

## **ACO #9 – Prevention Quality Indicator (PQI): Ambulatory Sensitive Conditions Admissions for Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults**

### **Measure Information Form (MIF)**

#### **Data Source**

- ◆ Medicare Part B Carrier Claims
- ◆ Medicare Outpatient Claims
- ◆ Medicare Inpatient Claims
- ◆ Medicare beneficiary enrollment data

#### **Measure Set ID**

- ◆ ACO #9

#### **Version Number and effective date**

- ◆ Version 1.0, effective 10/31/12

#### **CMS approval date**

- ◆ 10/18/12

#### **NQF ID**

- ◆ #275, 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 Chronic Obstructive Pulmonary Disease (COPD) or Asthma

### Payer source

- ◆ Medicare Fee-for-Service

### Improvement notation

- ◆ Lower PQI scores are better

### Measure steward

- ◆ Centers for Medicare and Medicaid Services (CMS), as adapted from the Agency for Healthcare Research and Quality (AHRQ) measure

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- ◆ This Medicare ACO PQI COPD/Asthma quality measure is adapted from the general population PQI quality measure for COPD/Asthma that was previously developed by AHRQ (AHRQ, 2007).

### Measure description

- ◆ All discharges ICD-9-CM principal diagnosis code for COPD or Asthma in adults ages 40 years and older, for ACO assigned or aligned Medicare beneficiaries with COPD or Asthma, with risk-adjusted comparison of observed discharges to expected discharges for each ACO.

### Rationale

Hospital admissions for COPD or asthma are a Prevention Quality Indicator of interest to comprehensive health care delivery systems including ACOs. COPD or Asthma 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.

### Clinical Recommendation Statement

Bindman et al. (1995) reported that self-reported access to care explained 27 percent of the variation in COPD hospitalization rates at the ZIP code cluster level. Millman (1993) found that low-income ZIP codes had 5.8 times more COPD hospitalizations per capita than high-income ZIP codes. Physician adherence to practice guidelines and patient compliance also influence the effectiveness of therapy. Practice guidelines for COPD have been developed and published over the last decade (Hackner, 1999). With appropriate outpatient treatment and compliance, hospitalizations for the exacerbations of COPD and decline in lung function should be minimized.

Based on empirical results, areas with high rates of COPD admissions also tend to have high rates of other Ambulatory Sensitive Conditions Admissions (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 93.4 percent, indicating that the differences in age-sex adjusted rates likely represent true differences across areas (AHRQ, 2007).

Risk adjustment for age and sex appears to most affect the areas with the highest rates. Several factors that are likely to vary by area may influence the progression of the disease, including smoking and socioeconomic status. As a PQI, admissions for chronic obstructive pulmonary disease are not a measure of hospital quality, but rather one measure of outpatient and other health care.

## References

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

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

Hackner D, Tu G, Weingarten S, et al. Guidelines in pulmonary medicine: a 25-year profile. *Chest* 1999; 116(4):1046-62.

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

## Release Notes / Summary of Changes

- ◆ N/A

## Technical Specifications

- ◆ Target Population: ACO assigned or aligned Medicare beneficiaries

## Denominator

- ◆ Denominator Statement

Expected (risk adjusted) discharges from an acute care hospital with a principal diagnosis of COPD or Asthma, for Medicare FFS beneficiaries assigned or aligned to an ACO, aged 40 years and older, with COPD or Asthma

- ◆ Denominator Details

The ICD-9-CM codes used to identify Medicare beneficiaries with COPD or Asthma for this Medicare ACO PQI quality measure are as follows: 4910, 4911, 49120, 49121, 4918, 4919, 4920, 4928, 494, 4940, 4941, 496, 49300, 49301, 49302, 49310, 49311, 49312, 49320, 49321, 49322, 49381, 49382, 49390, 49391, 49392

These ICD-9-CM codes for COPD or Asthma 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 (COPD or Asthma 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 (COPD/Asthma) 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 COPD or Asthma 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 SRC\_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 SRC\_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 with a principal diagnosis of Chronic Obstructive Pulmonary Disease or Asthma, 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 COPD or Asthma for this Medicare ACO PQI quality measure are as follows:

1. An ICD-9-CM principal diagnosis code that indicates COPD, including: 4910, 4911, 49120, 49121, 4918, 4919, 4920, 4928, 494, 4940, 4941, 496  
**OR**
2. An ICD-9-CM principal diagnosis code of 4660 or 490 **AND** a secondary diagnosis for one of the following ICD 9 –CM diagnosis codes: 4910, 4911, 49120, 49121, 4918, 4919, 4920, 4928, 494, 4940, 4941, 496  
**OR**
3. An ICD-9-CM principal diagnosis code that indicates asthma, including: 49300, 49301, 49302, 49310, 49311, 49312, 49320, 49321, 49322, 49381, 49382, 49390, 49391, 49392

These ICD-9-CM codes for COPD or Asthma 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 these discharges 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 COPD/Asthma hospital discharge logistic regression prediction model used for risk adjustment for this Medicare ACO COPD/Asthma 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 COPD/Asthma 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 COPD/Asthma 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 COPD or Asthma during the performance year.
4. Search Medicare Inpatient claims data to find all admissions with a principal diagnosis of COPD or Asthma for those eligible assigned or aligned beneficiaries with COPD or Asthma. 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 COPD or Asthma for each ACO for the performance year. This constitutes the denominator
6. Divide the numerator by the denominator to find the Medicare ACO COPD/Asthma PQI score.