ACO #10 – Prevention Quality Indicator (PQI): Ambulatory Sensitive Conditions Admissions for Heart Failure (HF)

Measure Information Form (MIF)

Data Source

- Medicare Part B Carrier claims data
- Medicare Outpatient claims data
- Medicare Inpatient claims data
- Medicare beneficiary enrollment data

Measure Set ID

- ACO #10

Version Number and effective date

- Version 2.0, effective 1/1/13–12/31/13; 1/1/14–12/31/14

CMS approval date

- 9/12/13

NQF ID

- #277, adapted for quality measurement in Medicare Accountable Care Organizations

Date Endorsed

- N/A

Care Setting

- Hospital

Unit of Measurement

- Accountable Care Organization (ACO)

Measurement Duration

- Calendar Year

Measurement Period

- Calendar Year

Measure Type

- Outcome

Measure Scoring

- Prevention quality indicator (PQI) score, that is a ratio of observed admissions to expected admissions for Heart Failure (HF)

Payer source

- Medicare Fee-for-Service

Improvement notation

- Lower PQI scores are better

Measure steward

- Agency for Healthcare Research and Quality (AHRQ) with adaptations by Centers for Medicare and Medicaid Services (CMS) (co-stewards).

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- This Medicare ACO PQI HF quality measure is adapted from the general population PQI quality measure for HF that is developed by AHRQ (AHRQ, 2012).

Measure description

- All discharges ICD-9-CM principal diagnosis code for HF in adults ages 18 years and older, for ACO assigned or aligned Medicare beneficiaries with HF, with risk-adjusted comparison of observed discharges to expected discharges for each ACO.

Rationale

Hospital admissions for HF are a Prevention Quality Indicator of interest to comprehensive health care delivery systems, including ACOs. HF can often be controlled in an outpatient setting. Evidence suggests that these hospital admissions could have been avoided through high quality outpatient care, or the condition would have been less severe if treated early and appropriately. Proper outpatient treatment and adherence to care may reduce the rate of occurrence for this event, and thus of hospital admissions.

Outpatient interventions such as the use of protocols for ambulatory management of low-severity patients and improvement of access to outpatient care would most likely decrease inpatient admissions for CHF. In addition, physician management of patients with CHF differs significantly by physician specialty. (Edep, 1997; Reis, 1997) Such differences in practice may be reflected in differences in CHF admission rates.

Clinical Recommendation Statement

Billings et al. (1993) found that low-income ZIP codes in New York City had 4.6 times more HF hospitalizations per capita than high-income ZIP codes. Millman (1993) reported that low-income ZIP codes had 6.1 times more HF hospitalizations per

capita than high-income ZIP codes. Based on empirical results, areas with high rates of HF admissions also tend to have high rates of other ASCAs.

The signal ratio (i.e., the proportion of the total variation across areas that is truly related to systematic differences in area performance rather than random variation) is very high, at 93.0 percent, indicating that the observed differences in age-sex adjusted rates very likely represent true differences across areas (AHRQ, 2007). Risk adjustment for age and sex appears to most affect the areas with the highest rates. As a PQI, admissions for HF are not a measure of hospital quality, but rather one measure of outpatient and other health care.

This indicator was originally developed by Billings et al. in conjunction with the United Hospital Fund of New York. It was subsequently adopted by the Institute of Medicine and has been widely used in a variety of studies of avoidable hospitalizations. (Bindman, 1995; Rosenthal, 1997)

References

AHRQ. *Guide to Prevention Quality Indicators*. Rockville, Maryland: U.S. Agency for Healthcare Research and Quality, 2007.

Billings J, Zeitel L, Lukomnik J, et al. Impact of socioeconomic status on hospital use in New York City, *Health Aff* (Millwood) 1993;12(1):162-73.

Bindman AB, Grumbach K, Osmond D, et al. Preventable hospitalizations and access to health care. *JAMA* 1995;274(4):305-11.

Millman M, editor. Committee on Monitoring Access to Personal Health Care Services. Washington, DC: National Academy Press; 1993.

Reis, SE, Holubkov R, Edmundowicz D, et al. Treatment of patients admitted to the hospital with congestive heart failure: specialty-related disparities in practice patterns and outcomes. *J Am Coll Cardiol* 1997;30(3):733-8.

Rosenthal GE, Harper DL, Shah A, et al. A regional evaluation of variation in low-severity hospital admissions. *J Gen Intern* Med 1997;12(7):416-22.

Release Notes / Summary of Changes

- There have been no substantial changes made to the measure specifications. The specifications reflect the most recent version (version 4.5, May 2013) of technical specifications posted on the AHRQ website for PQI #8.

Technical Specifications

- Target Population: ACO assigned or aligned Medicare beneficiaries

Denominator

- Denominator Statement

  Expected (risk adjusted) discharges from an acute care or critical access hospital with a principal diagnosis of HF, for Medicare FFS beneficiaries assigned or aligned to an ACO, aged 18 years and older, with HF

- Denominator Details

  The ICD-9-CM codes used to identify Medicare beneficiaries with HF for this Medicare ACO PQI quality measure are as follows: 39891, 4280, 4281, 42820, 42821, 42822, 42823, 42830, 42831, 42832, 42833, 42840, 42841, 42842, 42843, 4289

  These ICD-9-CM codes for HF can be found in any Medicare Outpatient claims or Part B Carrier claims for the ACO's assigned or aligned beneficiary in the performance year for the beneficiary to be included in the denominator.

  The Medicare ACO PQI quality measure denominator specifications are adapted from the AHRQ PQI specifications with adjustments to the reference population to focus on Medicare beneficiaries since they are likely to be older and more disabled than the general population. Additionally, ACOs may have more and varying proportions of patients with the chronic conditions targeted by the PQI quality measures (HF for this ACO PQI). As a result, the changes made to adapt the AHRQ PQIs to the Medicare population for the Medicare ACO PQIs include the following:

  1. Change the PQI denominator to include only Medicare beneficiaries assigned or aligned to a Medicare ACO, instead of the general population in a geographic area (as currently specified for AHRQ PQIs), and allow part-year Medicare beneficiaries to be included in the denominator.
  2. Change the PQI denominators to include only those beneficiaries who were diagnosed with the condition under consideration (HF) instead of patients of any disease status (as currently specified for AHRQ PQIs).
  3. Exclude beneficiaries with a diagnosis of ESRD from the denominator populations for both PQI measures. ESRD patients are significantly more prone to hospitalization, are severely ill, and are a much larger proportion of Medicare beneficiaries than they are in the general population. As a result, the AHRQ PQI measures may not be good measures of quality of care in treatment of Medicare beneficiaries with HF who also have ESRD.

- Denominator Exceptions and Exclusions

  1. Admissions that are transfers from a hospital, Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF), or another health care facility
  2. Beneficiaries with a diagnosis of ESRD
  3. Beneficiaries not eligible for both Medicare Part A and Part B
  4. Beneficiaries with missing data for gender, age, or principal diagnosis

- Denominator Exceptions and Exclusions Details

  The AHRQ PQI SAS software excludes admissions that are transfers from a hospital, skilled nursing facility or Intermediate Care Facility, or another healthcare facility, identifying these transfers using HCUP variables SID ASOURCE and POINTOFORIGINUB04 codes. The Medicare claims data available from the IDR does not include these codes. As a result, the Medicare ACO PQIs use the Medicare claims variable "Source of Admission (SRC_ADMS)" to identify transfers. For the Medicare ACO PQIs patients were excluded with an SCR_ADMS value of 4 (transfer from hospital), 5 (transfer from skilled nursing facility), or 6 (transfer from another health care facility). However, previous work with the SCR_ADMS variable has found that it is sometimes unreliable. As a result, to better ensure that all transfers were excluded the Medicare ACO PQI software excludes beneficiaries with two Part A Inpatient claims admissions on the same day at two different facilities.

To identify beneficiaries for the ESRD exclusion the MS_CD variable (CWF Beneficiary Medicare Status Code) is used. Excluded beneficiaries including those with MS_CD values equal to 11 (aged with ESRD), 21 (disabled with ESRD), or 31 (ESRD only).

Numerator

- Numerator Statement

  Observed discharges from an acute care hospital or critical access hospital with a principal diagnosis of HF, for Medicare beneficiaries in the denominator population for this measure.

- Numerator Details

  The ICD-9-CM codes used to identify hospital discharges with a principal diagnosis of HF for this Medicare ACO PQI quality measure are as follows: 39891, 4280, 4281, 42820, 42821, 42822, 42823, 42830, 42831, 42832, 42833, 42840, 42841, 42842, 42843, 4289

  However, the discharge is excluded from the numerator if a cardiac procedure was performed during the admission, as indicated by any of the following ICD-9-CM procedure codes: 0050, 0051, 0052, 0053, 0054, 0056, 0057, 0066, 1751, 1752, 1755, 3500, 3501, 3502, 3503, 3504, 3505, 3506, 3507, 3508, 3509, 3510, 3511, 3512, 3513, 3514, 3520, 3521, 3522, 3523, 3524, 3525, 3526, 3527, 3528, 3531, 3532, 3533, 3534, 3535, 3539, 3541, 3542, 3550, 3551, 3552, 3553, 3554, 3555, 3560, 3561, 3562, 3563, 3570, 3571, 3572, 3573, 3581, 3582, 3583, 3584, 3591, 3592, 3593, 3594, 3595, 3596, 3597,3598, 3599, 3603, 3604, 3606, 3607, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3619, 362, , 3631, 3632, 3633, 3634, 3639, 3691, 3699, 3731, 3732, 3733, 3734, 3735, 3736, 3737, 3741, 3751, 3752, 3753, 3754, 3755, 3760, 3761, 3762, 3763, 3764, 3765, 3766, 3770, 3771, 3772, 3773, 3774, 3775, 3776, 3777, 3778, 3779, 3780, 3781, 3782, 3783, 3785, 3786, 3787, 3789, 3794, 3795, 3796, 3797, 3798, 3826

  These ICD-9-CM codes for HF diagnoses and for cardiac procedures can be found for any Medicare Inpatient claims for the ACO's assigned or aligned beneficiary in the performance year for that discharge to be included in the numerator. The sum of all of the discharges that are not excluded due to cardiac procedures is calculated for the performance year for all of the assigned or aligned beneficiaries for each ACO to calculate the numerator.

Stratification or Risk Adjustment

This measure uses risk adjustment and is not stratified.

A Medicare claims data 5% file was used for re-estimating the AHRQ HF hospital discharge logistic regression prediction model used for risk adjustment for this Medicare ACO HF PQI measure. The 5% file is nationally representative for the Medicare FFS population, and replaced the general population data used for the AHRQ PQI measure prediction models. For this Medicare ACO PQI risk adjustment analysis it was further restricted to Medicare beneficiaries who met the inclusion criteria for the ACO program and the HF disease diagnosis criteria for the Medicare ACO PQI quality measure denominator. The prediction variables in this model were the age-sex categories identified for the Medicare populations for the ACO PQI quality measures. These models produced coefficients that were included in the ACO PQI calculation SAS software as risk adjusters to calculate the expected rate of hospital discharges for an ACO population given its age and sex distribution.

For this Medicare ACO PQI prediction model, the AHRQ age ranges used for risk adjustment were revised to reflect age ranges that are more appropriate for the Medicare FFS population. The new age ranges are: 0 to 39, 40 to 65, 65 to 69, 70 to 74, 75 to 79, 80 to 84, and 85+. They were used to calculate the age-sex categories used as predictors in the risk adjustment model.

Sampling

- N/A

Calculation Algorithm

Calculation of this Medicare ACO HF PQI quality measure includes the following steps:

1. Identify the assigned or aligned beneficiaries for each ACO.
2. Apply the eligibility criteria to identify beneficiaries of the correct age, Medicare enrollment status, ESRD status, and satisfying the other eligibility criteria.
3. Search Medicare Outpatient and Part B Carrier claims data to find all of the eligible assigned or aligned beneficiaries with at least one ICD-9 diagnosis code for HF during the performance year.
4. Search Medicare Inpatient claims data to find all of the observed admissions with a principal diagnosis of HF, that are not excluded due to cardiac procedures, for those eligible assigned or aligned beneficiaries with HF. This constitutes the numerator.
5. Apply the risk adjustment prediction model using the age/sex categories and distribution of the eligible assigned or aligned beneficiaries to calculate the expected number of admissions with a principal diagnosis of HF for each ACO for the performance year. This constitutes the denominator
6. Divide the numerator by the denominator to find the Medicare ACO HF PQI score.