Analyst Harlan Krumholz, MD, SM – Director, CORE Kasia Lipska, MD, MHS – Project Lead Julia Montague, MPH – Research Project Coordinator II/Project Manager Craig Parzynski, MS – Supporting Analyst Joseph Ross, MD, MHS – Clinical Investigator, CORE Erica Spatz, MD, MHS – Project Lead La’Mont Sutton, MPH – Research Associate Vera Zhang, MPH – Supporting Analyst</p>
<p>Measure Developer/Steward Updates and Ongoing Maintenance Ad.2 Year the measure was first released: Ad.3 Month and Year of most recent revision: Ad.4 What is your frequency for review/update of this measure? Not applicable. Ad.5 When is the next scheduled review/update for this measure?</p>
<p>Ad.6 Copyright statement: Not applicable. Ad.7 Disclaimers: Not applicable.</p>
<p>Ad.8 Additional Information/Comments: Not applicable.</p>