Pulmonary and Critical Care Consensus Standards Endorsement Maintenance

TECHNICAL REPORT

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NATIONAL QUALITY FORUM

Contents

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Introduction

At least 33 million Americans have chronic lung diseases such as asthma, chronic obstructive pulmonary disease (COPD), and pneumonia. Lung disease is the third leading cause of death in the United States.[1] The human and financial burden is enormous:

- In 2008, 23.3 million Americans suffered from asthma. Asthma afflicts people of all ages, races, genders, and socioeconomic status; however, it occurs at disproportionately higher rates among some ethnic and racial populations. Asthma affects an estimated 7 million children and accounts for more than 14 million lost school days every year.[2] The annual direct healthcare cost of asthma is $15.6 million.[3]
- COPD is the third leading cause of death in the United States, costing the nation nearly $49.9 billion in 2010.[4]
- In 2006, an estimated 1.2 million hospital discharges were attributable to pneumonia.[5]

More than 5 million patients are admitted annually to critical care units in the United States, treating patients with respiratory insufficiency/failure, postoperative management, ischemic heart disorder, sepsis, and heart failure. There are approximately 6,000 ICUs in the United States, caring for 55,000 critically ill patients each day.[6]

NQF has endorsed more than 40 consensus standards to evaluate the quality of care for pulmonary conditions and the critical care setting over the past decade. As quality measurement has matured, better data systems have become available, electronic health records adoption is increasing, and the demand for meaningful performance measures has prompted development of more sophisticated measures of healthcare processes and outcomes for pulmonary conditions and critical care. An evaluation of the NQF-endorsed® pulmonary and critical care measures and consideration of new measures will ensure the currency of NQF's portfolio of voluntary consensus standards.

Measure Evaluation

On March 21-22, 2012, the Pulmonary and Critical Care Steering Committee evaluated 8 new measures and 28 measures undergoing maintenance review against NQF's standard evaluation criteria (January 2011). To facilitate the evaluation, the Committee and candidate standards were divided into four workgroups for preliminary review of the measures against the evaluation sub-criteria prior to consideration by the entire Steering Committee. The Committee's discussion and ratings of the criteria are summarized in the evaluation tables beginning on page 9.

Pulmonary and Critical Care

	Maintenance	New	Total
Measures under consideration	35*	8	43
Withdrawn from consideration	8	0	8
Recommended	17	5	22
Not recommended	10	3	13
Reasons for Not Recommending	Importance – 7 Scientific Acceptability – 2 Overall – 0 Competing measure – 0	Importance – 1 Scientific Acceptability – 1 Overall – 0 Competing measure – 0	

*Includes two measures that are paired.

Overarching Issues

During the Steering Committee's discussion of the measures, several overarching issues emerged that were factored into the Committee's ratings and recommendations for multiple measures and are not repeated in detail with each individual measure:

Incomplete titles and descriptions

The Committee noted that many measure titles are vague and not informative or the descriptions are incomplete as to the population being measured and the focus of the measure. The Committee urges developers to use thoughtful measure titles that convey the measure's intent to general audiences and descriptions that provide enough detail (e.g., population, setting, measure focus) to inform audiences what information the measure results will provide. The Committee specifically noted that clearly identifying whether the target population is in-patient or ambulatory is critical.

Evidence and guidelines

Many of the measure submissions referenced guidelines as the evidence for a process measure without summarizing the actual body of evidence on which the guideline is based. NQF's 2011 Evidence Task Force report specifies evaluation of the quantity, quality and consistency of the body of evidence. The Committee struggled with evaluating measures against the evidence criteria when this information was not provided.

Data on current performance and disparities

The Committee expected more detailed information on current performance than was typically submitted. A mean was not considered to be not sufficient information to assess current performance of the measure. Data on the number of facilities or practices and the number of patients, the range of results and the percentiles are critical to understanding the opportunity for improvement. Very little data was submitted on the use of the measures to identify disparities. A greater emphasis should be made to collect data on disparities when the measures are tested and implemented.

Asthma versus Chronic Obstructive Pulmonary Disease (COPD)

The Committee noted that there is a spectrum of airways diseases from asthma to COPD. Identifying patients with asthma or COPD is confounded by the overlapping pathophysiology of airway disease and the reliability of coding for the diagnosis. Measures attempt to address the sensitivity of the diagnosis by

using age criteria, such as up to age 64 years for asthma and 40 years and above for COPD. Some Committee members expressed concern with lower age inclusions for measures for COPD asking whether this is a different population with different therapeutic expectations. Similarly, the lack of measures for asthma for the Medicare population is explained by the difficulty in determining who has asthma or COPD or other co-morbidities in that population.

Reserve status

Two endorsed measures, **0143 CAC-1: Relievers for inpatient asthma** and **0144 CAC-2 Systemic corticosteroids** for inpatient asthma were found to have very high compliance at 100% reported on Hospital Compare . The developer noted that only a small number of hospitals are reporting on the measure so additional opportunity may exist if new hospitals are recruited to report on their performance. The Committee determined that these measures meet the criteria for "endorsed with reserve status." Endorsement with reserve status requires that the measure meet all other criteria except for 1b. Opportunity for Improvement. Reserve status applies only to highly credible, reliable, and valid measures that have high levels of performance due to quality improvement actions (often facilitated or motivated through public reporting and other accountability programs).

Complex proprietary measures

Two measures, **0334 PICU Severity-adjusted length of stay** and **0343 PICU Standardized Mortality Ratio,** use a proprietary risk-adjustment model that is only available to participants in a private registry. NQF's Measure Steward Agreement allows for complex proprietary to be submitted if the submission is accompanied by a statement of the participation fees which are considered in the evaluation of the feasibility of the measure. Details of the risk model were reviewed by the Steering Committee and are included in submission materials. The Committee rated the measures low on feasibility, but recommended the measures for continued endorsement because the measures use a highly credible and valid risk model for pediatric intensive care.

Recommendations for Future Measure Development

During its discussion, the Steering Committee identified important gap areas in the pulmonary and critical care episodes of care framework for further measure development:

- measures focused on in-hospital, severity adjusted, high mortality conditions such as 30-day mortality rates, readmissions, sepsis and acute respiratory distress syndrome (ARDS);
- measures for earlier identification of sepsis at the compensated stage before it becomes decompensated septic shock and appropriate resuscitative measures;
- measures of efficiency and overutilization;
- measures that focus on palliative care for patients with end-stage pulmonary conditions;
- better measures of comprehensive asthma education, e.g., instruction related to the appropriate application of handheld inhalers prior to discharge and demonstration of use;
- measures of unplanned pediatric extubations;
- measures for effectiveness and outcomes of post-acute care for COPD patients;
- measures of functional status;
- measures for quality of spirometries in relation to meeting the American Thoracic Society (ATS) standards for pediatric and adult patients; and
- more outpatient composite measures targeted for consumer use.

Additional recommendations on gaps in pulmonary medicine where measures exist do not were submitted by the American College of Chest Physicians and the American Thoracic Society. A Measure Gaps in Critical Care Medicine was submitted by the Critical Care Societies Collaborative (CCSC). The reports are available on the NQF project web page.

Measure Evaluation Summary

Endorsed Measures

Measures Not Recommended

Measures Withdrawn From Consideration

Endorsed Measures

Asthma Measures Endorsed

Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable; Y= Yes; N=No

0036: Use of appropriate medications for people with asthma

Submission |Specifications
Status: Maintenance, Original Endorsement: Aug 10, 2009
Description: The measure assesses the percentage of members 5-64 years of age during the measurement year who were identified as having moderate to severe persistent asthma and who were appropriately prescribed medication during the measurement year.
Numerator Statement: The number of members who were dispensed at least one prescription for a preferred therapy during the measurement year
Denominator Statement: All health plan members 5–64 years of age during the measurement year who were identified as having moderate to severe persistent asthma
Exclusions: Exclude any members who had at least one encounter, in any setting, with any code to identify a diagnosis of emphysema, COPD, cystic fibrosis, or acute respiratory failure (Table ASM-E) any time on or prior to December 31 of the measurement year.
Adjustment/Stratification: No risk adjustment or risk stratification N/A The NCQA age strata for asthma measures are designed to align with both clinical practice guidelines and reporting requirements for child health quality improvement programs. Clinical guidelines specify appropriate age cohorts for measuring use of asthma medications as 5–11 years of age and 12–50 years of age, to account for the differences in medication regimens for children vs. for adolescents and adults. Implementation requires further stratification of the age ranges, to enable creation of comparable cohorts that align with child health populations. Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the member's age as of December 31st of the Measurement Year.
1) 5–11 years
2) 12–18 years
3) 19-50 years
4) 51-64 years
5) Total
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Health Plan, Integrated Delivery System, Population : National, Population : Regional, Population : State
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Laboratory, Electronic Clinical Data : Pharmacy, Paper Records
Measure Steward: National Committee for Quality Assurance

IMPLEMENTATION COMMENTS
- None of the American College of Chest Physicians (ACCP) Quality Improvement Committee (QIC) members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.
- America's Health Insurance Plans (AHIP): We recognize that classification of asthma using administrative data poses challenges and does not allow for tracking of performance by stage of disease as defined by clinical guidelines. As electronic health record data become available, it will be important to include clinically defined asthma stages and ensuring appropriate care by stage. Additionally, since a single prescription can ensure compliance, this measure does not track how well asthma is managed for a patient.

Steering Committee Evaluation

0036: Use of appropriate medications for people with asthma

1. Importance to Measure and Report (*based on decision logic*)**: PASSED all three subcriteria.**
1a. Impact: H-18; M-1; L-0; I-0; **1b. Performance Gap: H-16; M-3; L-0; I-0**
Rationale:
- The developer stated that affects an estimated 25 million Americans, associated with a cost of more than $20 billion annually. Ashtma continues to be associated with unacceptable morbidity and mortality.
- Data submitted by the developer reported that Medicaid health plan performace rates are lower and have greater opportunity for improvement compared to commercial plans.. Commercial health plan mean rates were 89-96% with Medicaid mean performace at 83-93% in 2008 .

1c. Evidence (*based on decision logic*)**: Y-14; N-5; I-0**
Rationale:
- The Committee agreed that high quality evidence exists from multiple random controlled trials, meta-analyses, and guidelines for inhaled corticosteroids (ICSs); however, evidence is less strong for alternative controllers (e.g., anti-leukotrienes, cromones, or theophylline).
- ICSs are the preferred option among adults and children, with long-acting beta2 agonists (LABAs) recommended only if combined with ICSs.

2. Scientific Acceptability of Measure Properties (*based on decision logic*)**: PASSED reliability and validity.**
2a. Reliability: H-8; M-9; L-1; I-1; 2b. Validity: H-1; M-11; L-7; I-0
Rationale:
- The Committee asked how moderate to severe asthma was identified using administrative data. The Committee noted a lack of precision in identifying the denominator population.
  - The developer responded that it has been tested in HEDIS and found to be highly reliable in identifying severe, persistent asthma.
- The Committee noted the list of medications is quite broad. The specifications include not only the preferred therapy, inhaled corticosteroids (ICS), where there is high-quality evidence supporting improved outcomes, but a number of other medications for asthma for which data have not shown to be as strongly associated with improved outcomes.
  - The developer replied that the broad list of medications was intended to avoid overriding any critical decision by the provider about what is best for the patient and consistent with guidelines.
  - The developer confirmed that there are no data linking the use of this measure directly to other outcomes. The measure has at times been used and stratified by ICS versus other medications; however, the detailed data on those stratified rates was not available.

3. Usability: H-9; M-9; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- This measure has been retooled for EHRs and is part of the meaningful use program.
- The measure is used in public reporting through Healthcare Effectiveness Data and Information Set (HEDIS) and is reported through venues such as the annual State of Healthcare Quality report, Quality Compass, America's Best Health Plans.
- This measure is included in the CHIPRA core set.

4. Feasibility: H-10; M-9; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Data generated during care process and all data elements are in a combination of electronic sources.

0036: Use of appropriate medications for people with asthma
Steering Committee Recommendation for Endorsement: Y-17; N-1 **Rationale:**   - High impact condition.   - Established HEDIS measure, though newly submitted measures (1799, 1800) provide more information about medication adherence.   **Additional Comments/Questions**: The Committee requested data showing inhaled corticosteroids versus all the other medications, and perhaps even a sensitivity analyses on the number of prescriptions a year and whether that would make it a better measure.
RELATED AND COMPETING MEASURES The Committee detereminied that the following two measures are competing (same measure focus and same target population):   **0036 Use of Appropriate Medications for People with Asthma (NCQA)**   **0047 Asthma: Pharmacologic therapy (AMA PCPI)**   - The Committee recommends that measure 0036 stratify ICS and combinations including ICS from the second line medications – see measure 0047.   - The measure is listed for clinician/group level of analysis. Has the measure been tested at this level? Is this a drill down from plan level data? Is there attribution logic for clinician-level specifications?   - The ultimate goal is to have one measure that can be used at the clinician and health plan level. Acknowledging that achieving one measure cannot be expected in the very near future, an acceptable intermediate step would be two fully harmonized measures – one for health plans and one for clinicians. Harmonization should include focus on denominator (including age), medications, and stratification approach. By the time of the Steering Committee conference call after the comment period, the Committee requested a detailed plan and timeline as to how this will be achieved. If a reasonable plan and timeframe cannot be presented, the Committee will determine the measure that is most valid.   **Developer response:**   - This measure is not tested at the clinician/group level. Health plans have the opportunity of using data from this measure to identify clincan performance. This measure is not tested to distinguish individual clincan performance. For the clinician-level specifications, we have patient inclusion criteria at the health plan and non-health plan levels.   **NCQA/AMA-PCPI Joint Response (0036 and 0047):**   - Measure development staff for NCQA and PCPI acknowledge that the categorization and stratified reporting of asthma controller medications in our respective measures should be fully aligned. Accordingly, we will each revise our numerator specifications as needed to clearly delineate two separate groups of medications for reporting: inhaled corticosteroids (ICS) and the recommended ICS combinations; and all other controller medications approved for treatment of persistent asthma. Each measure will also require that a total of the controller medications be reported separately. Pending the approval of our respective measure development panels, we'll implement these changes as soon as possible. As noted at the SC meeting in March, we also have plans in place to ensure that the age ranges in the two measures will be aligned.

0036: Use of appropriate medications for people with asthma

Public & Member Comment
Comments included:

- Concerns about the difficulty with using administrative data to infer whether a patient has mild, moderate, or severe asthma.

Developer response: The HEDIS denominator uses a validated algorithm to identify health plan members with persistent asthma through claims data, however the algorithm is designed to favor moderate to severe persistent asthma as those are the patients for whom the evidence supports long term medication therapy.

- Steering Committee recommendations: (1) separate rates for ICS and ICS combinations; non-ICS; and total; (2) revisions to the denominator; and (3) harmonization of the upper age limit. There is a lack of evidence linking this measure to patient outcomes. The measure inappropriately combines the preferred therapy (ICS) identified in the clinical guidelines with non-preferred medications. At a minimum there should be two separate rates-- one for ICS and one for the other medications. The denominator, even with a two year look back, does not define the population well and will result in a measure that cannot be used at the physician level or as a Medicaid measure. Further, the measure defines one prescription as meeting the numerator criteria. However, a single dispensing event has not been shown to be adequate for control of persistent asthma. NQF#1800, better accounts for adequate asthma control which is associated with improved outcomes. Recommend the measure be updated to reflect current asthma medication guidelines - for example, some combination medications provided in the measure specification are no longer routinely used.

Developer respose: NCQA and PCPI acknowledge that the categorization and stratified reporting of asthma controller medications in our respective measures should be fully aligned. Accordingly, we will work to revise our numerator specifications as needed to clearly delineate medications for reporting: inhaled corticosteroids (ICS) and the recommended ICS combinations; and all other controller medications approved for treatment of persistent asthma. These changes will be presented to our respective measure development panels along with a plan for implementation of the changes.

- Request for updated data on performance gap. **Developer response:** Please look at Section 2b5. Identification of Meaningful Differences in Performance; NCQA provided performance data from 2008-2010.
- Comments about the denominators.

Developer response: The HEDIS denominator uses a validated algorithm to identify health plan members with persistent asthma through claims data, however the algorithm is designed to favor moderate to severe persistent asthma as those are the patients for whom the evidence supports long term medication therapy.

- Harmonization of measure 0036 and 0047.

 Developer response: NCQA and PCPI acknowledge that the specifications for our respective measures should be fully aligned. 0036 only allows for medication dispensed to count for the measure and will not be modified to include prescribed as that information is not a currently available in a reliable data source.

- Question about the defiinition.

Developer response: This is an administrative claims measure which captures dispensed medications, not prescribed medications. Medications that meet the criteria for numerator compliance are clearly listed in the measure specification by name and medication class.

Committee response:

- After reviewing the comments, particularly regarding parsimony, the Committee did not change their recommendations of the five asthma measures.
- The Committee recommended that full harmonization of measures 0036 and 0047 should occur by the next annual update to continue endorsement.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):

- Ratified for continued endorsement

0047: Asthma: Pharmacologic therapy for persistent asthma

Submission |Specifications

Status: Maintenance, Original Endorsement: Aug 10, 2009
Description: Percentage of patients aged 5 through 50 years with a diagnosis of persistent asthma who were prescribed long-term control medication. Three rates are reported for this measure:
1. Patients prescribed inhaled corticosteroids (ICS) as their long term control medication
2. Patients prescribed other alternative long term control medications (non-ICS)
3. Total patients prescribed long-term control medication
Numerator Statement: Patients who were prescribed long-term control medication
Numerator Definitions:
Long Term Control Medication Includes:
Patients prescribed inhaled corticosteroids (the preferred long-term control medication at any step of asthma pharmacological therapy)
OR
Patients prescribed alternative long-term control medications (inhaled steroid combinations, anti-asthmatic combinations, antibody inhibitor, leukotriene modifiers, mast cell stabilizers, methylxanthines, long-acting inhaled beta-2 agonists, short-acting inhaled beta-2 agonists)
Prescribed – May include prescription given to the patient for inhaled corticosteroid OR an acceptable alternative long-term control medication at one or more visits in the 12-month period OR patient already taking inhaled corticosteroid OR an acceptable alternative long-term control medication as documented in current medication list.
Denominator Statement: All patients aged 5 through 50 years with a diagnosis of persistent asthma
Exclusions: Documentation of patient reason(s) for not prescribing either an inhaled corticosteroid (ICS) or an alternative long-term control medication
Adjustment/Stratification: No risk adjustment or risk stratification
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Measure Steward: American Medical Association - Physician Consortium for Performance Improvement Other organizations: National Committee for Quality Assurance (NCQA)

IMPLEMENTATION COMMENTS
- None of the American College of Chest Physicians (ACCP) Quality Improvement Committee (QIC) members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluation

1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**
1a. Impact: H-20; M-0; L-0; I-0; **1b. Performance Gap: H-15; M-5; L-0; I-0**
Rationale:
- The developer described the impact: " An estimated 300 million people worldwide suffer from asthma, and it is estimated that by 2025, the prevalence will grow by more than 100 million. Asthma-related direct and indirect monetary costs were estimated to be $19.7 billion in the United States in 2007."
- The developer reported that CMS PQRS data for 2008 demonstrates 46% compliance for this measure. No further details were provided.
1c. Evidence (*based on decision logic*): **Y-19; N-1; I-0**
Rationale:
- The measure is based on guideline recommendations and underlying body of evidence pertaining to the effectiveness of long-term control medications for achieving and maintaining control of persistent asthma.
- The Committee noted that quality evidence is less strong for alternative controllers included in the numerator (e.g., anti-leukotrienes, cromones, theophylline, LABA, etc). Seaparating the two rates for ICS and other reflects the difference in evidence.

0047: Asthma: Pharmacologic therapy for persistent asthma

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria**
2a. Reliability: H-5; M-15; L-0; I-0; 2b. Validity: H-0; M-14; L-6; I-0
Rationale:

- The Committee was concerned that patients receiving combination medications that include ICS are not counted in rate 1- preferred therapy. Combination medications are frequently used and consistent with evidence for preferred therapy.
- Rate 2 includes patients who are receiving agents which are not as strongly associated with improved outcomes. Credit is given for use of non-preferred therapy
  - The developer clarified that the numerator definition for rate 2 includes inhaled steroid combinations, so the intent is for anything combined with ICS to be in the second group.

3. Usability: H-11; M-7; L-2; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale

- The measure has been used in the CMS PQRS program since 2007.
- This is a retooled eMeasure and in included in the meaningful use program.

4. Feasibility: H-11; M-9; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:

- Data are generated and used by healthcare personnel during the provision of care.
- All data elements are in electronic health records.

RELATING AND COMPETING MEASURES
The Committee determined the following measure to be competing (same measure focus and same measured population):

- **0036 Use of Appropriate Medications for People with Asthma (NCQA)**
- **0047 Asthma: Pharmacologic therapy (AMA PCPI)**

- Age range difference: 5-50 (measure 0047) as opposed to 5-64 (measure 0036). PCPI expects approval of upper age limit to be harmonized with 0036 in the near future.
  The ultimate goal is to have one measure that can be used at the clinician and health plan level. Acknowledging that achieving one measure cannot be expected in the very near future, an acceptable intermediate step would be two fully harmonized measures – one for health plans and one for clinicians. Harmonization should include focus on denominator (including age), medications, and stratification approach. By the time of the Steering Committee conference call after the comment period, the Committee requested a detailed plan and timeline as to how this will be achieved. If a reasonable plan and timeframe cannot be presented the Committee will determine the measure that is most valid
  NCQA/AMA-PCPI Joint Response (0036 and 0047):
  Measure development staff for NCQA and PCPI acknowledge that the categorization and stratified reporting of asthma controller medications in our respective measures should be fully aligned. Accordingly, we will each revise our numerator specifications as needed to clearly delineate two separate groups of medications for reporting: inhaled corticosteroids (ICS) and the recommended ICS combinations; and all other controller medications approved for treatment of persistent asthma. Each measure will also require that a total of the controller medications be reported separately. Pending the approval of our respective measure development panels, we'll implement these changes as soon as possible. As noted at the SC meeting in March, we also have plans in place to ensure that the age ranges in the two measures will be aligned.

Steering Committee Recommendation for Endorsement: Y-16; N-4
Rationale: Main concern is the inclusion of alternative agents in the numerator, as noted.
Additional Comments/Questions:

- The developer clarified the list of medications should not include short acting beta 2 agonists and will submit an updated list.

0047: Asthma: Pharmacologic therapy for persistent asthma
Public & Member Comment   **Comments included:**   • The measure should be harmonized with measure 0036.   • ACCP recommends the measure be updated to reflect current asthma medication guidelines - for example, some combination medications provided in the measure specification are no longer routinely used.   **Developer response:** NCQA and PCPI acknowledge that the categorization and stratified reporting of asthma controller medications in our respective measures should be fully aligned. Accordingly, we will work to revise our numerator specifications as needed to clearly delineate medications for reporting: inhaled corticosteroids (ICS) and the recommended ICS combinations; and all other controller medications approved for treatment of persistent asthma. These changes will be presented to our respective measure development panels along with a plan for implementation of the changes.   **Committee response:**   The Committee recommended that full harmonization of measures 0036 and 0047 should occur by the next annual update to continue endorsement.
Consensus Standard Approval Committee (CSAC) Review (July 2012): Y-15; N-0   • Decision: Approved for continued endorsement
Board of Directors (July 31, 2012):   • Decision: Ratified for continued endorsement

1799: Medication management for people with asthma (MMA)

Submission |Specifications

Status: New Submission

Description: The percentage of members 5-64 years of age during the measurement year who were identified as having persistent asthma and were dispensed appropriate medications that they remained on during the treatment period. Two rates are reported.

1. The percentage of members who remained on an asthma controller medication for at least 50% of their treatment period.
2. The percentage of members who remained on an asthma controller medication for at least 75% of their treatment period.

Numerator Statement: Numerator 1: The number of members who achieved a PDC* of at least 50% for their asthma controller medications during the treatment period

Numerator 2: The number of members who achieved a PDC* of at least 75% for their asthma controller medications during the treatment period

*PDC is the proportion of days covered by at least one asthma controller medication prescription in the measurement year.

Denominator Statement: All health plan members 5–64 years of age during the measurement year who were identified as having moderate to severe persistent asthma.

Exclusions: 1) Exclude any members who had at least one encounter, in any setting, with any code to identify a diagnosis of emphysema, COPD, cystic fibrosis or acute respiratory failure (Table ASM-E). Look as far back as possible in the member's history through December 31 of the measurement year.

2) Exclude any members who have no medications dispensed during the measurement year.

Adjustment/Stratification: No risk adjustment or risk stratification N/A The NCQA age strata for asthma measures are designed to align with both clinical practice guidelines and reporting requirements for child health quality improvement programs. Clinical guidelines specify appropriate age cohorts for measuring use of asthma medications as 5–11 years of age and 12–50 years of age, to account for the differences in medication regimens for children vs. for adolescents and adults. Implementation requires further stratification of the age ranges, to enable creation of comparable cohorts that align with child health populations. Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the member's age as of December 31st of the Measurement Year.

1) 5–11 years
2) 12–18 years
3) 19-50 years
4) 51-64 years
5) Total

Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional

Type of Measure: Process

Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy

Measure Steward: National Committee for Quality Assurance

Steering Committee Evaluations

1799: Medication management for people with asthma (MMA)

1. Importance to Measure and Report (*based on decision logic*): Passed all three subcriteria
1a. Impact: H-13; M-6; L-0; I-0; 1b. Performance Gap: H-12; M-7; L-0; I-0
Rationale:
- Impact of asthma as previously noted in 0036.
- Extensive data from field testing was provided. For patients aged 5-64 years the > 50% PDC aggregate results for commercial plans was 56% compared to 37% for Medicaid plans. For >75% PDC, the commercial results are 34% compared to Medicaid at 21%.

1c. Evidence (*based on decision logic*): Y-16; N-2; I-1
Rationale:
- Clinical practice guidelines and field research have both illustrated the significance of adherence to medication regimens in controlling asthma.
- The evidence suggests that asthma patients that are adherent to their prescribed medication regimens experience fewer exacerbations and ED visits or hospitalizations.
- The Committee noted a lack of evidence for the 50% and 75% PDC threshold values in relationship to outcomes.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): Passed both subcriteria
2a. Reliability: H-6; M-12; L-1; I-0; 2b. Validity: H-1; M-14; L-4; I-0
Rationale:
- The Committee questioned whether the measure is consistent with evidence. Specifically, calculating the "proprotion of days covered (PDC)" based on a IPSD (earliest dispensing event).
- The Committee identified a challenge for Medicaid patients in meeting the two year persistent asthma definition due to their transient enrollment.
- The Committee asked for clarification whether the measure is designed to count the actual number of dispensed days, so it would pick up a three-month prescription being over 90 days.
  - The developer confirmed that the measure does pick up multiple canisters if there are multiple or it is distributed as a 90-day supply. The measure is able to count each day covered from prescription data.
- The Committee asked about the selection of the 50% or 75% thresholds. What is the evidence for these thresholds?
  - The developer explained that 50 and 75 percent were selected by an expert panel, and the panel felt that they really wanted to have two different levels to try and help describe the population.
  - One of the field test sites did go back and look at the ED visits for the population below and above the 50 percent mark, and it did find higher utilization the lower level.
- The developer noted that a 5% misclassification of results is possible.
- According to the developer, the number of patients getting a new precription in the fourth quarter is low (about 5% in the field test) and so the short follow-up period has minimal effect.

3. Usability: H-4; M-13; L-1; I-1
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- This measure is a first year measure for the Healthcare Effectiveness Data and Information Set (HEDIS) and is reported through avenues such as the annual State of Healthcare Quality report, Quality Compass, America's Best Health Plans**.**

4. Feasibility: H-12; M-7; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Data are electronically collected.

Steering Committee Recommendation for Endorsement: Y-16; N-3
Rationale:
- Adherence is a better measure of medication management for asthma than a single prescription.
Additional Comments/Questions:
- Similar concerns as with 0036, i.e., numerator inclusion of medications other than the preferred therapy of inhaled corticosteroid which are not as strongly associated with improved outcomes in patients with asthma.

1799: Medication management for people with asthma (MMA)
Public & Member Comment **Comments included:**   - Concern that years of data prior to the measurement year will likely be a challenge for any organization other than a large health plan. Questioning the evidence that the 50% or 75% Proportion of Days Covered (PDC) threshold values correlate with improved outcomes. **Developer response:** This measure is fully harmonized with all other HEDIS denominator criteria for identifying health plan members with persistent asthma. Michael Schatz's work has validated this algorithm using the two year HEDIS denominator.   - Recommend harmonization of the age ranges in measues 0047 (ages 5 to 50) with the age ranges of 5 to 64 years in measures 1799 and 1800. **Developer response:** As noted at the SC meeting in March, NCQA and AMA-PCPI have plans in place to ensure that the age ranges for the alignment of the asthma measures with the age range of 5 to 64 years.   - General support of adherence measures and recommend separate rates for ICS/ICS combinations and non-ICS. Recommend the developer test the denominators. **Developer response**: NCQA and PCPI acknowledge that the categorization and stratified reporting of asthma controller medications in our respective measures should be fully aligned. Accordingly, we will work to revise our numerator specifications as needed to clearly delineate medications for reporting: inhaled corticosteroids (ICS) and the recommended ICS combinations; and all other controller medications approved for treatment of persistent asthma. These changes will be presented to our respective measure development panels along with a plan for implementation of the changes.   - Questioning criteria for inclusions and exclusions. **Developer response**: The measure specification lists all formal criteria that need to be met in order to report the measure. This measure is is an administrative claims measure that uses a well validated algorithm to identify health plan members with persistent asthma. The documentation that the commenter listed is not currently available in claims, nor in a national standardized eMeasure format that could be used to report the measure.   - Comments regarding the specificity of the denominator for moderate-severe (as opposed to mild) persistent asthma. **Developer response**: The HEDIS denominator uses a validated algorithm to identify health plan members with persistent asthma through claims data, however the algorithm is designed to favor moderate to severe persistent asthma as those are the patients for whom the evidence supports long term medication therapy.   **Committee response:** The Committee reviewed the comments and the developer responses and made no changes to their recommendations.
Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0   Decision: Approved for endorsement
Board of Directors (July 31, 2012):   Decision: Ratified for endorsement

1800: Asthma medication ration (AMR)

Status: New Submission

Description: The percentage of members 5–64 years of age who were identified as having persistent asthma and had a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.

Numerator Statement: The number of members who have a medication ratio of at least 0.50

Denominator Statement: All health plan members 5–64 years of age during the measurement year who were identified as having moderate to severe persistent asthma

Exclusions: 1) Exclude any members who had at least one encounter, in any setting, with any code to identify a diagnosis of emphysema, COPD, cystic fibrosis or acute respiratory failure (Table ASM-E). Look as far back as possible in the member's history through December 31 of the measurement year.

2) Exclude any members who have no medication events present in their record during the measurement year.

Adjustment/Stratification: No risk adjustment or risk stratification N/A The NCQA age strata for asthma measures are designed to align with both clinical practice guidelines and reporting requirements for child health quality improvement programs. Clinical guidelines specify appropriate age cohorts for measuring use of asthma medications as 5–11 years of age and 12–50 years of age, to account for the differences in medication regimens for children vs. for adolescents and adults. Implementation requires further stratification of the age ranges, to enable creation of comparable cohorts that align with child health populations. Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the member's age as of December 31st of the Measurement Year.

1) 5–11 years
2) 12–18 years
3) 19-50 years
4) 51-64 years
5) Total

Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional

Type of Measure: Process

Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy

Measure Steward: National Committee for Quality Assurance

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): Passed all three subcriteria

1a. Impact: H-19; M-1; L-0; I-0; 1b. Performance Gap: H-14; M-5; L-0; I-0

Rationale:
- Impact of asthma described in measure 0036.
- In field tests, the commerical plan mean rate for ages 5-64 years is 62% and for Medicaid plans it is 52%.

1c. Evidence (*based on decision logic*): Y-11; N-3; I-5

Rationale:
- While the developers presented strong evidence for the need for controller therapy in persistent asthma, the Committee felt they did not present evidence that a ratio of >0.5 is appropriate.
- The Committee would like to see evidence-based literature that supports the use of this controller to total asthma medication ratio of >=0.5, as being ideal or optimal.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): Passed both subcriteria

2a. Reliability: H-11; M-7; L-0; I-1; 2b. Validity: H-1; M-11; L-4; I-3

Rationale:
- Some Committee members noted similar issues with the medication inclusions as for measures 0036 and 1799.
- The developer submitted field testing results indicating that clinical exclusions affect a significant proportion of the eligible population with persistent asthma-particularly in the older age cohort (24.6% excluded); however, the stability of the coding in the administrative claims was found to be adequately reliable to continue to utilize the exclusions.

1800: Asthma medication ration (AMR)

3. Usability: H-4; M-14; L-1; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- The Committee continued to question whether reporting a medication ratio of 0.5 or better is"meaningful", or how much this ratio is informative for public reporting.
- This measure is a first year measure for the Healthcare Effectiveness Data and Information Set (HEDIS) whose results may appear through venues such as the annual State of Healthcare Quality report, Quality Compass, America's Best Health Plans.

4. Feasibility: H-13; M-6; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Data are generated during care process and are electronically available.
- The Committee discussed the potential of susceptible inaccuracies, errors, or unintended consequences that could include inaccuracies in diagnosing, overly broad controller, imprecise counting of meds, and use of the 0.5 ratio.

Steering Committee Recommendation for Endorsement: Y-16; N-3
Rationale:
- A measure of adherence is stronger than a single prescription measure.
- This is a good direction for getting better measures of medication use.

Public & Member Comment
Comments included:
- Concern that the definition is not specific enough and that a ratio of 0.50 seems arbitrary.
  Developer response: The measure specification lists all formal criteria that need to be met in order to report the measure. The measure is an administrative claims measure that uses a well validated algorithm to identify health plan members with persistent asthma. The documentation that the commenter listed is not currently available in claims, nor in a national standardized eMeasure format that could be used to report the measure.
- Question regarding the specificity of the denominator.
  Developer response: The HEDIS medication lists require the inclusion of a larger number of medication owing to the variation in patient needs and ability to tolerate the "gold standard" medications. All medications on the list were deemed appropriate by the RMAP, while still recognizing that there were some that were not in wide use or not as effective as ICS**.**

Committee response:
The Committee reviewd the comments and developer response and made no changes to their recommendations.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0
- Decision: Approved for endorsement

Board of Directors (July 31, 2012):
- Decision: Ratified for endorsement

0548: Suboptimal asthma control (SAC) and absence of controller therapy (ACT)

Submission |Specifications

Status: Maintenance, Original Endorsement: Aug 05, 2009

Description: Rate 1: The percentage of patients with persistent asthma who were dispensed more than 3 canisters of a short-acting beta2 agonist inhaler during the same 90-day period.

Rate 2: The percentage of patients with persistent asthma during the measurement year who were dispensed more than three canisters of short acting beta2 agonist inhalers over a 90-day period and who did not receive controller therapy during the same 90-day period.

The full detailed measure specifications have also been submitted as a separate attachment.

Numerator Statement: Rate1: From the date of each prescription fill, count all of the canisters of short acting Beta2 Agonist Inhalers dispensed at that fill and dispensed within 90 days of that fill. If the patient receives 3 or more canisters in at least one 90 day period, then the patient is compliant for the numerator.

Short-Acting Inhaled Beta Agonists: albuterol MDI, albuterol HFA, pirbuterol, levalbuterol HFA

Rate 2: Patients who were not dispensed a controller therapy medication during the same 90-day period where they received more than three canisters of short-acting beta-agonist medication.

Denominator Statement: Rate 1: Step 1: Identify patients 5 - 50 years of age as of the last day of the measurement year.

Step 2: Identify patients who were dispensed at least two consecutive fills for any asthma medication during the measurement year.

Step 3: Exclude patients identified in step 1 who meet any of the following criteria:

• Any patient who filled one or more COPD medications during the measurement year.

• Any patient who filled one or more prescriptions for pulmozyme during the measurement year.

• Any patient who filled one or more nasal steroid medications during the measurement year.

Short-Acting Inhaled Beta Agonists: albuterol MDI, albuterol HFA, pirbuterol, levalbuterol HFA

Long-Acting Beta Agonists: salmeterol, formoterol

Inhaled Corticosteroids: beclomethasone, budesonide, flunisolide, fluticasone, fluticasone/salmeterol, mometasone, triamcinolone

Leukotriene Inhibitors: zafirlukast, montelukast, zileuton

Xanthines: long acting theophylline

Mast Cell Stabilizers: nedocromil, cromolyn

COPD Medications: tiotropium, ipratropium/albuterol MDI, ipratropium MDI

Nasal Steroids: beclomethasone, budesonide, flunisolide, fluticasone, mometasone, triamcinolone

Rate 2: Step 1: Identify patients 5 - 50 years of age as of the last day of the measurement year.

Step 2: Identify patients who were dispensed at least two consecutive fills for any asthma medication (Table ACT-A: Asthma Medications) during the measurement year.

Step 3: Exclude patients identified in step 1 who meet any of the following criteria

• Any patient who filled one or more COPD medications during the measurement year.

• Any patient who filled one or more prescriptions for pulmozyme during the measurement year.

• Any patient who filled one or more nasal steroid medications during the measurement year.

Step 4: For the remaining patients, identify those who were dispensed more than five canisters of a short-acting beta-agonist medication during the same 90-day period in the measurement year. It is those patients who, from the date of each prescription fill, had at least 3 canisters of short acting Beta2 Agonist Inhalers dispensed at that fill or dispensed within 90 days of that fill.

Note: This is a count of canisters dispensed, not prescriptions filled. If a patient received 2 canisters at one fill, it counts as 2 canisters.

Exclusions:

Adjustment/Stratification: No risk adjustment or risk stratification

Level of Analysis: Health Plan

Type of Measure: Process

Data Source: Electronic Clinical Data : Pharmacy

Measure Steward: Pharmacy Quality Alliance, Inc.

Steering Committee Evaluation

0548: Suboptimal asthma control (SAC) and absence of controller therapy (ACT)

1. Importance to Measure and Report (*based on decision logic*): Passed all three subcriteria
1a. Impact: H-11; M-4; L-1; I-0; 1b. Performance Gap: H-6; M-9; L-0; I-1
Rationale:

- The Committee noted there were no performance rates initially submitted to assess the current gap in performance.
  - The developer stated the measure has been tested with several PDMs and some health plans and identified fairly significant number of patients who were using more than one short acting beta agonist inhaler per month who were then not on inhaled corticosteroids.
- The developer provided additional information to the Committee on performance and testing (see updated submission form).
- The Committee noted that there was a performance gap demonstrated at the pharmacy level based on data from 3 health plans in 2010 that included 804 pharmacies with at least 10 patients:

Table 1. Health Plan Performance- Suboptimal Control			
	Denominator	Numerator	Performance Rate
Plan A	28,284	4,166	14.7%
Plan B	2,867	509	17.8%
Plan C	1,713	145	8.5%
Total:	32,864	4,820	14.7%

Table 2 - Use of Controller Medications			
	Denominator	Numerator	Performance Rate
Plan A	4,166	1,904	45.7%
Plan B	509	299	58.7%
Plan C	145	73	50.3%

1c. Evidence (*based on decision logic*): Y-14; N-0; I- 2
Rationale:

- The measure is based on NHBLI guidelines, however the Committed noted details of the quanitity, quality and consistency of the specific studies was not provided in the submission.
- The Committee questioned the evidence on the 90-day timeframe, noting that most of the evidence addresses chronic lack of controller therapy for greater than 12 months.
  - Developer response: The measure focuses on identification of patients who receive more than 3 inhalers during ANY 90-day period within a measurement year. Thus, the studies encompassed a measurement year.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): Passed reliability and validity
2a. Reliability: H-3; M-8; L-1; I-4; 2b. Validity: H-1; M-9; L-2; I-4
Rationale:

- Some members voiced concerns about alternative sources of medications diluting positive results for Rate 1 and increasing false positives in Rate 2. Committee members remain concerned that medications dispensed in a hospital or ED to be taken home would not be "counted", and that a patient's existing stock of medication would not be counted.
- Committee members note that the measure presents some challenges related to attribution. Attribution for this measure is dependent not only where the patient fills their asthma medications, but also on how many canisters of short- acting beta2 agonist's inhalers were filled and where they filled. Concerns were raised about how best to attribute these patients given that they may be filling the medications that qualify them for the numerator at a different pharmacy than the medications that made them eligible for the measure.
  - Developer response: Additional testing was performed to investigate how many patients filled the prescription for their canisters at a different pharmacy than their other asthma medications. The overwhelming majority filled the prescriptions at the same pharmacy; however, up to 8 percent filled their short-acting beta2 agonist medication at a different pharmacy than where they filled their other asthma medications meaning that those patients would be misattributed.
- Some Committee members thought that a prescription for one or more intranasal steroids in a year as an exclusion is confusing.
  - Developer response: This measure uses drug claims for asthma-related medications to identify patients with asthma. Since we include leukotriene inhibitors in the list of controller medications, and since some patients who

use leukotriene inhibitors may have allergic rhinitis w/o persistent asthma, we needed another method to exclude patients who may have allergic rhinitis without having persistent asthma. Thus, we use the prescriptions for nasal steroids as an exclusion criterion to increase the likelihood that the patients in the denominator have persistent asthma and not just allergic rhinitis.

- Excess use of reliever agents defined by the guidelines begins at a level of more than twice (4 puffs) per week. This measure is triggered by a prescription for 3 inhalers, reflecting 600 puffs (50 puffs/week) which seems too much.
  - Developer response: The measure is designed to identify patients who are clearly receiving excessive amounts of short-acting beta-agonists. If we reduce the threshold for identifying overuse, we run the risk of false-positives in the numerator (a false positive would occur if the patient was identified as an over-user when in fact they were not an over-user). When you consider that many young asthma patients may occasionally obtain two SABA inhalers in one month (perhaps because they need to have one inhaler at school and one at home), the risk of false-positives is real. We chose the more conservative approach of improving the specificity of the measure (i.e., reducing false positives) while acknowledging that there may be a few over-users who are missed (i.e., lower sensitivity).

3. Usability: H-5; M-6; L-2; I-3
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:

- Committee members agreed the measure is fairly easy to understand.
- The measure will be reported by URAC in 2013 and it is currently being used by the Indian Health Service for QI.

4. Feasibility: H-5; M-7; L-2; I-2
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:

- The measure is based on pharmacy claims data.
- The Committee did not raise any specific issues with feasibility.

Steering Committee Recommendation for Endorsement: Y-9; N-7
Rationale:

- The measure is generally consistent with guidelines.
- The measure is based on pharmacy claims data.
- This is a health plan level measure.
- Opportunity for further improvement exists.

Public & Member Comment
Comments included:

- Concern that the use of pharmacy claims data alone may not adequately reflect either quality of care delivered at the point of care or actual medication use by the patient.
  Developer response: We understand the concern that actual quality of care provided or specific medication use by a patient may not be captured by this measure. However the overuse of short-acting beta-agonists and the underuse of controller medications for asthma is a serious problem that can be highlighted and improved by the use of this measure. Delaying re-endorsement of this measure sends a particularly bad message to pharmacists and prescription drug plans that use this measure as a performance indicator to improve care.
- Disagreement with exclusion of patients who are treated with intranasal steroids (to increase specificity of the asthma population defined by LTRA dispensings alone) because that would exclude many appropriate patients with both asthma and rhinitis. To more appropriately get at the issue of LTRA use for rhinitis instead of asthma, the measure should exclude patients whose ONLY controller is LTRA and who have received no short-acting beta agonists during the measurement year.
  Developer response: We agree with the comment that the exclusion of persons using intranasal steroids in the denominator is intended to better identify an asthma population. Since the denominator can include persons with two fills of a leukotriene inhibitor only, excluding those on nasal steroids eliminates those with only rhinitis. We

0548: Suboptimal asthma control (SAC) and absence of controller therapy (ACT)

further agree that this exclusion may eliminate some people with asthma and rhinitis. We will consider the recommendation to exclude from the denominator any patient with two or more leukotriene inhibitors that did not receive a beta-agonist can be considered. Additional testing with this change will be needed. While this measure is further reviewed and tested, we request support of the existing measure.

- Disapprove measuring dispensed controller medication as opposed to prescribed.
  Developer response: This performance measure was not intended to be used for evaluation of individual physicians. It was developed for use in evaluation of prescription drug plans, health plans that provide drug benefits, and pharmacies. It was designed for environments where only drug claims data is available, and thus it is not intended to replace measures that are focused on prescribing behaviors where the medical chart is reviewed to assess prescribing behaviors.

Committee response:

The Committee reviewed the comments and the developer's responses and made no changes to their recommendations.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):

- Decision: Ratified for continued endorsement

Asthma Measures Endorsed with Reserve Status

0143: CAC-1: Relievers for inpatient asthma

Submission |Specifications

Status: Maintenance, Original Endorsement: Mar 09, 2007

Description: Use of relievers in pediatric patients, age 2 years through 17 years, admitted for inpatient treatment of asthma. This measure is a part of a set of three nationally implemented measures that address children's asthma care (CAC-2: Systemic Corticosteroids for Inpatient Asthma, and CAC-03: Home Management Plan of Care (HMPC) Document Given to Patient/Caregiver) that are used in The Joint Commission's accreditation process.

Numerator Statement: Pediatric asthma inpatients who received relievers during hospitalization

Denominator Statement: Pediatric asthma inpatients (age 2 years through 17 years) who were discharged with a principal diagnosis of asthma.

Exclusions: Excluded Populations:
- Patients with age less than 2 years or 18 years or greater
- Patients who have a Length of Stay greater than 120 days
- Patients enrolled in clinical trials
- Patients with a documented Reason for Not Administering Relievers

Adjustment/Stratification: No risk adjustment or risk stratification Not Applicable This measure is stratified by age as noted in the following table:

CAC-1a   Relievers for Inpatient Asthma (age 2 years through 17 years) – Overall Rate
CAC-1b   Relievers for Inpatient Asthma (age 2 years through 4 years)
CAC-1c   Relievers for Inpatient Asthma (age 5 years through 12 years)
CAC-1d   Relievers for Inpatient Asthma (age 13 years through 17 years)

Level of Analysis: Facility, Population : National

Type of Measure: Process

Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Records

Measure Steward: The Joint Commission

IMPLEMENTATION COMMENTS

- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

  Developer response: This measure is one of a set of three measures focused on Children's Asthma Care. The set is one of 14 available measure sets from which hospitals can select to meet The Joint Commission´s ORYX accreditation program requirement for standardized measure data collection and reporting. This measure has been in use since 2007, and aggregate measure results have improved over time, indicating that they are being used by hospitals to identify and address areas in need of improvement. The Joint Commission utilizes this measure in its accreditation process, and it provides information about the comparative performance of accredited organizations to the public. Measure results are reported on Hospital Compare and on The Joint Commission's public reporting web-site, Quality Check.

Steering Committee Evaluation

0143: CAC-1: Relievers for inpatient asthma

1. Importance to Measure and Report (*based on decision logic*): **Did not pass sub-criterion 1b. Performance Gap, however, the Committee evaluated the measure fore Reserve Status.**
1a. Impact: H-13; M-3; L-4; I-0; **1b. Performance Gap: H-1; M-0; L-19 I-0**
Rationale:
- The developers submitted the following data for impact: 9.3% of the US population is composed of children suffering from asthma. There are approximately 2 million Emergency Department (ED) visits per year related to children with acute asthma. This large reported emergency population is responsible for an annual reported 200,000 hospital admissions a year for childhood asthma in the US. This consequently represents more than $3 billion in healthcare costs.
- The Committee agreed that asthma is the most important chronic condition for children.
- Hospital Compare lists the national rates for performance at 100%, leaving little to no room for improvement.
  - The developer replied that only a small number of hospitals report on the measures and that opportunity may exist in recruiting more hospitals to report.

The Committee, noting this long-standing, publicly reported measure voted to consider the measure for reserve status (Yes-18, No-2).
1c. Evidence (*based on decision logic*): **Y-20; N-0; I-0**
Rationale:
- The Committee agreed there is ample evidence supporting the use of relievers in in-patient settings.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria**
2a. Reliability: H-19; M-1; L-0; I-0, 2b. Validity: H-17; M-3; L-0; I-0
Rationale:
- The Committee agreed the measure has demonstrated reliability and validity.

3. Usability: H-13; M-6; L-1; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- The developer report that this measure is in the process of retooling for EHR collection and is included in the proposed rule for stage 2 of meaningful use.

4. Feasibility: H-18; M-2; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Data are captured during care process and are available electronically.

Steering Committee Recommendation for Endorsement: Y-18; N-2 RESERVE STATUS
Rationale:
- The measure met all criteria except for sub-criterion 1b (opportunity for improvement.)
- The Committee recommended this measure for Reserve Status because performance is extremely high.

Public & Member Comment
Comments included:
- Measure 0143 should be harmonized with measure 0144.
Committee response:
- Measures 0144 and 143 are fully aligned in the denominator. The numerators address different medications.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0
- Decision: Approved for continued endorsement with reserve status

Board of Directors: (July 31, 2012):
- Decision: Ratified for continued endorsement with reserve status

0144: CAC-2 Systemic corticosteroids for inpatient asthma

Submission |Specifications

Status: Maintenance, Original Endorsement: Mar 09, 2007

Description: Use of systemic corticosteroids in pediatric asthma patients (age 2 through 17 years) admitted for inpatient treatment of asthma. This measure is a part of a set of three nationally implemented measures that address children's asthma care (CAC-1: Relievers for Inpatient Asthma, CAC-3: Home Management Plan of Care (HMPC) Document Given to Parent/Caregiver) that are used in The Joint Commission's accreditation process.

Numerator Statement: Pediatric asthma inpatients who received systemic corticosteroids during hospitalization.

Denominator Statement: Pediatric asthma inpatients (age 2 years through 17 years) who were discharged with a principal diagnosis of asthma.

Exclusions: Excluded Populations:
- Patients with an age less than 2 years or 18 years or greater
- Patients who have a Length of Stay greater than 120 days
- Patients enrolled in clinical trials
- Patients with a documented Reason for Not Administering Systemic Corticosteroids

Adjustment/Stratification: No risk adjustment or risk stratification None This measure is stratified by age as noted in the following table:

CAC-2a   Systemic Corticosteroids for Inpatient Asthma (age 2 years through 17 years) – Overall Rate

CAC-2b   Systemic Corticosteroids for Inpatient Asthma (age 2 years through 4 years)

CAC-2c   Systemic Corticosteroids for Inpatient Asthma (age 5 years through 12 years)

CAC-2d   Systemic Corticosteroids for Inpatient Asthma (age 13 years through 17 years)

Level of Analysis: Facility, Population : National

Type of Measure: Process

Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Records

Measure Steward: The Joint Commission

IMPLEMENTATION COMMENTS

- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

  Developer response: This measure is one of a set of three measures focused on Children's Asthma Care. The set is one of 14 available measure sets from which hospitals can select to meet The Joint Commission´s ORYX accreditation program requirement for standardized measure data collection and reporting. This measure has been in use since 2007, and aggregate measure results have improved over time, indicating that they are being used by hospitals to identify and address areas in need of improvement. The Joint Commission utilizes this measure in its accreditation process, and it provides information about the comparative performance of accredited organizations to the public. Measure results are reported on Hospital Compare and on The Joint Commission's public reporting web-site, Quality Check.

Steering Committee Evaluation

1. Importance to Measure and Report (*based on decision logic*): **Did not pass sub-criterion 1b. Performance Gap**

1a. Impact: H-18; M-2; L-0; I-0; **1b. Performance Gap: H-1; M-3; L-16; I-0**

Rationale:
- Impact information same as for measure 0143.
- Hospital Compare listed the performance rate at 100%.

The Committee noted this long-standing, publicly reported measure voted to consider the measure for reserve status (Yes-20, No-0).

1c. Evidence (*based on decision logic*): **Y-20; N-0; I-0**

Rationale:
- The Committee agreed there is considerable evidence favoring the potential for benefit compared with the potential for harm or burden. A number of studies and the literature are uniform in its results and findings, although difficult to completely account for confounding variables (SABAs, oxygen, epidemiology\causation, etc.).

0144: CAC-2 Systemic corticosteroids for inpatient asthma
2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria** **2a. Reliability: H-19; M-1; L-0; I-0; 2b. Validity: H-17; M-3; L-0; I-0** **Rationale:** • The Committee agreed the measure has been shown to be reliable and valid.
3. Usability: H-13; M-6; L-1; I-0 (*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*) **Rationale:** • This measure is in the process of retooling for EHR collection and is included in the proposed rule for stage 2 of meaningful use. • The measure has been in use since 2007.
4. Feasibility: H-18; M-2; L-0; I-0 (*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*) **Rationale:** • Data are captured during care process and are electronically available.
Steering Committee Recommendation for Endorsement: Y-20; N-0 RESERVE STATUS **Rationale:** • The measure met all criteria except for sub-criterion 1b (opportunity for improvement.) • The measure was recommended for placement in Reserve Status due to a very high performance rate of 100%.
Public & Member Comment **Comments included:** • Measure 0144 should be harmonized with measure 0143. **Committee response**: Measures 0144 and 0143 are fully aligned in the denominator. The numerators have different foci.
Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0 • Decision: Approved for continued endorsement with reserve status
Board of Directors (July 31, 2012): • Decision: Ratified for continued endorsement with reserve status

COPD Measures Endorsed

0091: COPD: spirometry evaluation

Status: Maintenance, Original Endorsement: Aug 10, 2009
Description: Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented
Numerator Statement: Patients with documented spirometry results in the medical record (FEV1 and FEV1/FVC)
Denominator Statement: All patients aged 18 years and older with a diagnosis of COPD
Exclusions: Documentation of medical reason(s) for not documenting spirometry results; Documentation of patient reason(s) for not documenting spirometry results; Documentation of system reason(s) for not documenting spirometry results
Adjustment/Stratification: No risk adjustment or risk stratification; No risk adjustment or risk stratification. We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Measure Steward: American Medical Association - Physician Consortium for Performance Improvement

IMPLEMENTATION COMMENTS

- The American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC): None of the QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluation

1. Importance to Measure and Report (*based on decision logic*): PASSED all three sub-criteria
1a. Impact: H-16; M-2; L-0; I-0; 1b. Performance Gap: H-12; M-4; L-0; I-2
Rationale:

- The developer notes that this measure focuses on a high impact condition (COPD) affecting 12 million Americans and costing $18 billion per year. Evidence suggests there is significant under utilization of spirometry to confirm the diagnosis.
- The developer reports a performance gap of 45.7% of patients who did not meet this measure in the 2008 PQRS. However, the Committee thought it is unclear, based on the way the measure is specified, if this gap is specific to use of spirometry to confirm a COPD diagnosis or is specific to routine spirometry use.
- Disparities are identified as an issue in the literature but results for this measure's ability to detect them were not provided.
- The basic goal is to identify new cases of COPD but what will be tested is whether already diagnosed COPD patients had spirometry. This is a less poweful measure. The ideal measure [not likely to be available from administrative data] would be the precentage of patients with chronic shortness of breath who had spirometry.

1c. Evidence (*based on decision logic*): Y-16; N-0; I-2
Rationale:

- The Committee agreed with developer's assessment of evidence. The citations referenced in the guideline update that are specific to spirometry use address its application in the detection of COPD. The measure developers cite excerpts from the 2011 guideline update specific to this use (see responses to 1c.16). There are no articles that are specific to the use of spirometry once a patient is diagnosed with COPD (the population for whom the measure is intended). Quote from the ACP Guideline 2011 update: "In our guideline update, there is no new evidence to support the use of routine periodic spirometry after initiation of therapy to monitor disease status or to modify therapy in symptomatic patients. Improvements in clinical symptoms do not necessarily correlate with spirometric responses to therapy or reduction of long-term decline in FEV1. Spirometry is useful to identify symptomatic patients with airflow obstruction who may benefit from pharmacotherapy. Because of the wide intraindividual variation, the spirometric decline of lung function cannot be used to measure individual long-term response to treatment."
- The guidelines are clear about when spirometry is indicated to confirm the diagnosis of COPD, and that it is not indicated to monitor treatment.

0091: COPD: spirometry evaluation

2. Scientific Acceptability of Measure Properties (*based on decision logic*): PASSED reliability and validity.
2a. Reliability: H-9; M-8; L-1; I-0; 2b. Validity: H-9; M-7; L-1; I-1
<u>Rationale:</u>
2a: RELIABILITY:
- Numerator specifications are unclear and indicate the spirometry test be performed at least once every 12 months; there could be potential for inappropriate/overuse.
- The time window indicates a one year measurement period but the developer states that a spirometry at any time counts in the numerator. The Committee notes that the specification for "most recent documentation of spirometry" implies that there may be several spirometry tests performed. This is a potential for mis-understanding.

2b: VALIDITY:
- The denominator captures all patients with a diagnosis of COPD – not just newly diagnosed or suspected diagnosis of COPD – it makes the measure open to misinterpretation.
- A specific exclusion for having a prior spirometry would clarify the intent of the measure.
- The value of including the lower end of the age range to 18 years also is unclear given that the incidence and prevalance of COPD starts climbing after age 40.
- Validity testing is limited to one academic medical center.
- The Committee questioned the construct validity if the measure is capturing routine use of spirometry after COPD diagnosis when this is not indicated by the evidence or guidelines.

3. Usability: H-9; M-7; L-1; I-1
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
<u>Rationale:</u>
- This measure is in use in the CMS's PQRS program but it is not publicly reported.
- There is no evidence that the measure is currently informing quality improvement. Measure developers indicate the measure is used in public reporting and QI initiatives but do not provide data with which to evaluate actual usability.

4. Feasibility: H-10; M-8; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
<u>Rationale:</u>
- eSpecifications would be useful.
- Measure developers report they have no information on unintended consequences such as overuse of spirometry to monitor patients and therapy.

Steering Committee Recommendation for Endorsement: Y-17; N-1
<u>Rationale:</u>
- High volume, high cost condition.
- Measure is in use in a federal program.
- Measure meets all the endorsement crtieria but concerns remain regarding the possible misinterpretation of the specifications.

<u>Additional Comments/Questions</u>:
- The developer indicated a willingness to clarify the specifications.

0091: COPD: spirometry evaluation

RELATED AND COMPETING MEASURES

The Committee identified the following two measures as competing:

- **0091 COPD: Spirometry evaluation (AMA PCPI)**
- **0577 Use of spirometry testing in the assessment and diagnosis of COPD (NCQA)**

- The Committee reviewed tables comparing the two measures on the factors identified in NQF's guidance for related and competing measures. The developers agreed to work together and by the time of the Steering Committee conference call after the comment period, they will present a detailed plan and timeline to achieve two fully harmonized measures – one for health plans and one for clinicians. Harmonization should include focus on denominator (including age), timeframe of measurement, and confirming diagnosis. If a reasonable plan and timeframe cannot be presented the Committee will determine the measure that is most valid.
  NCQA/AMA-PCPI Joint Response (0091 and 0577):
- Measure development staffs from NCQA and PCPI acknowledge that the criteria in our respective COPD measures should be aligned wherever it is sensible to do so. Recommendations to address misalignment in the current specifications that are due to the different data collection and reporting environments will be taken to our respective measure advisory expert panels to harmonize the criteria if possible. We will inform NQF staff as soon as the review and approval process is complete in order to allow NQF to post the most current specification in the QPS.

Public & Member Comment

Comments included:

- This is a measure that requires review of paper or electronic records but because this is a process measure that is truly difficult to obtain, it is not clear whether outcome improvements can be documented or if the cost makes this a valuble mesure. We would not recommend this measure as to date there has been no demonstrated improvement in outcomes for COPD.
  Developer response: This measure has been specified for claims and EHRs. To facilitate reporting in claims, a CPT-II code has been developed. To aid in the integration of the measure into routine clinical practice, PCPI staff have identified the data elements required to collect and calculate this measure in an EHR. We recognize that EHRs are state of the art for clinical encounters, as they hold the promise of providing the relevant clinical data for measures and for providing feedback to physicians and other health care providers that is timely and actionable. Additionally, as this measure is finalized, the draft data elements will aid in completing the development of EHR specifications and facilitate the incorporation of this measure into registries.The measure focus is the process of providing a spirometry evaluation to all adults with COPD to assist in proper diagnosis and routine treatment of patients with COPD. This process is directly related to reducing COPD exacerbations and inpatient hospitalizations. Proper diagnosis leads to better COPD treatment, which should lead to less comorbid disease, physical dysfunction, and death from COPD.
- Recommend harmonization of the two spirometry measures.
  Developer response: Measure development staff for NCQA and PCPI acknowledge that the criteria in our respective COPD measures should be aligned wherever it is sensible to do so. Recommendations to address misalignment in the current specifications that are due to the different data collection and reporting environments will be taken to our respective measure advisory expert panels to harmonize the criteria if possible. We will inform NQF staff as soon as the review and approval process is complete in order to allow NQF to post the most current specification in the QPS.
- Clarification on new diagnosis and established diagnosis.
  Developer response: "The measure intent is to confirm existing cases of COPD with spirometry if not already done in the past. Our numerator instructions say: ""Look for most recent documentation of spirometry evaluation results in the medical record; do not limit the search to the reporting period." The concern is that many patients who have been diagnosed with COPD have never undergone spirometry evaluation, shown by multiple studies cited below. Since the measure focus is limited to confirming existing cases of COPD if spirometry has never before been done, respiratory symptoms would be beyond the scope of the measure as written. COPD is often underdiagnosed and misdiagnosed in the primary care setting (Tinkelman, 2006). Marked underutilization of spirometry testing has been well documented and is thought to be a contributing factor (Foster et al, 2007; Yawn et al, 2008; Lee et al, 2006; Damarla et al, 2006). A recent study found that only 32% of patients with a new diagnosis of COPD had undergone spirometry within the previous 2 years to 6 months following diagnosis (Han et al., 2007). A cross-sectional study

0091: COPD: spirometry evaluation

implemented in July 2008 was designed to assess attitudes and barriers to COPD guideline usage. Five hundred US PCPs (309 family medicine physicians, 191 internists) were included in the analysis. Over two-thirds (69.1%) of PCPs agreed that when COPD is suspected, the diagnosis should be confirmed by spirometry; however, only 23.4% of surveyed PCPs indicated that they "nearly always" (>=91% of the time) order spirometry when patients report symptoms suggestive of COPD

Committee response:

The Committee recommended that full harmonization of measures 0091 and 0577 should occur by the next annual update to continue endorsement.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0
- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):
- Decision: Ratified for continued endorsement

0102: COPD: inhaled bronchodilator therapy

Submission | Specifications

Status: Maintenance, Original Endorsement: Aug 10, 2009

Description: Percentage of patients aged 18 years and older with a diagnosis of COPD and who have an FEV1/FVC < 70% and have symptoms who were prescribed an inhaled bronchodilator

Numerator Statement: Patients who were prescribed an inhaled bronchodilator

Denominator Statement: All patients aged 18 years and older with a diagnosis of COPD, who have an FEV1/FVC <70% and have symptoms (eg, dyspnea, cough/sputum, wheezing)

Exclusions: Documentation of medical reason(s) for not prescribing an inhaled bronchodilator; documentation of patient reason(s) for not prescribing an inhaled bronchodilator; documentation of system reason(s) for not prescribing an inhaled bronchodilator

Adjustment/Stratification: No risk adjustment or risk stratification; No risk adjustment or risk stratification. We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.

Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team

Type of Measure: Process

Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records Retooled eMeasure

Measure Steward: American Medical Association – Physician Consortium for Performance Improvement

IMPLEMENTATION COMMENTS
- The American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC): None of the QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluations

0102: COPD: inhaled bronchodilator therapy

1. Importance to Measure and Report (*based on decision logic*): **PASSED all three sub-criteria.**
1a. Impact: H-18; M-2; L-0; I-0; 1b. **Performance Gap: H-13; M-4; L-0; I-0**
Rationale:
- 1a: Measure focuses on a high impact condition affecting 12 million Americans and costs $18 billion per year.
- 1b: The developer reported that this measure was used in the CMS Physician Quality Reporting Initiative/System (PQRS) in the: 2007 through 2011 claims option; 2009 through 2011 registry option; and the 2011 group practice reporting II option. In the 2008 data 53.61% of patients reported on did not meet the measure.

1c. Evidence (*based on decision logic*): **Y-17; N-1**
Rationale:
- Agree with developer's assessment of evidence. The measure includes the range of 60-70% FEV1/FVC ratio for which the evidence is less than clear.
- This is aligned with the GOLD crieria.
- Data showing that long-acting beta agonists (LABAs) reduce FEV1 decline are few. There is limited performance data for the 60-80% range for FEV1/FVC ratio population.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **PASSED reliability and validity**.
2a. Reliability: H-7; M-11; L-0; I-0 2b. **Validity: H-14; M-4; L-0; I-0**
Rationale:
- Measure includes eSpecifications. Tested in EHRs only.
  - The Committee agrees with need for stratification for disparities.
  - CPAP is included in mechanical ventilation – captures both invasive and non-invasive ventilation.

3. Usability: H-15; M-3; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- This measure is in current use in CMS´s PQRS program and has been continuously since 2007.
- 3a: History of use in certification and public reporting demonstrate usability.
- 3b: Lack of evidence that measure is currently informing quality improvement.

4. Feasibility: H-15; M-4; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Currently in use in PQRS using a variety of data sources
- EHR specifications.

Steering Committee Recommendation for Endorsement: Y-18; N-0
Rationale:
- There is good evidence that bronchodilators improve function and there is a good data to suggest that people who meet the individual criteria are not getting bronchodilators.
- Measure is in use; retooled eMeasure.

Public & Member Comment
Comments themes included:
- Suggest changing the denominator of this measure to patients with an FEV1 <60% of predicted, thus brining it in line with the most current guidelines. Concern that the measure as written would penalize physicians even when their practice aligns with current clinical practice guidelines.
  Developer response: This measure was originally developed prior to the 2011 ACP, ACCP, ATS, and ERS guideline recommendation of treatment with inhaled bronchodilators for stable COPD patients with respiratory symptoms and FEV1 <60% predicted. The PCPI agrees that the measure should be brought in line with the most current guidelines and will bring back the suggested measure change to our COPD Work Group for proposed revision.
- Recommendation that the medications and/or drug classes included in these measures be included as part of the NQF technical specifications. Should the measure developer not specify these, BIPI suggests that this level of detail be a requirement for measure submissions.

0102: COPD: inhaled bronchodilator therapy
NQF response: The complete specifications for all measures as submitted by the developers are included in Appendix A:Technical Specifications in the draft report.   - Questioning the reference for the FEV1 <70% figure. **Developer response:** This measure was originally developed prior to the 2011 ACP, ACCP, ATS, and ERS guideline recommendation of treatment with inhaled bronchodilators for stable COPD patients with respiratory symptoms and FEV1 <60% predicted. The PCPI agrees that the measure should be brought in line with the most current guidelines and will bring back the suggested measure change to our COPD Work Group for proposed revision.
Committee response: The Committee reviewed the comments and the developer responses and made no changes to their recommendations.
Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0   Decision: Approved for continued endorsement
Board of Directors (July 31, 2012):   Decision: Ratified for continued endorsement
Appeals
One appeal was received on this measure: - Forest Research Institute, Inc. requested that Tudorza™ and Pressair™ (aclidinium bromide inhalation powder) be included in the list of medications for this measure. The appellant's primary objection was that as the measure is currently written, access to all new treatments may be limited as healthcare professionals may be discouraged from trying new therapeutic options. As the company who manufactures and sells Tudorza™ and Pressair™, they were concerned that this will not only directly and materially impact Forest, but will also directly impact patients who suffer from COPD. **Developer Response:** The developer determined that the newly approved (i.e., granted FDA approval July 23, 2012) drug, aclidinium bromide inhalation powder (classified as a long-acting muscarinic antagonist [LAMA]) would be appropriate to add to the AMA-PCPI Bronchodilator Value Set. They have evaluated and determined the appropriate LAMA RXNORM concepts to add to the value set accordingly. The measure specifications were updated in November 2012. It is important to note that AMA-PCPI protocol is to include the Semantic Clinical Drug Name in supporting specifications rather than the Brand Name. The Brand Names Tudorza™ and Pressair™, as referenced in the appeal letter by Forest Laboratories, Inc., will not be included, but the generic (i.e., Semantic Clinical Drug) drug name will be included.   **Consensus Standards Approval Committee (CSAC) Review (October 2012):**   - During the CSAC discussion the measure developer reaffirmed their intent to modify the measure to include the generic drug name in the specification. The appellant advised CSAC that their concerns were satisfied by the change in the measure specifications.   - The CSAC members on the call voted unanimously to uphold endorsement of the measure with the revised specifications.   **Board of Directors (October 29, 2012):**   - The Board upheld the CSAC decision and voted unanimously to uphold endorsement of the measure with the revised specifications.

0577: Use of spirometry testing in the assessment and diagnosis of COPD

Submission |Specifications

Status: Maintenance, Original Endorsement: Dec 04, 2009
Description: This measure assesses the percentage of members 40 years of age and older with a new diagnosis of COPD or newly active COPD, who received appropriate spirometry testing to confirm the diagnosis.
Numerator Statement: The measure looks at the number of health plan members whose initial diagnosis of COPD is being confirmed using spirometry.
Denominator Statement: Any health plan member 42 years or older as of December 31 of the measurement year, who had a diagnosis of COPD during the Intake Period.
Exclusions: Members are excluded from the denominator if they had a claim/encounter with a COPD diagnosis during the 730 days (2 years) prior to the index episode start date (IESD).
Adjustment/Stratification: No risk adjustment or risk stratification N/A N/A
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy
Measure Steward: National Committee for Quality Assurance

IMPLEMENTATION COMMENTS

- Measure 0577 is not very useful as they are subject to small numbers issues. Additionally, there are issues with data availability. For example, if a spirometry test is performed in the hospital these data may not be captured and the patient could be classified as non-compliant. The measure is also designed to identify new diagnosis of COPD and the timeline is insufficient to have data on new enrollees.
- The American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC notes that this measure should be harmonized with Measure 0091: COPD: spirometry evaluation.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): PASSED all three sub-criteria.
1a. Impact: H-12; M-5; L-0; I-1; **1b. Performance Gap: H-14; M-4; L-0; I-0**
Rationale:

- 1a: Measure focuses on high impact condition affecting 12 million Americans and contributing to significant mortality.
- 1a: Sufficient data submitted on the impact of COPD and its severity as quantified by spirometry when it is diagnosed.
- 1b: Data demonstrates under utilization of spirometry.
- 1b: The health plan mean results = 41.7% (2010) 38.8% (2009) 37.6% (2008). No data provided at the clinician level.
- 1b. The measure developers note that the measure is not specified to detect disparities. They argue that doing so would create undue burden on measure users.

1c. Evidence (*based on decision logic*): **Y-18; N-0**
Rationale:

- The Committee noted that the developer's assessment of evidence was inconsistent with materials presented.
- The Committee notes that the evidence is appropriate and consistent for the use of spirometry to confirm the diagnosis of COPD.
- The question remains whether confirming the diagnosis improves overall outcomes.

0577: Use of spirometry testing in the assessment and diagnosis of COPD

2. Scientific Acceptability of Measure Properties (*based on decision logic*)**: PASSED reliability and validity.**
2a. Reliability: H-12; M-6; L-0; I-0; 2b. Validity: H-13; M-5; L-0; I-0
Rationale:
- Reliability and validity testing performed and results provided for commercial, Medicare and Medicaid plans. No testing at the clinician level was done.
- 2b: RELIABILITY Measure is based on administrative data collected in electronic format (CPT codes) rather than data collected directly during care delivery process.
  - The specification for age 42 with a 2 year look back to arrive at a population age 40 and above was initially confusing. The developer clarified that the denominator population is identifed first, then the numerator is calculated from that population.
  - When asked why the denominator population was limited to patients aged 40 years and older, the developer replied that the data for patients under age 40 is too noisy. The developer also notes a specificity issue in the younger ages in determining COPD vs asthma.
  - No rationale for age threshold of 40 years was given in the submission.
    - The developer noted that the data is clean and reliable enough for the COPD diagnosis without confusion with asthma for the 40-56 year group.
- VALIDITY - Meaningful differences in performance results indicate overall low performance (<50% at the 90th percentile) but with improvement in performance from year to year (2008 - 2010) within percentile levels.
  - No specifications to detect disparities. The developer reported that they have repeatedly found a great variation in the plans' collection of a standardized race, ethnicity, SES data such that is cannot be used to report stratified results.

3. Usability: H-7; M-10; L-1; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- The measure has been reported in HEDIS since 2007.
- 3a: History of use in NCQA certfication demonstrate usability.
- 3b: Lack of evidence that measure is currently informing quality improvement. There has been slow improvement in three years of data. Why not a bigger impact?
  - The developer speculated that the limitation of adminstrative claims coding for COPD influences the results as well as low performance.
- Measure is used in public reporting and QI. Not clear from the submission how meaningful and understandable the measure is to the public.
- Enrollment requirement for > 2 years is difficult for the transient Medicaid population.

4. Feasibility: H-12; M-6; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- 4a-4b: Uses adminstrative billing data.
- A strategy to migrate to eSpecifications was not provided.
- 4c – A general description of HEDIS methodology used to ensure measure integrity is provided, however, specific information related to potential problems with this measure is not addressed.

Steering Committee Recommendation for Endorsement: Y-18; N-0
Rationale:
- In use as a HEDIS health plan measure.
- Opportunity for improvement exists.
- Claims based measure.
- Not harmonized with competing measure 0091.

0577: Use of spirometry testing in the assessment and diagnosis of COPD

RELATED AND COMPETING MEASURES

The Committee identified the following two measures as competing:

- **0091 COPD: Spirometry evaluation (AMA PCPI)**
- **0577 Use of spirometry testing in the assessment and diagnosis of COPD (NCQA)**

- The Committee reviewed tables comparing the two measures on the factors identified in NQF's guidance for related and competing measures. The developers agreed to work together and by the time of the Steering Committee conference call after the comment period, they will present a detailed plan and timeline to achieve two fully harmonized measures – one for health plans and one for clinicians. Harmonization should include focus on denominator (including age), timeframe of measurement, and confirming diagnosis. If a reasonable plan and timeframe cannot be presented the Committee will determine the measure that is most valid.

   NCQA/AMA-PCPI Joint Response (0091 and 0577): Measure development staff from NCQA and PCPI acknowledge that the criteria in our respective COPD measures should be aligned wherever it is sensible to do so. Recommendations to address misalignment in the current specifications that are due to the different data collection and reporting environments will be taken to our respective measure advisory expert panels to harmonize the criteria if possible. We will inform NQF staff as soon as the review and approval process is complete in order to allow NQF to post the most current specification in the QPS.

Public & Member Comment

Comments included:

- Harmonization of the two spirometry measures.

   Developer response: Measure development staff for NCQA and PCPI acknowledge that the criteria in our respective COPD measures should be aligned wherever it is sensible to do so. Recommendations to address misalignment in the current specifications that are due to the different data collection and reporting environments will be taken to our respective measure advisory expert panels to harmonize the criteria if possible.

- ACP and USPSTF both recommend against screening spirometry even in the presence of risk factors. The measure needs to clarify screening in symptomatic patients. The ACP Guideline referenced needs to be updated. Question about the appropriate timeframe to complete spirometry and confirm diagnosis.

   Developer response: This is a health plan measure that captures spirometry through administrative claims to confirm diagnosis of COPD. The numerator identifies any members in the denominator with at least on claim/encounter with any code in Table SPR-B for spirometry in the 730 days before the index episode start date (IESD) to 180 days after the IESD. Index Episode Start Date is the earliest date of service for an eligible visit during the Intake Period with any diagnosis of COPD. The numerator is calculated over a 12 month intake period beginning on July 1 of year prior to the measurement year (calendar year) and ending June 30 of the measurement year.

Committee response:

The Committee recommended that full harmonization of measures 0091 and 0577 should occur by the next annual update to continue endorsement.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):

- Decision: Ratified for continued endorsement

1825: COPD- management of poorly controlled COPD

Submission |Specifications

Status: New Submission

Description: The percentage of patients age 18 years or older with poorly controlled COPD, who are taking a long acting bronchodilator.

Numerator Statement: Patients age 18 years or older with poorly controlled COPD, who are taking a long acting bronchodilator.

Denominator Statement: Patients age 18 years and older with poorly controlled COPD who are taking a short acting bronchodilator.

Exclusions: Patients who had lung transplantation in the past 3 years.

Adjustment/Stratification: No risk adjustment or risk stratification This specific measure addresses all COPD patients, regardless of the disease, across the entire measured population. Using our highly specific condition validation rule algorithms, people with a confirmed diagnosis of COPD will be included in the denominator. Therefore, no risk adjustment or risk stratification is necessary for this unique measure.This specific measure addresses all COPD patients, regardless of the disease, across the entire measured population. Using our highly specific condition validation rule algorithms, people with a confirmed diagnosis of COPD will be included in the denominator. Therefore, no risk adjustment or risk stratification is necessary for this unique measure.

Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Facility, Health Plan, Integrated Delivery System, Population : County or City, Population : National, Population : Regional, Population : State

Type of Measure: Process

Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Pharmacy, Healthcare Provider Survey, Patient Reported Data/Survey

Measure Steward: ActiveHealth Management

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): PASSED all three sub-criteria.

1a. Impact: <u>H-17; M-0; L-0; I-0</u>; 1b. Performance Gap: <u>H-16; M-2; L-0; I-0</u>

Rationale:

- 1a. significant impact of pharmacotherapy for COPD.
- 1b: Additional information on performance gap from the developer: the performance across 106 client populations (total N =8657 patients.) The inter quartile range showed that at least 10 percent of the test population had a compliance rate of 63% or less:
  10th percentile – 63%
  25th percentile – 72%
  50th percentile – 77%
  75th percentile – 83%
  90th percentile - 100%
  Inter Quartile Range – 12%

1c. Evidence (*based on decision logic*): <u>Y-14; N-4;I-0</u>

Rationale:

- Solid evidence base: 8 meta-analyses, 42 studies were presented.
- There is good evidence that adding a LABA to a SABA in COPD, which is not controlled, will improve symptoms.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): PASSED reliability and validity.

2a. Reliability: H-3; M-15; L-0; I-0; 2b. Validity: H-5; M-12; L-1; I-0

Rationale:

- Reliability and validity information submitted applied to the entire subscriber base as opposed to testing of the actual measure.
- Age 18 years and above – raises same concerns regarding specificity of the diagnosis in younger patients.

1825: COPD- management of poorly controlled COPD

3. Usability: H-7; M-9; L-2; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- 3a-3b: Though data presented suggests that 1 in 4 were not prescribed long-acting bronchodilators, no data was presented to demonstrate that the measure is useful for accountability or quality improvement.

4. Feasibility: H-11; M-7; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- 4a: Based on claims data.

Steering Committee Recommendation for Endorsement: Y-18; N-0
- High impact condition.
- Solid evidence and significant performance gap.
- Claims based measure.

Public & Member Comment
Comments included:
- Question about the denominator specifications and recommend alignment with the current clinical practice guideline of long-acting bronchodilator therapy in patients with symptomatic COPD and an FEV1 <60% predicted.
  Developer response: ActiveHealth Management appreciates the comment from the ATS and agree with its' concerns. We will update our measure with any available codes for the appropriate FEV1 value. We also do allow for physician feedback to inform us that a patient may not qualify for a measure based on his or her current health status (i.e. in this case, that the patient has an FEV1 > 60%) in order to avoid falsely penalizing a clinician.
- There are other measures of poorly controlled COPD other than a short acting bronchodilator, such as hospitalization, ED visit, steroid inhaler, visit frequency that could qualify a patient for the denominator. Denominator should include patients on long and short acting bronchodilators; not sure how they will calculate the percentage if numerator is not included in the denominator.
  Developer response: ActiveHealth Management appreciates the comment from The ACP Performance Measurement Committee. In response, we would like to point out that we do include measures of poorly controlled COPD other than a short acting bronchodilator. We include COPD patients who are older than 18 years of age, with a prescription for a short acting-inhaler (beta-agonist or anticholinergics as single agents or in combination), and either an emergent COPD treatment procedure, or greater than a 25 total days supply of steroids in the measurement year overlapping within 3 days of the COPD diagnosis code. This measure identifies a subset of symptomatic COPD patients who are treated with a short acting inhaler and still not well controlled. These patients would need to be on a long acting inhaler as stated by the guideline. We don't specifically exclude those patients on a long acting inhaler in our denominator. We are looking specifically for those patients who are already on a short acting inhaler, but continue to have symptoms, in order to identify those patients that are truly uncontrolled despite a using a short acting inhaler.
- For ease of stakeholder implementation, Boehringer Ingelheim recommends that the medications and/or drug classes included in these measures be included as part of the NQF technical specifications. Should the measure developer not specify these, we suggest that this level of detail be a requirement for measure submissions.
- **NQF response:** In the draft report Appendix A - Technical Specifications provides all the infromation submitted by the developer. For this measure the numerator specification identify the drug classes: 1. Presence of Health Information Exchange data indicating at least 1 refill of BRONCHODILATOR (LONG ACTING) in the past 12 months
  2. Presence of at least 1 refill of BRONCHODILATOR (LONG ACTING) in the past 12 months
  3. Presence of patient data confirming at least 1 refill of BRONCHODILATOR (LONG ACTING) in the past 12 months
  Prescence of feedback from provider or patients indicating BRONCHODILATOR (LONG ACTING) already implemented
  Prescence of feedback from provider or patients indicating BRONCHODILATOR (LONG ACTING) outside of benefit plan.
  Prescence of feedback from provider or patients is taking BRONCHODILATOR (LONG ACTING)drug samples.
  See attachment [to the measure submuission form posted on the NQF web site]. for code set

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

1825: COPD- management of poorly controlled COPD

- Decision: Approved for endorsement

Board of Directors (July 31, 2012):

- Decision: Ratified for endorsement

1891 Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following chronic obstructive pulmonary disease (COPD) hospitalization

Submission |Specifications

Status: New Submission

Description: The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as readmission for any cause within 30 days after the date of discharge of the index admission, for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.

Numerator Statement: The outcome for this measure is 30-day all-cause readmission. We define all-cause readmission as an inpatient admissions for any cause within 30 days after the date of discharge from the index admission. for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD. If a patient has one or more admissions (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission. For the detailed definition of planned readmissions, please refer to the attached report, Respecifying the Hospital 30-Day Pneumonia and 30-Day Chronic Obstructive Pulmonary Disease Readmission Measures by adding a Planned Readmission Algorithm.

Denominator Statement: This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 40 years or older. We have explicitly tested the measure in both age groups.

The cohort includes admissions for patients discharged from the hospital with either a principal diagnosis of COPD (see codes below) OR a principal diagnosis of respiratory failure (see codes below) WITH a secondary discharge diagnosis of acute exacerbation of COPD (see codes below) and with a complete claims history for the 12 months prior to admission.

Exclusions: An index admission is any eligible admission to an acute care hospital assessed in the measure for the outcome (readmitted within 30 days of the date of discharge from the initial admission).

The measure excludes admissions for patients:

• with an in hospital death (because they are not eligible for readmission).

• transferred to another acute care facility (We assign the outcome for the acute episode of care to the hospital that discharges the patient to the non-acute care setting because the discharging hospital initiates the discharge and the transition to the outpatient setting. Therefore, the last admission in the acute care setting for the episode of care is eligible to be an index admission in the measure. The prior admissions in the same acute episode are excluded from the measure.)

• who were discharged alive and against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge).

• without at least 30 days post-discharge claims data (because the 30-day readmission outcome cannot be assessed in this group).

Additionally, admissions that occur within 30 days of the discharge date of an earlier index admission are not themselves considered to be index admissions. Any COPD admission can only be an index admission or a readmission, but not both.

Of note, a patient may satisfy multiple exclusion criteria.

Adjustment/Stratification: Statistical risk model Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for Statistical Models Used for Public Reporting of Health Outcomes"1.

The measure employs a hierarchical logistic regression model to create a hospital-level 30-day RSRR. This approach to modeling appropriately accounts for the structure of the data (patients clustered within hospitals), the underlying risk due to patients' comorbidities, and sample size at a given hospital when estimating hospital readmission rates. In brief, the approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals.2 At the patient level, the model adjusts the log-odds of readmission within 30 days of discharge for age and selected clinical covariates. The second level models hospital-specific intercepts as arising from a normal distribution. The hospital-specific intercepts represent the hospital contribution to the risk of readmission, after accounting for patient risk and sample

size, and can be inferred as a measure of quality. The hospital-specific intercepts are given a distribution in order to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSRR is calculated as the ratio of the number of "predicted" to the number of "expected" readmissions, multiplied by the national unadjusted readmission rate. For each hospital, the numerator of the ratio ("predicted") is the number of readmissions within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the denominator ("expected") is the number of readmissions expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case-mix to an average hospital's performance with the same case-mix. Thus, a lower ratio indicates lower-than-expected readmission or better quality and a higher ratio indicates higher-than-expected readmission or worse quality.

The predicted hospital outcome (the numerator) is the sum of predicted probabilities of readmission for all patients at a particular hospital. The predicted probability of each patient in that hospital is calculated using the hospital-specific intercept and patient risk factors. The expected number of readmissions (the denominator) is the sum of expected probabilities of readmission for all patients at a hospital. The expected probability of each patient in a hospital is calculated using a common intercept and patient risk factors.

Candidate and Final Risk-adjustment Variables: The measure was developed using Medicare FFS claims data. Candidate variables were patient-level risk-adjustors that were expected to be predictive of readmission, based on empirical analysis, prior literature, and clinical judgment, including age and indicators of comorbidity and disease severity. For each patient, covariates are obtained from Medicare claims extending 12 months prior to and including the index admission. The model adjusts for case mix differences based on the clinical status of patients at the time of admission. We used condition categories (CCs), which are clinically meaningful groupings of more than 15,000 ICD-9-CM diagnosis codes, and combinations of CCs as candidate variables. A file which contains a list of the ICD-9-CM codes and their groupings into CCs is available on www.qualitynet.org (http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1182785083979).

We did not risk-adjust for CCs that were possible adverse events of care and that were only recorded in the index admission. Only comorbidities that conveyed information about the patient at that time or in the 12 months prior, and not complications that arose during the course of the hospitalization were included in the risk-adjustment.

References:

1. Krumholz HM, Brindis RG, Brush JE, et al. 2006. Standards for Statistical Models Used for Public Reporting of Health Outcomes: An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College of Cardiology Foundation. Circulation 113: 456-462.

2. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226.

Frequencies and odds ratios for the model development sample (2008 Medicare FFS patients aged 65 and older; n=170,480 admissions) are presented below.

Table 1: Final set of risk-adjustment variables:

Variable//Frequency (%)//Odds Ratio (95% confidence interval)

Demographic

• Age-65 (years above 65, continuous) for 65 and over cohorts/Frequency = -/OR (95% CI)=1.00 (1.00-1.00);

(this variable is Age (years, continuous) for 18 and over cohorts)

Cardiovascular/Respiratory

• Sleep Apnea (ICD-9 CM diagnosis codes: 327.20, 327.21, 327.23, 327.27, 327.29, 780.51, 780.53, 780.57) / Frequency=10.46% / OR (95% CI)=1.00 (0.96-1.03)

• History of mechanical ventilation (ICD-9 procedure codes: 93.90, 96.70, 96.71, 96.72)/ Frequency=7.33/ OR (95% CI)=1.13 (1.08-1.18)

• Respirator dependence/respiratory failure (CC 77-78)/ Frequency=1.38/ OR (95% CI)=1.12 (1.03-1.23)

• Cardio-respiratory failure and shock (CC 79)/ Frequency=29.84/ OR (95% CI)=1.21 (1.18-1.24)

• Congestive heart failure (CC 80)/ Frequency=43.86/ OR (95% CI)=1.21 (1.18-1.24)

• Chronic atherosclerosis (CC 83-84)/ Frequency=51.57/ OR (95% CI)=1.11 (1.08-1.13)

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• Arrhythmias (CC 92-93)/ Frequency=37.2/ OR (95% CI)=1.17 (1.12-1.22)
• Vascular or circulatory disease (CC 104-106)/ Frequency=38.2/ OR (95% CI)=1.09 (1.05-1.14)
• Arrhythmias (CC 92-93)/ Frequency=38.48/ OR (95% CI)=1.14 (1.11-1.17)
• Other and Unspecified Heart Disease (CC 94)/ Frequency=19.45/ OR (95% CI)=1.08 (1.05-1.11)
• Vascular or Circulatory Disease (CC 104-106)/ Frequency=39.42/ OR (95% CI)=1.09 (1.06-1.11)
• Fibrosis of lung and other chronic lung disorder (CC 109)/ Frequency=18.12/ OR (95% CI)=1.09 (1.06-1.12)
• Pneumonia (CC 111-113)/ Frequency=51.51/ OR (95% CI)=1.10 (1.07-1.13)
Other Comorbid Conditions
• History of Infection (CC 1, 3-6)/ Frequency=32.16/ OR (95% CI)=1.08 (1.05-1.11)
• Metastatic cancer and acute leukemia (CC 7)/ Frequency=2.64/ OR (95% CI)=1.24 (1.15-1.33)
• Lung, upper digestive tract, and other severe cancers (CC 8)/ Frequency=5.91/ OR (95% CI)=1.19 (1.13-1.25)
• Lymphatic, head and neck, brain, and other major cancers; breast, prostate, colorectal and other cancers and tumors; other respiratory and heart neoplasms (CC 9-11)/ Frequency=13.88/ OR (95% CI)=1.04 (1.01-1.08)
• Other digestive and urinary neoplasms (CC 12)/ Frequency=7.06/ OR (95% CI)=0.96 (0.92-1.01)
• Diabetes and DM complications (CC 15-20, 119-120)/ Frequency=39.15/ OR (95% CI)=1.08 (1.05-1.11)
• Protein-calorie malnutrition (CC 21)/ Frequency=7.57/ OR (95% CI)=1.14 (1.09-1.19)
• Disorders of Fluid/Electrolyte/Acid-Base (CC 22-23)/ Frequency=34.57/ OR (95% CI)=1.17 (1.14-1.20)
• Other Endocrine/Metabolic/Nutritional Disorders (CC 24)/ Frequency=68.61/ OR (95% CI)=0.91 (0.89-0.94)
• Pancreatic Disease (CC 32)/ Frequency=4.85/ OR (95% CI)=1.12 (1.06-1.17)
• Peptic Ulcer, Hemorrhage, Other Specified Gastrointestinal Disorders (CC 34)/ Frequency=12.58/ OR (95% CI)=1.07 (1.03-1.11)
• Other Gastrointestinal Disorders (CC 36)/ Frequency=58.29/ OR (95% CI)=1.04 (1.02-1.07)
• Severe Hematological Disorders (CC44)/ Frequency=2.07 /OR (95% CI)=1.12 (1.04-1.20)
• Iron Deficiency and Other/Unspecified Anemias and Blood Disease (CC 47)/ Frequency=42.09/ OR (95% CI)=1.13 (1.10-1.16)
• Dementia and senility (CC 49-50)/ Frequency=17.07 /OR (95% CI)=1.00 (0.97-1.04)
• Drug/Alcohol Induced Dependence/Psychosis (CC 51-52)/ Frequency=3.67/ OR (95% CI)=1.15 (1.09-1.22)
• Major Psych Disorders (CC 54-56)/ Frequency=10.79/ OR (95% CI)=1.08 (1.04-1.12)
• Depression (CC 58)/ Frequency=19.63/ OR (95% CI)=1.06 (1.03-1.09)
• Anxiety Disorders (CC 59)/ Frequency=3.27/ OR (95% CI)=1.15 (1.08-1.22)
• Other Psychiatric Disorders (CC 60)/ Frequency=18.37/ OR (95% CI)=1.11 (1.08-1.15)
• Quadriplegia, paraplegia, functional disability (CC 67-69, 100-102, 177-178)/ Frequency=5.02/ OR (95% CI)=1.08 (1.02-1.13)
• Polyneuropathy (CC 71)/ Frequency=7.91/ OR (95% CI)=1.11 (1.06-1.16)
• Acute Coronary Syndrome (CC 81-82)/ Frequency=9.54/ OR (95% CI)=1.08 (1.04-1.12)
• Hypertensive Heart and Renal Disease or Encephalopathy (CC 89)/ Frequency=13.20/ OR (95% CI)=1.13 (1.09-1.17)
• Stroke (CC 95-96)/ Frequency=6.84/ OR (95% CI)=1.04 (1.00-1.09)
• Renal Failure (CC 131)/ Frequency=18.61/ OR (95% CI)=1.10 (1.06-1.14)
• Decubitus ulcer or chronic skin ulcer (CC 148-149)/ Frequency=7.43/ OR (95% CI)=1.03 (0.99-1.08)
• Cellulitis, Local Skin Infection (CC 152)/ Frequency=12.50/ OR (95% CI)=1.07 (1.03-1.11)
• Vertebral Fractures (CC 157)/ Frequency=5.24/ OR (95% CI)=1.14 (1.08 -1.19)
ICD-10-CM codes for model variables (for those variables defined by ICD-9 CM codes rather than CCs)
Mechanical Ventilation
• 5A09357 Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, Continuous Positive Airway Pressure
• 5A09457 Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, Continuous Positive Airway Pressure
• 5A09557 Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, Continuous Positive Airway Pressure
• 5A1935Z Respiratory Ventilation, Less than 24 Consecutive Hours
• 5A1945Z Respiratory Ventilation, 24-96 Consecutive Hours
•5A1955Z Respiratory Ventilation, Greater than 96 Consecutive Hours
Sleep Apnea
• G4730 Sleep apnea, unspecified
• G4731 Primary central sleep apnea

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• G4733 Obstructive sleep apnea (adult) (pediatric)
• G4737 Central sleep apnea in conditions classified elsewhere
• G4739 Other sleep apnea Results of this measure will not be stratified.
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Administrative claims
Measure Steward: Centers for Medicare & Medicaid Services (CMS) **Other organizations:** MPR: Mathematica Policy Research; RTI: Research Triangle Institute

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **PASSED all three sub-criteria**
1a. Impact: H-17; M-1; L-0; I-0; **1b. Performance Gap: H-15; M-3; L-0; I-0**
<u>Rationale:</u>
COPD is a leading cause of readmissions to the hospital.
- 1a: The developer presented data demonstrating significant readmissions and high cost.
- 1b: The submission indicates the 30-day readmission rate among patients hospitalized for COPD is 22.6%, accounting for 4% of all 30-day readmissions. In an analysis of Medicare FFS patients, crude readmission rates of a national sample of 176,481 patients across 4,547 hospitals demonstrates that hospital readmission rates for COPD patients are generally high, at a mean of 21.8%, and that there is a large amount of variation in outcomes, with the rates ranging from 10.8-32.6% (5th and 95th percentiles respectively).

1c. Evidence (*based on decision logic*): <u>**Y-18; N-1; I-0**</u>
<u>Rationale:</u>
- This is an outcome measure.
- Strong evidence base exists for interventions to improve outcomes such as readmission rates.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **PASSED reliability and validity**
2a. Reliability: H-15; M-4; L-0; I-0; 2b. Validity: H-3; M-10; L-5; I-1
<u>Rationale:</u>
- 2a: Measure specifications are clear and consistent and can be reliably measured.
  - 30 days begins at discharge from acute care regardless of whether patient goes to a LTAC, SNF or rehabilitation facility.
- 2b: Risk adjustment methodology is robust.
  - Individual risk factors should include rate of previous exacerbations and active smoking status if available. Institutional risk "factors" should include regional long term particle pollution levels and if individual active smoking rates are not available, regional smoking rates. All are known to contribute to exacrbations of COPD.
  - Concerns about risk adjustment for patients who had exacerbations and were ventilated but not for patients with previous admissions with exacerbations.
  - The numbers of patients with COPD diagnosis between 18-40 years is very small.
  - Multiple readmissions within the 30-day window only count once.
  - A patient may be counted more than once if they have multiple admissions during the year.

3. Usability: H-7; M-11; L-1; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
<u>Rationale:</u>
- 3a-3b: Similar measures have been used for other clinical conditions (e.g., AMI, HF, PN) and have been demonstrated to support both public reporting and quality improvement
- Measure was recently tested and expanded to include those beyond the Medicare population (18 years and above).
- CMS is monitoring observation stays to assess whether use of the readmission measure would incentivize hospitals potentially to increase their use of observation stays in lieu of admitting patients who come back to the hospital within the 30-day time frame.
- The measure publicly reported by CMS rolls up 3 years of data so the results are not timely which hampers quality improvement activities.

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4. Feasibility: H-14; M-5; L-0; I-0
(4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)
Rationale:
- The measure is based on adminstrative data.

Steering Committee Recommendation for Endorsement: Y-17; N-2
Rationale:
- Outcome measure.
- Variation in outcomes demonstrate opportunity for improvement.
- Unknown impact of local air quality should be explored for possible impact on the measure results.

Additional Comments/Questions:
- The Committee requested a commitment from CMS to explore the possible effect of differences in air quality at hospital locations on the results of the measures for 30-day Mortality and 30-day Readmissions for COPD.
- The Committee requested additional information about the 18-40 year population.
  Measure Developer Response:
  CMS appreciates the Committee members' suggestion that we consider adjusting the COPD measures for ambient particulate levels using monitoring data available from the US Environmental Protection Agency (EPA). We asked the measure developer, YNHHSC/CORE, to conduct a brief literature review and consult with 2-3 experts to explore this suggestion. YNHHSC/CORE found that, as noted by the Committee, the literature suggests that ambient levels of particulate matter affect short-term mortality and admission rates for COPD (and for other cardiovascular and respiratory conditions). EPA considered these effects in its most recent revision to its health-based national ambient air quality standard for particulates. Although important from a public health standpoint, these increases are relatively small. YNHHSC/CORE did not find any studies of the effect of ambient particulates on mortality and readmission rates among hospitalized patients for COPD.
  The purpose of risk adjustment is to account for differences across hospitals in factors unrelated to quality, such as patient comorbidities, that may affect the outcome of mortality and readmission. It is important to risk adjust for factors that could bias the measure results (e.g. could favor hospitals in low pollution areas). Adjusting for particulates would make sense if it were technically feasible and if it would improve the model by reducing or eliminating a potential bias.
  Based on its review, YNHHSC/CORE does not recommend adding a PM variable as it is unlikely to affect hospital-level risk-standardized rates. The studies to date focus on the general non-hospitalized population, and it is not clear how they apply to the patients in our models – that is, patients hospitalized with an acute exacerbation of COPD. YNHHSC/CORE reported that the experts felt the effect of adjusting for PM would likely be small or negligible given that the model applies to patients already hospitalized for COPD. Second, there are feasibility issues. Modeling the effect appropriately would be complex. YNHHSC/CORE's preliminary review of the issues suggests it would be inappropriate to use ambient air quality levels as a risk adjuster without also adjusting for other factors that affect the strength and direction of the potential association between particulate levels and the outcomes, including temperature, humidity, seasonal variation, and city-level factors such as smoking and air conditioning use rates. Given these challenges, and our expectation that building particulate levels into the model is not likely to significantly improve the models' performance even with the best methods, CMS does not plan to pursue adding air pollution variables to the models at this time.

Public & Member Comment
Comments included:
- Concerns about the reliably and validly of the ICD-9-CM coding used to identify the intended target population.
  Developer response: In the development of the COPD measures we followed a careful process aimed at selecting a cohort that is both clinically coherent and comprehensive. The cohort codes were informed by a thorough literature review and a review of codes used for other COPD measures. They have also been reviewed by both a working group of experts knowledgeable about ICD-9 coding for the COPD population and a national Technical Expert Panel. This

group, for example, made the decision to include patients with primary discharge diagnosis codes of respiratory failure and secondary codes for COPD in order to increase the sensitivity of case selection. Finally, a study by Brian Stein et al, published in Chest 2012 suggests that a set of ICD-9 codes similar to the ones we used to define the cohort has high positive predictive value. The commenter also refers to the medical record validation process used in prior CMS measures (e.g. pneumonia mortality and readmission). Previously, CMS has undergone medical record validation to confirm the adequacy of administrative codes for risk-adjustment but not to assess cohort selection. The selection of the appropriate codes for identifying the cohort is based on face validity and review of experts with knowledge of coding practices. CMS has a process for yearly maintenance of the measures, at which time the cohort codes will be reassessed to evaluate any need for changes or updates.

- Suggest measure 1891 only be reported as a paired measure along with 1893 in order to more accurately reflect both outcomes of interest, the overall quality of care provided, and to enhance usability.
  Developer response: CMS agrees that they are complementary and that reporting both measures provides a fuller picture of care; however, CMS has submitted the measures to NQF as independent measures. CMS will consider this preference in its approach to implementation.
- The American Hospital Association (AHA) submitted a letter which is posted on the NQF project page outlining concerns with the following issues:
  - o Failure to adjust for factors beyond the hospital's control such as patient characteristics, extreme circumstances, patient compliance and quality of post-acute care.
  - o Reliability – A recent CMS study required by the Accountable Care Act "shows the claims-based measures are unreliable." Additional reliability analyses are provided by KNG showing similar results.
  - o Harmonization with the recently endorsed measure 1789: Hospital-wide all-cause readmission measure to exclude planned readmissions; harmonization of exclusions in the COPD measures compared to the pneumonia measures that include exclusions for discharged alive on day 0 or 1.
  - o Exclusions for all Medicare patients in Hospice rather than just FFS Medicare patients enrolled in hospice.
  Developer response: Detailed responses to the AHA comments from the developer are posted on the NQF project page addressing all four issues. CMS will provide additional information on including exclusions for planned readmissions by July 11 for the Committee to consider.
  CMS/Yale advised the Committee that, in response by a recommendation from this Committee, the age range for measures 1891 and 1893 was changed to 40 years and above. The developers note that COPD is rare in the less than 40 age group (1.5% of patients in our 2006 California all payer dataset), and a diagnosis at younger ages is likely to represent the misclassification of patients with asthma or other pulmonary conditions. This approach is commonly used in the research literature.

Steering Commitee response:
- The Committee agrees with the change in age to 40 and above for measures 1891 and 1893.
- The Committee reviewed the extensive responses provided by the developer. The Committee indicated that the responses adequately addressed the issues raised by AHA.
- The Committee supports the plan of Yale/CMS to include the algorithm for planned readmissions in measures 0506 and 1891 and looks forward to reviewing the additional data.
- In response to the comment, CMS/Yale requested additional time to work on harmonization of exclusions using a new algorithm for planned readmission for the all readmission measures, including pneumonia and COPD.

Additional Steering Committee Review – October 16, 2012
The Committee reviewed the additional information on the algorithm for planned readmissions provided by Yale CORE.
- The Committee agreed that the list of planned readmission exclusions were reasonable and noted the change in raw readmission rate was less than 1% and the minimal impact on the risk model.
- The Committee unanimously maintained their recommendation for endorsement.

Steering Committee Reassessment of Recommendation for Endorsement: Y-14; N-0

Additional Public and Member Comment:

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- A commenter ecommended that measure description be corrected to state patients 40 years of age and older.
- **NQF response**: Previously, this measure was modified by the developer at the request of the Steering Committee to include ages 40 years and older. NQF staff will review all documents to ensure the change in included.

- Commenters voiced various concerns including: excluding patients with medical conditions or comorbidities that often require multiple episodes of care; concerns about reliability and potential unintended consequenses.
  Developer response: The measures address clinical differences in hospitals' case-mix through risk adjustment rather than through excluding patients from the measure as suggested by the commenter. The goal in developing outcomes measures is to create a clinically cohesive cohort that includes as many patients as possible admitted with the given condition. Greatly expanding our list of exclusions would result in a measure that was less useful and meaningful, because it would reflect the care of fewer patients and diverse clinical conditions. To fairly profile hospitals' performance, it is critical to place hospitals on a level playing field and account for their differences in the patients that present for care. This is accomplished through adequate risk-adjustment for patients' clinical presentation rather than exclusion of patients. In addition, the expanded planned readmission definitions for the measures will identify as planned and not count in the outcome readmissions for procedures for procedures, such as wound debridement, that represent routine care for patients with chronic conditions.
  We appreciate the points AHA raises about reliability. In a June 19, 2012 memo to NQF we responded to the KNH Health Consulting work in detail. We note that CMS uses 3 years of data to calculate the measure results for the Inpatient Quality Reporting and Hospital Readmission Reduction programs to increase the measures' reliability.

- A commenter voiced concern over the use of the hierarchical risk adjustment model in this and other, similar readmission measures. This method of risk adjustment drives the data toward the mean, and does not result in meaningful display of the variation in performance and/or quality.
- **NQF response:** The issue of hierarchical modeling has been discussed numerous times by Steering Committees, CSAC and Board. In November 2011, a report from the Committee of Presidents of Statistical Societies addressed these issues for CMS**.**

- Additional comments were received voicing concerns incuding: distinguishing between related and unrelated admissions; accounting for socioeconomic factors; and use of hierarchical modeling in the risk adjustment methodology. The commenter suggest that there is an opportunity to use the field experience going forward to determine whether additional changes are warranted and request that the developer provide an assessment at the annual update.
  Developer response: We agree that the field experience with the measures can be informed by the planned readmission algorithm. We made several revisions to the algorithm based on input from the national dry run of CMS's hospital-wide readmission measure. We will continue to evaluate potential additional changes identified by hospitals as the measures are tested and used in CMS programs.

- A commenter recommended that the exclusion/inclusion selection criteria methodology be improved with frequent reviews and revisions. Unplanned readmissions that are not related to the index admission should be excluded from this measure and the measure be controlled for socioeconomic status, nonreversible comorbidities, and circumstances outside of the control of the provider.
  Developer response: The readmission measure was developed to be an all-cause measure for several reasons. There are several reasons for using all cause readmission as the outcome. First, from the patient perspective, readmission from any cause is an adverse event. Second, although we would expect few hospitals to use gaming strategies, measures should not create incentives for them to do so.
  Third, it is often hard to exclude quality issues and accountability based on the documented cause of readmission. The measure does not adjust for patient characteristics such as socioeconomic status (SES). The association between SES and health outcomes can be due, in part, to the differences in the quality of health care. Risk-adjusting for patient characteristics such as SES would suggest that hospitals with high proportions of such patients are held to different

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standards for the risk of readmission than hospitals treating higher-SES patient populations. For example, if patients of low socioeconomic status have higher readmission rates, then adjusting for SES in the model will lower the risk-standardized rates for hospitals with a higher proportion of these patients relative to other hospitals with clinically similar patients and similar outcomes. CMS does not want to hold hospitals with different SES mixes to different standards. Adjusting for SES would also obscure differences that are important to identify if we want to reduce disparities where they do exist. Thus, the choice was to adjust only for clinical differences in the populations among hospitals. This is consistent with guidance from the National Quality Forum recommending against adjusting for patient characteristics such as socioeconomic status in outcomes measures.

- A commenter requested a formal evaluation of the qualifying readmissions in the first year of the Readmission Reduction Program to determine if there should be further modifications to the planned readmission methodology. **Developer response:** We appreciate the AAMC's request for a "formal review" of the planned readmission algorithm in the first year of the Readmission Reduction Program. We note that the algorithm has undergone four rounds of public comment, as well as structured input from surgical subspecialists, technical expert panels, NQF committees, and hospitals participating in a national dry run of the hospital-wide and hip and knee arthroplasty readmission measures. The developer and CMS welcome continued comments and suggestions on the components of the algorithm as the revised measures are used.

Steering Committee Response: The Committee reviewed the comments and responses from developers and made no changes to their recommendations.

Consensus Standards Approval Committee (CSAC) Review (February 2013): Y-14; N-0
- Decision: Approved for endorsement

Board of Directors (March 6, 2013):
- Decision: Ratified for endorsement

1893: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

Submission |Specifications
Status: New Submission
Description: The measure estimates a hospital-level risk-standardized mortality rate (RSMR), defined as death from any cause within 30 days after the index admission date, for patients 18 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.
Numerator Statement: The outcome for this measure is 30-day all-cause mortality. We define mortality as death from any cause within 30 days from the date of admission for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.
Denominator Statement: This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 40 years or older. We have explicitly tested the measure in both age groups.
The cohort includes admissions for patients discharged from the hospital with either a principal diagnosis of COPD (see codes below) OR a principal diagnosis of respiratory failure (see codes below) WITH a secondary diagnosis of acute exacerbation of COPD (see codes below) and with a complete claims history for the 12 months prior to admission.
If a patient has more than one COPD admission in a year, one hospitalization is randomly selected for inclusion in the measure.
Exclusions: An index admission is any eligible admission to an acute care hospital assessed in the measure for the outcome (died within 30 days after the index admission date).
For all cohorts, the measure excludes admissions for patients:
• transferred into the hospital from another acute care hospital (We assign the outcome for the acute episode of care to the first admitting hospital because the first hospital initiates patient management and is responsible for any decision to transfer the patient. Therefore, the first admission in an acute episode of care is eligible to be an index admission in the measure. The second or subsequent admissions in the same acute episode are excluded from the measure).

• with inconsistent or unknown mortality status or other unreliable data (e.g. date of death precedes admission date).

• who were discharged alive and against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);

For Medicare FFS patients, the measure additionally excludes admissions for patients:

• enrolled in the Medicare Hospice program any time in the 12 months prior to the index hospitalization including the first day of the index admission (since it is likely these patients are continuing to seek comfort measures only). Although this exclusion currently applies to Medicare FFS patients, it could be expanded to include all-payer data if an acceptable method for identifying hospice patients outside of Medicare becomes available.

Of note, a patient may satisfy multiple exclusion criteria.

Adjustment/Stratification: Statistical risk model Our approach to risk adjustment was tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for Statistical Models Used for Public Reporting of Health Outcomes".1

The measure employs a hierarchical logistic regression model to create a hospital-level 30-day RSMR. This approach to modeling appropriately accounts for the structure of the data (patients clustered within hospitals), the underlying risk due to patients' comorbidities, and sample size at a given hospital when estimating hospital mortality rates. In brief, the approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals.2 At the patient level the model adjusts the log-odds of mortality within 30 days of admission for age and selected clinical covariates. The second level models hospital-specific intercepts as arising from a normal distribution. The hospital-specific intercept represents the hospital contribution to the risk of mortality, after accounting for patient risk and sample size, and can be inferred as a measure of quality. The hospital-specific intercepts are given a distribution in order to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths, multiplied by the national unadjusted mortality rate. For each hospital, the numerator of the ratio ("predicted") is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the denominator ("expected") is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case-mix to an average hospital's performance with the same case-mix. Thus, a lower ratio indicates lower-than-expected mortality or better quality and a higher ratio indicates higher-than-expected mortality or worse quality.

The predicted hospital outcome (the numerator) is the sum of predicted probabilities of death for all patients at a particular hospital. The predicted probability of each patient in that hospital is calculated using the hospital-specific intercept and patient risk factors. The expected number of deaths (the denominator) is the sum of expected probabilities of death for all patients at a hospital. The expected probability of each patient in a hospital is calculated using a common intercept and patient risk factors.

Candidate and Final Risk-adjustment Variables: The measure was developed using Medicare FFS claims data. Candidate variables were patient-level risk adjustors that were expected to be predictive of mortality, based on empirical analysis, prior literature, and clinical judgment, including age and indicators of comorbidity and disease severity. For each patient, covariates are obtained from Medicare claims extending 12 months prior to and including the index admission. The model adjusts for case mix differences based on the clinical status of patients at the time of admission. We used condition categories (CCs), which are clinically meaningful groupings of more than 15,000 ICD-9-CM diagnosis codes, and combinations of CCs as candidate variables. A file which contains a list of the ICD-9-CM codes and their groupings into CCs is available on www.qualitynet.org

(http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1182785083979).

We did not risk-adjust for CCs that were possible adverse events of care and that were only recorded in the index admission. Only comorbidities that conveyed information about the patient at that time or in the 12 months prior, and not complications that arose during the course of the hospitalization were included in the risk-adjustment.

References:

1. Krumholz HM, Brindis RG, Brush JE, et al. 2006. Standards for Statistical Models Used for Public Reporting of Health Outcomes: An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research

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Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College of Cardiology Foundation. Circulation 113: 456-462.

2. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226.

Frequencies and odds ratios for the model development sample (2008 Medicare FFS patients aged 65 and older; n=150,035 admissions) are presented below.

Table 1: Final set of risk-adjustment variables:

Variable//Frequency (%)//Odds Ratio (95% confidence interval)

Demographic
• Age-65 (years above 65, continuous) for 65 and over cohorts/Frequency = -/OR (95% CI)=1.03 (1.03-1.04); (this variable is Age (years, continuous) for 18 and over cohorts)

Cardiovascular/Respiratory
• Sleep Apnea (ICD-9 CM diagnosis codes: 327.20, 327.21, 327.23, 327.27, 327.29, 780.51, 780.53, 780.57)/Frequency=9.6/OR (95% CI)=0.87 (0.81-0.94)
• History of mechanical ventilation (ICD-9 procedure codes: 93.90, 96.70, 96.71, 96.72)/ Frequency= 6.0/OR (95% CI)=1.19 (1.11-1.28)
• Respirator dependence/respiratory failure (CC 77-78)/ Frequency=1.2/OR (95% CI)=0.88 (0.76-1.02)
• Cardio-respiratory failure and shock (CC 79)/ Frequency=26.4/OR (95% CI)=1.60 (1.53-1.68)
• Congestive heart failure (CC 80)/ Frequency=41.5/OR (95% CI)=1.33 (1.28-1.40)
• Chronic atherosclerosis (CC 83-84)/Frequency=50.4/OR (95% CI)=0.87 (0.83-0.90)
• Arrhythmias (CC 92-93)/ Frequency=37.2/OR (95% CI)=1.17 (1.12-1.22)
• Vascular or circulatory disease (CC 104-106)/ Frequency=38.2/OR (95% CI)=1.09 (1.05-1.14)
• Fibrosis of lung and other chronic lung disorder (CC 109)/Frequency=17.0/OR (95% CI)=1.08 (1.03-1.13)
• Asthma (CC 110)/ Frequency=17.1/OR (95% CI)=0.67 (0.63-0.71)
• Pneumonia (CC 111-113)/ Frequency=49.5/OR (95 CI)=1.29 (1.24-1.35)
• Pleural effusion/Pneumothorax (CC 114)/ Frequency=11.8/OR (95% CI)=1.17 (1.11-1.23)
• Other lung disorders (CC 115)/ Frequency=53.1/OR (95% CI)=0.80 (0.77-0.83)

Other Comorbid Conditions
• Metastatic cancer and acute leukemia (CC 7)/ Frequency=2.8/OR (95% CI)=2.34 (2.13-2.56)
• Lung, upper digestive tract, and other severe cancers (CC 8)/ Frequency=6.0/OR (95% CI)=1.80 (1.67-1.92)
• Lymphatic, head and neck, brain, and other major cancers; breast, prostate, colorectal and other cancers and tumors; other respiratory and heart neoplasms (CC 9-11)/ Frequency=14.1/OR (95% CI)=1.03 (0.97-1.08)
• Other digestive and urinary neoplasms (CC 12)/ Frequency=6.9/OR (95% CI)=0.91 (0.84-0.98)
• Diabetes and DM complications (CC 15-20, 119-120)/ Frequency=38.3/OR (95% CI)=0.91 (0.87-0.94)
• Protein-calorie malnutrition (CC 21)/ Frequency=7.4/OR (95% CI)=2.17 (2.05-2.29)
• Disorders of Fluid/Electrolyte/Acid-Base (CC 22-23)/ Frequency=32.1/OR (95% CI)=1.13 (1.08-1.18)
• Other Endocrine/Metabolic/Nutritional Disorders (CC 24)/ Frequency=68.0/OR (95% CI)=0.75 (0.72-0.78)
• Other Gastrointestinal Disorders (CC 36)/Frequency=56.2/OR (95% CI)=0.81 (0.78-0.84)
• Osteoarthritis of Hip or Knee (CC 40)/ Frequency=9.3/OR (95% CI)=0.74 (0.69-0.80)
• Other Musculoskeletal and Connective Tissue Disorders (CC 43)/ Frequency=64.1/OR (95% CI)=0.83 (0.79-0.86)
• Iron Deficiency and Other/Unspecified Anemias and Blood Disease (CC 47)/ Frequency=40.8/OR (95% CI)=1.08 (1.04-1.12)
• Dementia and senility (CC 49-50)/ Frequency=17.1/OR (95% CI)=1.09 (1.04-1.14)
• Drug/Alcohol Abuse, Without Dependence (CC 53)/ Frequency=23.5/OR (95% CI)=0.79 (0.75-0.83)
• Other Psychiatric Disorders (CC 60)/ Frequency=16.5/OR (95% CI)=1.12 (1.07-1.18)
• Quadriplegia, paraplegia, functional disability (CC 67-69, 100-102, 177-178)/ Frequency=4.9/OR (95% CI)=1.03 (0.95-1.12)
• Mononeuropathy, Other Neurological Conditions/Injuries (CC 76)/ Frequency=11.4/OR 95% CI)=0.85 (0.80-0.91)
• Hypertension and Hypertensive Disease (CC 90-91)/ Frequency=80.4/OR (95% CI)=0.78 (0.75-0.82)
• Stroke (CC 95-96)/ Frequency=6.8/OR (95% CI)=1.00 (0.93-1.08)
• Retinal Disorders, Except Detachment and vascular Retinopathies (CC 121)/ Frequency=10.8/OR (95% CI)=0.87 (0.82-0.93)
• Other Eye Disorders (CC 124)/ Frequency=19.1/OR (95% CI)=0.90 (0.86-0.95)
• Other Ear, Nose, Throat, and Mouth Disorders (CC 127)/Frequency=35.2/OR (95% CI)=0.83 (0.80-0.87)

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• Renal Failure (CC 131)/ Frequency=17.9/OR (95% CI)=1.12 (1.07-1.18)
• Decubitus ulcer or chronic skin ulcer (CC 148-149)/ Frequency=7.4/OR (95% CI)1.27 (1.19-1.35)
• Other Dermatological Disorders (CC 153)/ Frequency=28.5/OR (95% CI)0.91 (0.87-0.95)
• Trauma (CC 154-156, 158-161)/ Frequency=9.0/OR (95% CI)1.10 (1.03-1.16)
• Vertebral Fractures (CC 157)/ Frequency=5.0/OR (95% CI)=1.33 (1.24-1.44)
• Major Complications of Medical Care and Trauma (CC 164)/ Frequency=5.5/OR (95% CI)=0.81 (0.75-0.88)
ICD-10-CM codes for model variables (for those variables defined by ICD-9 CM codes rather than CCs)
Mechanical Ventilation
• 5A09357 Assistance with Respiratory Ventilation, Less than 24 Consecutive Hours, Continuous Positive Airway Pressure
• 5A09457 Assistance with Respiratory Ventilation, 24-96 Consecutive Hours, Continuous Positive Airway Pressure
• 5A09557 Assistance with Respiratory Ventilation, Greater than 96 Consecutive Hours, Continuous Positive Airway Pressure
• 5A1935Z Respiratory Ventilation, Less than 24 Consecutive Hours
• 5A1945Z Respiratory Ventilation, 24-96 Consecutive Hours•5A1955Z Respiratory Ventilation, Greater than 96 Consecutive Hours
Sleep Apnea
• G4730 Sleep apnea, unspecified
• G4731 Primary central sleep apnea
• G4733 Obstructive sleep apnea (adult) (pediatric)
• G4737 Central sleep apnea in conditions classified elsewhere
• G4739 Other sleep apnea Results of this measure will not be stratified.
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Administrative claims, Other
Measure Steward: Centers for Medicare & Medicaid Services (CMS) **Other organizations:** MPR: Mathematica Policy Research; RTI: Research Triangle Institute

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **PASSED all three sub-criteria**
1a. Impact: H-18; M-2; L-0; I-0; **1b. Performance Gap: H-3; M-13; L-4; I-0**
Rationale:
- 1a: Strong data presented demonstrating significant mortality for COPD.
- 1b: The developer presented analyses of Medicare Part A inpatient claims data (2008): the mean and median risk standardized 30-day mortality rate for patients admitted with an acute exacerbation of COPD are 8.6% and 8.5% respectively. There is a substantial variation across hospitals, with risk standardized rates ranging from 7.6% in the 10th percentile to 9.9% in the 90th percentile.

1c. Evidence (*based on decision logic*): **Y-18; N-1; I-1**
Rationale:
- This is an outcome measure.
- There is much evidence for lack of adherence to guidelines for COPD exacerbation management in hospitals. There is much less evidence that lack of adherence to guidelines leads to increased mortality.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **PASSED reliability and validity**
2a. Reliability: H-17; M-3; L-0; I-0; 2b. Validity: H-2; M-10; L-5; I-3
Rationale:
- 2a: Measure specifications are clear and consistent and can be reliably measured.
- 2b: Risk adjustment methodology is robust.
  - Committee members advised that an important, recently elucidated risk factor, history of exacerbations, is not included.
  - Committee members considered the impact of local air quality on COPD mortality.

3. Usability: H-8; M-9; L-3; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)

1893: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

Rationale:
- 3a-3b: Similar measures have been used for other clinical conditions (e.g., AMI, HF, PN) and have been demonstrated to support both public reporting and quality improvement

4. Feasibility: H-12; M-7; L-1; I-0
(4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)
Rationale:
- The measure is based on adminstrative data.

Steering Committee Recommendation for Endorsement: Y-17; N-3
Rationale:
- New outcome measure for an important condition.
- Significant opportunity for improvement.
- Anticipate public reporting on Hospital Compare.

Additional Comments/Questions
- The Committee requested a commitment from CMS to explore the possible effect of differences in air quality at hospital locations on the results of the measures for 30-day Mortality and 30-day Readmissions for COPD.
  Measure Developer Response:
  CMS appreciates the Committee members' suggestion that we consider adjusting the COPD measures for ambient particulate levels using monitoring data available from the US Environmental Protection Agency (EPA). We asked the measure developer, YNHHSC/CORE, to conduct a brief literature review and consult with 2-3 experts to explore this suggestion. YNHHSC/CORE found that, as noted by the Committee, the literature suggests that ambient levels of particulate matter affect short-term mortality and admission rates for COPD (and for other cardiovascular and respiratory conditions). EPA considered these effects in its most recent revision to its health-based national ambient air quality standard for particulates. Although important from a public health standpoint, these increases are relatively small. YNHHSC/CORE did not find any studies of the effect of ambient particulates on mortality and readmission rates among hospitalized patients for COPD.
  The purpose of risk adjustment is to account for differences across hospitals in factors unrelated to quality, such as patient comorbidities, that may affect the outcome of mortality and readmission. It is important to risk adjust for factors that could bias the measure results (e.g. could favor hospitals in low pollution areas). Adjusting for particulates would make sense if it were technically feasible and if it would improve the model by reducing or eliminating a potential bias.
  Based on its review, YNHHSC/CORE does not recommend adding a PM variable as it is unlikely to affect hospital-level risk-standardized rates. The studies to date focus on the general non-hospitalized population, and it is not clear how they apply to the patients in our models – that is, patients hospitalized with an acute exacerbation of COPD. YNHHSC/CORE reported that the experts felt the effect of adjusting for PM would likely be small or negligible given that the model applies to patients already hospitalized for COPD. Second, there are feasibility issues. Modeling the effect appropriately would be complex. YNHHSC/CORE's preliminary review of the issues suggests it would be inappropriate to use ambient air quality levels as a risk adjuster without also adjusting for other factors that affect the strength and direction of the potential association between particulate levels and the outcomes, including temperature, humidity, seasonal variation, and city-level factors such as smoking and air conditioning use rates. Given these challenges, and our expectation that building particulate levels into the model is not likely to significantly improve the models' performance even with the best methods, CMS does not plan to pursue adding air pollution variables to the models at this time.

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Public & Member Comment
Comments included:

- Concern that the claims-based definition of COPD has not undergone sufficient clinical validation.
  Developer response: In the development of the COPD measures we followed a careful process aimed at selecting a cohort that is both clinically coherent and comprehensive. The cohort codes were informed by a thorough literature review and a review of codes used for other COPD measures. They have also been reviewed by both a working group of experts knowledgeable about ICD-9 coding for the COPD population and a national Technical Expert Panel. This group, for example, made the decision to include patients with primary discharge diagnosis codes of respiratory failure and secondary codes for COPD in order to increase the sensitivity of case selection. Finally, a study by Brian Stein et al, published in Chest 2012 suggests that a set of ICD-9 codes similar to the ones we used to define the cohort has high positive predictive value. The commenter also refers to the medical record validation process used in prior CMS measures (e.g. pneumonia mortality and readmission). Previously, CMS has undergone medical record validation to confirm the adequacy of administrative codes for risk-adjustment but not to assess cohort selection. The selection of the appropriate codes for identifying the cohort is based on face validity and review of experts with knowledge of coding practices. CMS has a process for yearly maintenance of the measures, at which time the cohort codes will be reassessed to evaluate any need for changes or updates.
- Suggest measure 1893 only be reported as a paired measure along with 1891 in order to more accurately reflect both outcomes of interest, the overall quality of care provided, and to enhance usability.
  Developer response: CMS agrees that they are complementary and that reporting both measures provides a fuller picture of care; however, CMS has submitted the measures to NQF as independent measures. CMS will consider this preference in its approach to implementation.
- AHA submitted a letter which is posted on the NQF project page outlining concerns with the following issues:
  o Failure to adjust for factors beyond the hospital's control such as patient characteristics, extreme circumstances, patient compliance and quality of post-acute care.
  o Reliability – A recent CMS study required by the Accountable Care Act "shows the claims-based measures are unreliable." Additional reliability analyses are provided by KNG showing similar results.
  o Exclusions for all Medicare patients in Hospice rather than just FFS Medicare patients enrolled in hospice.
  Developer response: Detailed responses to the AHA comments from the developer are posted on the NQF project page.
- CMS/Yale advised the Committee that, in response by a recommendation from this Committee, the age range for measures 1891 and 1893 to 40 years and above. The developers note that COPD is rare in the less than 40 age group (1.5% of patients in our 2006 California all payer dataset), and a diagnosis at younger ages is likely to represent the misclassification of patients with asthma or other pulmonary conditions. This approach is commonly used in the research literature.

Steering Commitee response:

- The Committee recommends the change in age to 40 and above for measures 1891 and 1893.
- The Committee reviewed the extensive responses provided by the developer. The Committee indicated that the responses adequately addressed the issues raised by AHA.

1893: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

Consensus Standards Approval Committee (CSAC) Review (July 2013)

- Several CSAC members noted that the measure appropriately excludes patients that are enrolled in Medicare hospice programs at any time in the prior 12 months or on the first day of hospitalization. CSAC members questioned whether the exclusion is broad enough since the condition of some COPD patients may not be well established in the first 24 hours in order to determine if a hospice or palliative care approach is preferred. While CSAC members acknowledged that the reason for limiting the exclusion is that enrollment in hospice after the first day may be a result of adverse events/quality of care problems, there were concerns that the 24 hour window may be too limited to allow for end-of-life decisions. The claims-based risk model does not capture patient preferences, such as for end-of-life decisions or potential referrals to palliative care that may occur following a hospitalization. CSAC members raised concerns that avoidance of appropriate palliative care may be an unintended consequence of this measure. It was also noted that this issue is more significant for chronic conditions that deteriorate as a part of the natural disease process such as COPD and heart failure and less so for pneumonia and AMI, which are more acute. The CSAC requested further analyses from the developer and review by the Steering Committee before a final recommendation is made.

Steering Committee Recommendation for Endorsement (October 16, 2013)

- The Steering Committee agreed that the CSAC raised important questions about palliative care. The Committee reviewed the data submitted by Yale/CMS (attachment 1) that described the frequency of hospice referrals at admission and discharge and compared the COPD mortality results for hospitals with palliative care programs and those without palliative care programs. Committee member noted that the lack of having the end-of-life discussion earlier in the disease process contributes to the problem.
- The Committee struggled with trying to understand whether there would be a systematic bias between institutions for the timing of hospice referrals. Committee members noted that availability of hospice varies throughout the country. The Committee agreed that the 24 hour time window seems artificial and perhaps it is insufficient time to assess the patients and make the end-of-life decisions with the patient and family. The Committee asked CMS/Yale if they could provide a sensitivity analysis on the effect of extending the hospice exclusions to 2, 3 or 4 days until the end of care.
- CMS/Yale provided the results of the sensitivity analysis, which shows very low levels of hospice referral throughout the hospitalization. Committee members commented that in their clinical experience the decision to enter palliative care often occurs either near discharge or at the post-acute site. Some Committee members would support eliminating hospice referral in the first 24 hours. After review of the sensitivity analysis, the majority of Committee members supported its previous evaluation of the scientific acceptability of the measure and maintained its recommendation to endorse the measure with the exclusion of hospice before and on first day of hospitalization.

Consensus Standards Approval Committee (CSAC) Review (December 2012): Y-13; N-1

- Decision: Approved for endorsement
  Following review of the additional material, the CSAC agreed with the Steering Committee's recommendation to endorse the measure.

Board of Directors (January 9, 2013):

Decision: Ratified for endorsement

Pneumonia Measures Endorsed

0096: Empiric antibiotic for community-acquired bacterial pneumonia

Submission |Specifications
Status: Maintenance, Original Endorsement: May 01, 2007
Description: Percentage of patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia with an appropriate empiric antibiotic prescribed
Numerator Statement: Patients with appropriate empiric antibiotic prescribed
Denominator Statement: All patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia
Exclusions: Documentation of medical reason(s) for not prescribing appropriate empiric antibiotic
Documentation of patient reason(s) for not prescribing appropriate empiric antibiotic
Documentation of system reason(s) for not prescribing appropriate empiric antibiotic
Adjustment/Stratification: No risk adjustment or risk stratification; None We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy, Electronic Clinical Data : Registry, Paper Records
Measure Steward: American Medical Association – Physician Consortium for Performance Improvement **Other organizations:** This measure is jointly copyrighted by the AMA-PCPI and the National Committee for Quality Assurance. The measure set was also developed in collaboration with the American College of Emergency Medicine.

IMPLEMENTATION COMMENTS

- The Association for Professionals in Infection Control and Epidemiology (APIC) approves this measure. NQF should consider additional language or at least cite Consensus Guidelines from Infectious Diseases Society of America / American Thoracic Society (IDSA/ATS) – either current or most recent version published and available. Second, is there benefit to specifying that this measure applies to outpatients or inpatients or both? We believe the most current Guidelines are: Mandell LA, Wunderink RG, Anzueto A, et al. IDSA/ATS Consensus Guidelines on the Management of Community-Acquired Pneumonia. Clin Infect Dis 2007; 44:S27-72.

- APIC wonders if there is potential for confusion between this measure 0147 and 0096 involving the language empiric vs. initial? Therapeutic choices based on level of function of the patient's immune system are assessed by clinicians at the point of care and we're not sure this additional measure is necessary. We encourage NQF to investigate deletion of this or at least harmonization between this and measure 0096.

- The American College of Chest Physicians (ACCP) Quality Improvement Committee (QIC): None of the QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use. The QIC felt that this measure should be harmonized with Measure 0096: Empiric antibiotic for community-acquired bacterial pneumonia.
  Developer response: It will be impossible to completely harmonize the PQRS measure with the hospital inpatient measure because of differences in data source. The PQRS (0096) measure is claims based and the CMS measure (0147) is chart abstracted. It is well established that direct chart-abstraction is the gold standard of collecting patient medical information.
  The epidemiology of community-acquired pneumonia is well described and empiric antibiotic recommendations are explicitly defined in guidelines from IDSA/ATS. The CMS performance measure is based on that guideline with ongoing technical expert panel input from members of the guideline-writing committee of IDSA/ATS, as well as other experts. The inpatient measure relies on collection of the actual antibiotic administered (consistent with guidelines) based on the clinical presentation of the patient. The PQRS measure does not provide specificity with regards to antibiotic selection.

Steering Committee Evaluations

0096: Empiric antibiotic for community-acquired bacterial pneumonia

1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**
1a. Impact: H-11; M-8; L-1; I-0; **1b. Performance Gap: H-2; M-12; L-4; I-2**
Rationale:
- Pneumonia is the number one cause of death due to infection and the costs are high.
- The submission indicates that this measure was used in the CMS Physician Quality Reporting Initiative/System (PQRI/S) in the 2007 through 2010 claims option as well as the registry and measure group options for 2009 and 2010. There is a gap in care as shown by this 2008 data; 22.52% of patients reported on did not meet the measure:
  10th percentile: 33.33 %
  25th percentile: 66.67 %
  50th percentile: 90.91 %
  75th percentile: 100.00%
  90th percentile: 100.00%
  The Committee discussed whether this data indicates further room for improvement.
- Current performance mean is 92% in the most recent data provided from PQRS 2009, however the range and distribution were not provided.
- No data on disparities was provided.

1c. Evidence (*based on decision logic*): **Y-15; N-1; I-4**
Rationale
- Many large studies demonstrate association of appropriate antibiotics with improved outcomes though the studies are primarily in sicker, hospitalized patients. The evidence is less strong for the outpatient setting which relies more on extrapolations and expert opinion.
- The measure is based on evidence-based guidelines from ADSA/ATS.
- The Committee noted conflicting study results with respect to which empiric antibiotic regimens lead to the best clinical outcomes. Meta-analyses and RCTs show that coverage for atypical pathogens for hospitalized patients with CAP (which is the primary thrust for IDSA/ATS/CTS guidelines) does not result in lower mortality.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both sub-criteria**
2a. Reliability: H-7; M-11; L-1; I-1; 2b. Validity: H-4; M-13; L-1; I-1
Rationale:
- RELIABILITY: tested only at the data element level (inter-rater reliability)
- The measure should specify that appropriate antibiotics are those that adhere to the ISDA/ATS guidelines.
- VALIDITY: tested validity of EHR generated results compared to results constructed manually; face validity of developer workgroup.
- Adherence to empiric antibiotics for CAP patients are currently well captured in the EHRs.
- A diagnosis of pneumonia in the ED may not be confirmed as pneumonia when evaluated by other clinicians – this measure is based on the discharge diagnosis.
- In the outpatient setting, there is a big difference between patients being evaluated in the ED compared to patients being seen in the clinician's office.
- The accuracy of the clinician's diagnosis of pneumonia many introduce variability in results. The office diagnosis of pneumonia may not include chest X-ray and other tests to confirm the diagnosis that are typically done in EDs and hospitals.
- The lack of explicit indication in the specifications that the measure applies only to outpatients is confusing.

3. Usability: H-8; M-8; L-2; I-2
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- The measure is in use in the CMS's PQRS program.
- If the clarifications on appropriate medications and outpatient setting are explicitly mentioned in the specifications, the measure seems to be usable.

0096: Empiric antibiotic for community-acquired bacterial pneumonia

4. Feasibility: H-15; M-4; L-0; I-1
(4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)
Rationale:
- Adherence to empiric antibiotics for CAP patients are currently well captured in the HER
- Measure is in use.

Steering Committee Recommendation for Endorsement: Y-18; N-2
Rationale:
- The developer clarified that this measure is applicable to the outpatient setting only and does not include inpatients.
- The measure is consistent with the evidence. The specifications should reference the IDSA/ATS guidelines.
- Small opportunity for improvement.

 Additional Comments/Questions:
- The Committee recommends that "appropriate use" reference the IDSA/ATS guidelines explicitly in the specifications.
- The specifications should clearly indicate that this is an outpatient only measure.
  Developer response:
  We would like to thank the Pulmonary and Critical Care Steering Committee members for their comments and recommendations on the PCPI Community-acquired Bacterial Pneumonia measures. We can readily agree to clarify the care setting (ambulatory, including the ED) in either the measure titles or descriptions. However, we cannot confirm the harmonization and language changes suggested for individual measures until we have assured approval from our measure development panel, for which additional time will be needed. We hope that the lack of a final determination on these measure-specific recommendations will not preclude the continued endorsement of the pneumonia measures.

RELATED AND COMPETING MEASURES
The Committee determined that these two measures are related, not competing:
- **0096 Empiric antibiotic for community-acquired bacterial pneumonia**
- **0147 Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients**

- Measure 0096 applies to the outpatient setting and 0147 applies to inpatients. They are related by the same measure focus/ process of care. Both are based on clinician or discharge diagnosis of pneumonia and use the IDSA/ATS guidelines for determining appropriateness of antibiotic selection. The developer has responded to the question of harmonization in the response to the implementation comments above.

Public & Member Comment
Comments included:
- Concerns with potentially inaccurate coding in ambulatory pneumonias. Concerns that the Consensus Guidelines from the Infections Disease Society of America and the American Thoracic Society change over time but are not imbedded in the measure.
  Developer response: We strive to ensure accurate coding in our measure specifications. However, incorrect coding may be caused by inaccurate documentation or misapplication of coding rules; these issues cannot be corrected or accomodated for in the performance measure specifications. If a measure is not coded as specified, there will be failure of the measure - the ICD-9-CM codes we have outlined in our specifications are limited to bacterial pneumonias. Additionally, this measure has been in use in the PQRS claim-based reporting program for many years. We have not been alerted to any implementation issues. PCPI measures are based on the current guidelines at the time the measure are developed. We update our specifications periodically to adhere to the most current guidelines if these are published after the measures are completed.
- Forest labs asked whether the drugs Ertapenem and Ceftaroline are included in the measure.
  Developer response: We agree to include language stating that other FDA-approved β-lactams could be considered. This would address Ertapenem and Ceftaroline which are recommended by the IDSA/ATS guidelines for the non-ICU setting.

Steering Commitee response:
The Committee reviewwed the comment and developer response and made no changes to their recommendations.

0096: Empiric antibiotic for community-acquired bacterial pneumonia

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0
- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):
- Decision: Ratified for continued endorsement

0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients

Submission |Specifications

Status: Maintenance, Original Endorsement: Mar 09, 2007

Description: Percentage of pneumonia patients 18 years of age or older selected for initial receipts of antibiotics for community-acquired pneumonia (CAP)

Numerator Statement: Pneumonia patients who received an initial antibiotic regimen consistent with current guidelines during the first 24 hours of hospitalization

Denominator Statement: Pneumonia patients 18 years of age or older

Table 3.1 Pneumonia (PN)
ICD-9 Code Shortened Description
481 PNEUMOCOCCAL PNEUMONIA
482.0 K. PNEUMONIAE PNEUMONIA
482.1 PSEUDOMONAL PNEUMONIA
482.2 H.INFLUENZAE PNEUMONIA
482.30 STREPTOCOCCAL PNEUMN NOS
482.31 PNEUMONIA STRPTOCOCCUS A
482.32 PNEUMONIA STRPTOCOCCUS B
482.39 PNEUMONIA OTH STREP
482.40 STAPHYLOCOCCAL PNEU NOS
482.41 METH SUS PNEUM D/T STAPH
482.42 METH RES PNEU D/T STAPH
482.49 STAPH PNEUMONIA NEC
482.82 PNEUMONIA E COLI
482.83 PNEUMO OTH GRM-NEG BACT
482.84 LEGIONNAIRES´ DISEASE
482.89 PNEUMONIA OTH SPCF BACT
482.9 BACTERIAL PNEUMONIA NOS
483.0 PNEU MYCPLSM PNEUMONIAE
483.1 PNEUMONIA D/T CHLAMYDIA
483.8 PNEUMON OTH SPEC ORGNSM
485 BRONCHOPNEUMONIA ORG NOS
486 PNEUMONIA, ORGANISM NOS
Table 3.2 Septicemia
ICD-9 Code Shortened Description
038.0 STREPTOCOCCAL SEPTICEMIA
038.10 STAPHYLCOCC SEPTICEM NOS
038.11 METH SUSC STAPH AUR SEPT
038.12 MRSA SEPTICEMIA
038.19 STAPHYLCOCC SEPTICEM NEC
038.2 PNEUMOCOCCAL SEPTICEMIA
038.3 ANAEROBIC SEPTICEMIA
038.40 GRAM-NEG SEPTICEMIA NOS
038.41 H. INFLUENAE SEPTICEMIA
038.42 E COLI SEPTICEMIA

038.43 PSEUDOMONAS SEPTICEMIA
038.44 SERRATIA SEPTICEMIA
038.49 GRAM-NEG SEPTICEMIA NEC
038.8 SEPTICEMIA NEC
038.9 SEPTICEMIA NOS
995.91 SEPSIS
995.92 SEVERE SEPSIS
Table 3.3 Respiratory Failure
ICD-9 Code Shortened Description
518.81 ACUTE RESPIRATRY FAILURE
518.84 ACUTE & CHRONC RESP FAIL
Table 3.1 Pneumonia (PN)
ICD-10 Code Shortened Description
J 13 Pneumonia due to Streptococcus pneumonia
J 18.1 Lobar pneumonia, unspecified organism
J 15.0 Pneumonia due to Klebsiella pneumoniae
J 15.1 Pneumonia due to Pseudomonas
J 14 Pneumonia due to Hemophilus influenzae
J 15.4 Pneumonia due to other streptococci
J 15.3 Pneumonia due to streptococcus, group B
J 15.20 Pneumonia due to staphylococcus, unspecified
J 15.21 Pneumonia due to staphylococcus aureus
Z 16 Infection and drug resistant microorganisms
J 15.29 Pneumonia due to other staphylococcus
J 15.5 Pneumonia due to Escherichia coli
J 15.6 Pneumonia due to other aerobic Gram-negative bacteria
A 48.1 Legionnaires' disease
J 15.8 Pneumonia due to other specified bacteria
J 15.9 Unspecified bacterial pneumonia
J 15.7 Pneumonia due to Mycoplasma pneumoniae
J 16.0 Chlamydial pneumonia
J 16.8 Pneumonia due to other specified infectious organisms
J 18.0 Bronchopneumonia, unspecified organism
J 18.8 Other pneumonia, unspecified organism
J 18.9 Pneumonia, unspecified organism
J 17 Pneumonia in diseases classified elsewhere
J 18.2 Hypostatic pneumonia, unspecified organism
J 85.1 Abscess of lung with pneumonia
Table 3.2 Septicemia
ICD-10 Code Shortened Description
A 40.0 Sepsis due to streptococcus, group A
A 40.1 Sepsis due to streptococcus, group B
A 40.3 Sepsis due to Streptococcus pneumoniae
A 40.8 Other streptococcal sepsis
A 40.9 Streptococcal sepsis, unspecified
A 41.9 Sepsis unspecified
A 41.2 Sepsis due to other unspecified specified staphylococcus
A 41.0 Sepsis due to Staphylococcus aureus
A 41.0 AND U80.1 Sepsis due to Staphylococcus aureus AND Methicillin-resistant staph aureus infection
A 41.1 Sepsis due to other specified staphylococcus
A 41.89 Other specified sepsis

0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients

A 41.4 Sepsis due to anaerobes

A 41.50 Gram-negative sepsis, unspecified

A 41.3 Sepsis due to Hemophilus influenzae

A 41.51 Sepsis due to Escherichia coli (E coli)

A 41.52 Sepsis due to pseudomonas

A 41.53 Sepsis due to Serratia

A 41.59 Other Gram-negative sepsis

A 41.81 Sepsis due to Enterococcus

A 42.7 Actinomycotic sepsis

A 41.9 Sepsis, unspecified

R65.20 Severe sepsis without septic shock

R65.21 Severe sepsis with septic shock

Table 3.3 Respiratory Failure

ICD-10 Code Shortened Description

J 96.0 Acute respiratory failure

J 96.9 Respiratory failure, unspecified

J 96.2 Acute and chronic respiratory failure

J 96.1 Chronic respiratory failure

J 80 Acute respiratory syndrome

J 22 Unspecified acute lower respiratory infection

J 98.8 Other specified respiratory disorders

Exclusions: Patients less than 18 years of age

Patients who hae a length of stay greater than 120 days

Patients with Cystic Fibrosis

Patients who had no chest x-ray or CT scan that indicated abnormal findings within 24 hours prior to hospital arrival or anytime during the hospitalization

Receiving comfort measures only documented the day of or the day after arrival

Patients enrolled in clinical trial

Patients received as a transfer from the emergency/observation department of another hospital

Patients received as a transfer from an ambulatory surgery center

Patients received as a transfer from an inpatient or outpatient department of another hospital

Patients who have no diagnosis of pneumonia either as the ED final diagnosis/impression or direct admission diagnosis/impression

Patients who are Compromised as defined in data dictionary (i.e., documentation that the patient had (1) any of the following compromising conditions: HIV positive, AIDS, cystic fibrosis, systemic chemotherapy within last three months, systemic immunosuppressive therapy within the past three months, leukemia documented in the past three months, lymphoma documented in the past three months, radiation therapy in the past three months; (2) a prior hospitalization within 14 days [the patient was discharged from an acute care facility for inpatient care to a non-acute setting—home, SNF, ICF, or rehabilitation hospital—before the second admission to the same or different acute care facility]) and abstraction guidelines

With healthcare associated pneumonia as defined in data dictionary (i.e., presence of at least one of the following: (1) hospitalization for 2 days within the last 90 calendar days; (2) residence in a nursing home or extended care facility for any amount of time within the last 90 days; (3) chronic dialysis within the last 30 days; (4) wound care provided by a health care professional within the last 30 days) and abstraction guidelines

Patients transferred/admitted to the ICU wihtin 24 hours after arrival to this hospital with a beta-lactam allergy

Patients who have a duration of stay less than or equal to one day

Patients with another source of infection who did not receive an antibiotic regimen recommened for pneumonia but did receive antibiotics within the first 24 hours of hospitalization

Adjustment/Stratification: N/A Can be stratified by ICU and non-ICU patients. However, CMS does not stratify.

Level of Analysis: Facility

Type of Measure: Process

Data Source: Electronic Clinical Data : Electronic Health Record, Paper Records

0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients

Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** The Joint Commission, Centers for Disease Control and Prevention, Infectious Diseases Society of America, American Thoracic Society, Johns Hopkins University, Northeastern Ohio Univ. College of Medicine, Pneumonia Patient Outcomes Team, New Jersey Medical

IMPLEMENTATION COMMENTS

- APIC wonders if there is potential for confusion between this measure 0147 and 0096 involving the language empiric vs. initial? Therapeutic choices based on level of function of the patient's immune system are assessed by clinicians at the point of care and we're not sure this additional measure is necessary. We encourage NQF to investigate deletion of this or at least harmonization between this and measure 0096.
- ACCP Quality Improvement Committee (QIC) felt that this measure should be harmonized with Measure 0096: Empiric antibiotic for community-acquired bacterial pneumonia.
  Developer response: It will be impossible to completely harmonize the PQRS measure with the hospital inpatient measure because of differences in data source. The PQRS (0096) measure is claims based and the CMS measure (0147) is chart abstracted. It is well established that direct chart-abstraction is the gold standard of collecting patient medical information.
  The epidemiology of community-acquired pneumonia is well described and empiric antibiotic recommendations are explicitly defined in guidelines from IDSA/ATS. The CMS performance measure is based on that guideline with ongoing technical expert panel input from members of the guideline-writing committee of IDSA/ATS, as well as other experts. The inpatient measure relies on collection of the actual antibiotic administered (consistent with guidelines) based on the clinical presentation of the patient. The PQRS measure does not provide specificity with regards to antibiotic selection.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): PASSED all three subcriteria
1a. Impact: H-13; M-6; L-0; I-0; **1b. Performance Gap: H-8; M-8; L-2; I-1**
Rationale:

- 1a. Reducing 30-day mortality for patients with CAP is a National Priority and Goal as defined by the National Priorities Partnership (Nov 2008).
- 1b. Data from Hospital Compare (data collected through 3/31/2011) show that the national average for appropriate empiric antibiotic for CAP is 94%.
  Measure developer response: A report was prepared and submitted showing the trend over time of PN-6 rates from 2005 to 2010 and also the frequency distribution and percentiles of hospital rates. The data show there are still hundreds of hospitals whose rates show variation in care, especially for ICU patients

1c. Evidence (*based on decision logic*): **Y-17; N-2; I-0**
Rationale:

- Based on IDSA/ATS guidelines.
- Evidence stronger for the inpatient population.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): Passed both subcriteria
2a. Reliability: H-17; M-2; L-0; I-0; 2b. Validity: H-10; M-8; L-1; I-0
Rationale:

- RELIABILITY – testing at the data element level only
  - Includes two populations of patients - in ICU and non-ICU patients. The Committee questioned the need for two measures.
  - Pneumonia that is diagnosed during the hospital stay, i.e., not in the ED, is not included in the measure.
- VALIDITY: The 2009 analysis showed that patients who passed this measure have better clinical outcomes, such as in-hospital mortality, 30-day mortality and 30-readission. After linking the 2009 calendar year data in the clinical data warehouse, the CMS inpatient claims database and the CMS enrollment database, the in-hospital death rate was 3.0% for those who passed the measure and 7.2% for those who failed the measure, (p-value 0.001). The 30-day mortality was 6.5% for those who passed the measure and 12.4% (1,398/11,283) for those who failed the measure, (p-value 0.001). The readmission rate was 15.3% for those who passed the measure and 19.2% for those who failed the measure, (p-value 0.001).
  - Measure is continuously updated to be aligned with guidelines.

0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients

3. Usability: H-15; M-4; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- Empiric antibiotics for CAP is currently one of the metrics reported in Hospital Compare.

4. Feasibility: H-19; M-0; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Measure is already in operational use
- The data source is chart abstraction.
- Adherence to empiric antibiotics for CAP patients are currently well captured in the EHRs.

Steering Committee Recommendation for Endorsement: Y-19; N-0
Rationale:
- Publicly reported measure.
- Some opportunity for improvement remains.
- This process measure is related to improved outcomes.

RELATED AND COMPETING MEASURES
- **0096 Empiric antibiotic for community-acquired bacterial pneumonia**
- **0147 Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients**

- These two measures are related, not competing. Measure 0096 applies to the outpatient setting and 0147 applies to inpatients. They are related by the same measure focus/ process of care. Both are based on clinician or discharge diagnosis of pneumonia and use the IDSA/ATS guidelines for determining appropriateness of antibiotic selection. The developer has responded to the question of harmonization in the response to the implementation comments above.

Public & Member Comment
Comments included:
- Concern that the measure references the Consensus Guidelines from the Infections Disease Society of America and the American Thoracic Society. Those guidelines do change over time but are not imbedded in the measure. This then requires that the measurement time periods be bound by the changes in the Guidelines.
  Developer response: The performance measure specifications were based on the publication of the 2007 IDSA/ATS guidelines for community acquired pneumonia but are continuously updated by a technical expert panel made up of pneumonia experts (some of which serve on the guideline panel) who review the measure specifications in light of contemporary science and alter the measure more frequently than the guidelines are updated. The technical expert panel for measure 0147 meets every three months.
- The measure should be harmonized with other community-aquired pneumonia measures.
  Developer response: There are ongoing discussions with the AMA's PCPI about possible harmonization of this performance measure (0147) with their measure (0096) which evaluates antibiotic management of outpatients with pneumonia. While there have been discussions about harmonization of the two measures, the two measures address care for different populations of patients (those sick enough to be admitted to the hospital - 0147; and those that are only treated in the office setting - 0096). We are committed to working with AMA to harmonize where feasible but our initial discussions have highlighted the very different populations of patients the measures assess.

Steering Commitee response:
The Committee reviewed the comments and developers responses and made no changes to their recommendations.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0
- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):
- Decision: Ratified for continued endorsement

0231: Pneumonia Mortality Rate (IQI #20)

Submission |Specifications

Status: Maintenance, Original Endorsement: Mar 09, 2007

Description: Percentage of patients, age 18 years and older, with an in-hospital death among discharges with an ICD-9-CM principal diagnosis code of pneumonia

Numerator Statement: Number of in-hospital deaths among cases meeting the inclusion and exclusion rules for the denominator.

Denominator Statement: Number of discharges, age 18 years and older, with an ICD-9-CM principal diagnosis code of pneumonia.

Exclusions: Exclude cases:

-Transferring to another short-term hospital

-MDC 14 (pregnancy, childbirth, and puerperium)

-Missing value for discharge disposition, gender, age, quarter, year or principal diagnosis

Adjustment/Stratification: Statistical risk model The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), Major Diagnostic Category (MDC), transfer status, All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for the year 2008 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges and 4,000 hospitals. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate.

Specific covariates used for this measure:

Sex	Female
Age	18 to 24
Age	25 to 29
Age	30 to 34
Age	35 to 39
Age	40 to 44
Age	45 to 49
Age	50 to 54
Age	55 to 59
Age	80 to 84
Age	85+
APR-DRG	´121-1´
APR-DRG	´121-2´
APR-DRG	´121-3´
APR-DRG	´121-4´
APR-DRG	´130-1´
APR-DRG	´130-2´
APR-DRG	´130-3´ to '130-4´
APR-DRG	´137-1´
APR-DRG	´137-2´
APR-DRG	´137-3´
APR-DRG	´137-4´
APR-DRG	´139-2´
APR-DRG	´139-3´
APR-DRG	´139-4´
MDC	4 (Diseases & Disorders Of The Respiratory System)
MDC	25 (Human Immunodeficiency Virus Infections)
TRNSFER	Transfer-in

APR-DRG 121 Other Respiratory & Chest Procedures

0231: Pneumonia Mortality Rate (IQI #20)

APR-DRG 130 Respiratory System Diagnosis w/ Ventilator Support 96+ Hours
APR-DRG 137 Major Respiratory Infections and Inflammations
APR-DRG 139 Other Pneumonia
APR-DRG Risk of Mortality Subclass:
1 - Minor
2 - Moderate
3 - Major
4 - Extreme Not applicable
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Administrative claims
Measure Steward: Agency for Healthcare Research and Quality **Other organizations:** Battelle Memorial Institute, Stanford University, University of California-Davis

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**
1a. Impact: H-17; M-1; L-0; I-0; **1b. Performance Gap: H-17; M-2; L-0; I-0**
Rationale:

- Of all deaths among pneumonia patients that occurred within 30-days of discharge, 52.2% were in-hospital before 30-days, 4.4% were in-hospital after 30-days, 40.1% were out-of-hospital, and 3.3% were transfers to other acute care hospitals. (2005 HCUP data).
- Performance trends included in the submission:
  2000 national risk-adjusted rate: 71.6 per 1000 hospital admissions
  2008 national risk-adjusted rate: 35.5 per 1000 hospital admissions
- The developer provided 2008 Disparities data: Medicare: 34.3 per 1000; Medicaid 41.1 per 1000; Private 39.4 per 1000; male 39.3 per 1000; female 33.1 per 1000; lowest income quartile 38.5 per 1000; highest income quartile 33.2 per 1000

1c. Evidence (*based on decision logic*): **Y-19; N-0; I-0**
Rationale:

- This is an outcome measure.
- There are established processes of care to improve outcomes.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria**
2a. Reliability: H-15; M-4; L-0; I-0, 2b. Validity: H-17; M-2; L-0; I-0
Rationale:

- RELIABILITY: assessed signal to noise of measure score: According to the submission the data demonstrate there is systematic variation in the provider level rate of 19.1 to 58.6 per 1,000 from the 5th to 95th percentile respectively after a signal ratio of 0.694 is applied as the shrinkage estimator (that is, after accounting for variation due to random factors).
- VALIDITY: Only challenge is identifying community acquired pneumonia - where most data on outcomes exist - versus all pneumonias.

3. Usability: H-16; M-4; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:

- Mortality is an easily understood outcome.
- The challenge is operationalizing the community- acquired versus all pneumonias.

4. Feasibility: H-18; M-2; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:

- Based on administrative data.

0231: Pneumonia Mortality Rate (IQI #20)

Steering Recommendation for Endorsement: Y-20; N-0
Rationale:
- No major issues or concerns with meeting the criteria.
- Outcome measure.
- It is important to have both inpatient and 30-day mortality – they complement each other. Both pieces of information are useful.

RELATED AND COMPETING MEASURES
- **0231 Pneumonia morality rate (IQI#20) (AHRQ)**
- **0468 Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization (CMS)**

- The Committee determined these are related, not competing, measures. Committee members felt strongly that both inpatient and 30-day mortality measures provide complimentary information and both are needed. However, the Committee asked whether further harmonization was possible and perhaps better alignment as they are both based on administrative data.

Public & Member Comment
Comments included:
- Concern about the consistency in coding for mortality.
  Developer response: The coding of patient discharge status (FL-17) is governed by Official UB-04 Data Specifications Manual 2012 (NUBC, July 2011) and the coding of a patient discharge status of "expired" is used in the assignment of MS-DRGs.
- Concern that the claims-based definition of pneumonia lacks sufficient validity and requests that the definition be updated to reflect coding trends.
  Developer response: The coding of principal diagnosis is governed by ICD-9-CM Official Guidelines for Coding and Reporting (CDC, 2011) and is defined as "that condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care." Although there are special circumstances in which a patient admitted in acute respiratory failure (ARF) due to an underlying diagnosis of pneumonia may be coded with a principal diagnosis of ARF rather than pneumonia, this change would affect relatively few cases and would reduce harmonization between the AHRQ measure and the CMS measure.
- Concern about the exclusion of patients with missing documentation for date for discharge, disposition, age, gender, quarter, year or principal diagnosis.
  Developer response: The purpose of these exclusions is to notify users of missing data elements that may impact the measure calculations, either the numerator or denominator counts or the risk adjustment. The software generates a report of the identified cases, and the user is provided the opportunity to remedy the missing data prior to import into the AHRQ QI software.This may appear as a trivial exclusion but it has utility because the record cannot be properly classified as a pneumonia patient in the population of interest, during the time period of interest, if any of these data elements is missing. In properly cleaned data sets, these exclusions affect zero records.
- ACCP disapproves this measure because hospital discharge is a poor landmark for mortality, since it is prone to discharge and transfer bias.
  Developer response: The relative merits of in-hospital and 30-day mortality as outcomes of interest has been discussed by previous NQF steering committees for conditions such as AMI and HF and the consensus was that the two specifications are related but not competing because both are useful. Specifically, in-hospital mortality may be measured in real-time and does not require access to discharge data linked to vital records; in addition the data reported from such linked data may have a time lag of 1- to 2-years. Many stakeholders, including state health data agencies, regional coalitions, hospitals, and hospital associations do not have access to 30-day all-site mortality data, or do have the personal identifiers necessary to generate such data. These stakeholders have expressed a strong interest in having an alternative measure that can be implemented using inpatient data alone, fully recognizing the strengths and limitations of such an alternative measure. In fact, empirical analyses have shown that the hospital-level correlation between risk-adjusted inpatient and 30-day measures is roughly comparable to the hospital-level

0231: Pneumonia Mortality Rate (IQI #20)

correlation between risk-adjusted mortality for Medicare and non-Medicare patients. Therefore, it is not clear whether a 30-day risk-adjusted mortality measure based on Medicare data is actually preferable to an inpatient risk-adjusted mortality measure based on all-payer data.

Steering Commitee response:

The Committee encourages the Committee to harmonize the definitions of pneumonia for the inpatient and 30-day mortality outcome measures as soon as possible.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0
- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):
- Decision: Ratified for continued endorsement

0468: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

Submission |Specifications

Status: Maintenance, Original Endorsement: Mar 09, 2007

Description: The measure estimates a hospital-level risk-standardized mortality rate (RSMR) defined as death for any cause within 30 days of the admission date for the index hospitalization for patients discharged from the hospital with a principal diagnosis of pneumonia. The target population is patients 18 and over. CMS annually reports the measure for patients who are 65 years or older and are either enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities.

Since NQF-endorsement, the measure has been tested and shown to perform well in an all-payer population aged 18 and older and has been re-specified for this broader age group. The full details of the all-payer analysis and testing are attached.

Numerator Statement: The outcome for this measure is 30-day all-cause mortality. We define all-cause mortality as death from any cause within 30 days of the index admission date for patients discharged from the hospital with a principal diagnosis of pneumonia.

The numerator of the risk-adjusted ratio is the predicted number of deaths within 30 days given the hospital's performance with its observed case mix. The term "predicted" describes the numerator result, which is calculated using the hospital-specific intercept term. (See details below in the 2a1.13 Statistical risk model and variables.)

Denominator Statement: The cohort includes admissions for patients 18 and over hospitalized for pneumonia. The measure is currently publicly reported by CMS for patients 65 years and older who are either enrolled in Medicare FFS or admitted to non-federal or admitted to VA hospitals.

The measure includes admissions for patients discharged from the hospital with a principal diagnosis of pneumonia and with a complete claims history for the 12 months prior to admission. If a patient has more than one pneumonia admission in a year, one hospitalization is randomly selected for inclusion in the measure.

Exclusions: The measure excludes admissions for patients:

For all cohorts, the measure excludes admissions for patients:

- discharged alive on the day of admission or the following day and did not get transferred (because it is unlikely they had a significant pneumonia diagnosis);
- transferred from another acute care hospital (because the death is attributed to the hospital where the patient was initially admitted);
- with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes admission date);
- discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);

For Medicare FFS patients, the measure additionally excludes admissions for patients:

- enrolled in the Medicare Hospice program any time in the 12 months prior to the index hospitalization including the first day of the index admission (since it is likely these patients are continuing to seek comfort measures only);

Adjustment/Stratification: Statistical risk model Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for Statistical Models Used for Public Reporting of Health Outcomes" (Krumholz et. al., 2006).

The proposed measure employs a hierarchical logistic regression model to create a hospital level 30-day RSMR. In brief, the

0468: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals (Normand & Shahian, 2007). At the patient level, each model adjusts the log-odds of mortality within 30 days of admission for age and selected clinical covariates. The second level models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of mortality, after accounting for patient risk. See section 2a1.20. Calculation Algorithm/Measure Logic for more detail.

Candidate and Final Risk-adjustment Variables: Candidate variables were patient-level risk-adjustors that were expected to be predictive of mortality, based on empirical analysis, prior literature, and clinical judgment, including age and indicators of comorbidity and disease severity. For each patient, covariates are obtained from Medicare claims extending 12 months prior to and including the index admission. The model adjusts for case mix differences based on the clinical status of patients at the time of admission. We use condition categories (CCs), which are clinically meaningful groupings of more than 15,000 ICD-9-CM diagnosis codes. A file which contains a list of the ICD-9-CM codes and their groupings into CCs is available at
http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1182785083979.

In addition, only comorbidities that convey information about the patient at that time or in the 12-months prior, and not complications that arise during the course of the hospitalization are included in the risk-adjustment. Hence, we do not risk-adjust for CCs that may represent adverse events of care and that are only recorded in the index admission.

The final set of risk-adjustment variables is:

Demographic Age-65 (years above 65, continuous)

Male

Cardiovascular History of PTCA

History of CABG

Congestive heart failure (CC 80)

Acute Myocardial Infarction (CC 81)

Unstable angina (CC 82)

Chronic atherosclerosis (CC 83, 84)

Cardio-respiratory failure and shock (CC 79)

Comorbidity Hypertension (CC 89, 91)

Stroke (CC 95, 96)

Cerebrovascular disease (CC 97-99, 103)

Renal failure (CC 131)

Chronic Obstructive Pulmonary Disease (CC 108)

Pneumonia (CC 111-113)

Protein-calorie malnutrition (CC 21)

Dementia and senility (CC 49, 50)

Hemiplegia, paraplegia, paralysis, functional disability (CC 67-69, 100-102, 177, 178)

Peripheral vascular disease (CC104, 105)

Metastatic cancer and acute leukemia and other severe cancers (CC 7, 8)

Trauma in the last year (CC154-156, 158-162)

Major psychiatric disorders (CC54-56)

Chronic liver disease (CC25-27)

Severe hematological disorders (CC44)

Iron deficiency/anemias/blood diseases (CC47)

Depression (CC 58)

Parkinson's/Huntington's diseases (CC73)

Seizure disorders and convulsions (CC 74)

Fibrosis of lung and other chronic lung disorders (CC109)

Asthma (CC 110)

Vertebral fractures (CC 157)

References:

Krumholz HM, Brindis RG, Brush JE, et al. 2006. Standards for Statistical Models Used for Public Reporting of Health Outcomes: An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College

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of Cardiology Foundation. Circulation 113: 456-462. N/A
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Administrative claims, Other
Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** MPR: Mathematica Policy Research; RTI-Research Triangle Institute

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): PASSED all three sub-criteria
1a. Impact: H-18; M-1; L-0; I-0; **1b. Performance Gap: H-13; M-6; L-0; I-0**
Rationale:
- This is an important outcome measure
- The measure has been used for several years, and the mean for the 2007 to 2009 period was 11.7%, with a range of 6.9% to 20.4%. No change yet seen in the 3-4 years of data but since CMS combines three years of data for public reporting, it is too soon to expect to see much change.
- Performance variation seems the same across different potential disparities groups.
- There are striking variation in measure results within and across regions

1c. Evidence (*based on decision logic*): **Y-15; N-0; I-4**
Rationale:
- This is an outcome measure.
- Large data sets and observations indicate opportunity for improvement.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): PASSED reliability and validity.
2a. Reliability: H-5; M-13; L-1; I-0; 2b. Validity: H-7; M-9; L-2; I-1
Rationale:
- RELIABILITY: data element – According to the developer "the measure uses only those data elements from the claims that have both face validity and reliability. The use of fields that are thought to be coded inconsistently across hospitals or providers is avoided. The selected data fields are consequential for payment which are audited."
- VALIDITY: The administrative risk model was validated with a medical-record based model when the measure was created. The model has been validated in an all payer (18 years and older) dataset as well as the Medicare dataset.
- The risk model has been published.
- The only potential confounder is increasing alternatives to admission (observation care).

3. Usability: H-13; M-3; L-2; I-1
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- Mortality is a readily understood outcome.

4. Feasibility: H-15; M-1; L-2; I-1
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Uses adminstrative data

Steering Committee Recommendation for Endorsement: Y-17; N-2
Rationale:
- Publicly reported outcome measure.
- There is further opportunity for improvement.
- Good reliability and validity has been demonstrated.

RELATED AND COMPETING MEASURES
- **0231 Pneumonia morality rate (IQI#20) (AHRQ)**
- **0468 Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization (CMS)**

- The Committee determined these are related, not competing, measures. Committee members felt strongly that both

0468: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

inpatient and 30-day mortality measures provide complimentary information and both are needed to describe the entire episode of care. However, the Committee asked whether further harmonization was possible and perhaps better alignment as they are both based on administrative data.

Public & Member Comment

Comments included:

- Concerns that the claims-based definition of pneumonia lacks sufficient validity and requests that the definition be updated to reflect coding trends, noting that this measure does not include patients with a primary diagnosis of sepsis or respiratory failure and a secondary diagnosis of pneumonia. A recent published study shows that hospital admissions with a primary diagnosis of pneumonia are declining over time, while at the same time admissions with a primary diagnosis of sepsis or respiratory failure and a secondary diagnosis of pneumonia are on the rise possibly due to the performance measure.

  Developer response: The recent paper by Dr. Lindenauer is useful and informative. CMS has an annual process to maintain and re-evaluate the measures and this process incorporates any important recent literature. The analyses in Dr. Lindenauer's paper suggest some additional cohort codes that could be incorporated into the measure in the future. Because the pneumonia mortality measure has been successfully used in public reporting for four years now and changes to the cohort will have an impact on hospitals and stakeholders, any potential changes must be undertaken with careful consideration. Dr. Lindenauer's paper was a patient-level analysis and our maintenance evaluation will need to take into account the implications for hospital results as well as the potential benefits and risks of changing the cohort definition.

- AHA submitted a letter which is posted on the NQF project page outlining concerns with the following issues:

  o   Failure to adjust for factors beyond the hospital's control such as patient characteristics, extreme circumstances, patient compliance and quality of post-acute care.

  o   Reliability – A recent CMS study required by the Accountable Care Act "shows the claims-based measures are unreliable." Additional reliability analyses are provided by KNG showing similar results.

  o   Exclusions for all Medicare patients in Hospice rather than just FFS Medicare patients enrolled in hospice.

  Developer response: Detailed responses to the AHA comments from the developer are posted on the NQF project page.

Steering Commitee response:

The Committee reviewed the extensive responses provided by the developer. The Committee indicated that the responses adequately addressed the issues raised by AHA.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

- Decision: Approved for continued endorsement

Board of Directors (July 31, 2012):

- Decision: Ratified for continued endorsement

0506 Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization

Submission | Specifications

Status: Maintenance, Original Endorsement: Oct 28, 2008

Description: The measure estimates a hospital-level risk-standardized readmission rate (RSRR) defined as readmission for any cause within 30 days of the discharge date for the index hospitalization for patients discharged from the hospital with a principal diagnosis of pneumonia. The target population is patients 18 and over. CMS annually reports the measure for patients who are 65 years or older and are either enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities.

Since NQF-endorsement, the measure has been tested and shown to perform well in an all-payer population aged 18 and older and has been re-specified for this broader age group. The full details of the all-payer analysis and testing are attached.

Numerator Statement: The outcome for this measure is 30 day all-cause readmission. We define all-cause readmission as an inpatient admission for any cause within 30 days from the date of discharge from the index pneumonia admission. If a patient has one or more admissions (for any reason) within 30 days of the date of discharge of the index admission, only one was

counted as a readmission. For the detailed definition of planned readmissions, please refer to the attached report, Respecifying the Hospital 30-Day Pneumonia and 30-Day Chronic Obstructive Pulmonary Disease Readmission Measures by adding a Planned Readmission Algorithm.

The numerator of the risk-adjusted ratio is the predicted number of readmissions within 30 days given the hospital's performance with its observed case mix. The term "predicted" describes the numerator result, which is calculated using the hospital-specific intercept term. (See details below in the 2a1.13 Statistical risk model and variables.)

Denominator Statement: The cohort includes admissions for patients 18 and over hospitalized for pneumonia. The measure is currently publicly reported by CMS for patients 65 years and older who are either enrolled in Medicare FFS and admitted to non-federal hospitals, or admitted to VA hospitals.

The measure includes admissions for patients discharged from the hospital with a principal diagnosis of pneumonia and with a complete claims history for the 12 months prior to admission.

Exclusions: The measure excludes admissions for patients:

For all cohorts, the measure excludes admissions for patients:

•	with an in-hospital death (because they are not eligible for readmission);

•	transferred to another acute care hospital (because the readmission is attributed to the hospital that discharges the patient to a non-acute setting);

•	discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);

•	admitted with pneumonia within 30 days of discharge from a qualifying index admission (Admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as a readmission and an index admission. The next eligible admission after the 30-day time period following an index admission will be considered another index admission.)

For Medicare FFS patients, the measure additionally excludes admissions for patients:

•	without at least 30 days post-discharge enrollment in FFS Medicare (because the 30-day readmission outcome cannot be assessed in this group).

Adjustment/Stratification: Statistical risk model Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for Statistical Models Used for Public Reporting of Health Outcomes" (Krumholz et. al., 2006).

The proposed measure employs a hierarchical logistic regression model to create a hospital level 30-day RSRR. In brief, the approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals (Normand & Shahian, 2007). At the patient level, each model adjusts the log-odds of readmission within 30-days of discharge for age and selected clinical covariates. The second level models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of readmission, after accounting for patient risk. See section 2a1.20. Calculation Algorithm/Measure Logic for more detail.

Candidate and Final Risk-adjustment Variables: Candidate variables were patient-level risk-adjustors that were expected to be predictive of readmission, based on empirical analysis, prior literature, and clinical judgment, including age and indicators of comorbidity and disease severity. For each patient, covariates are obtained from Medicare claims extending 12 months prior to and including the index admission. The model adjusts for case mix differences based on the clinical status of patients at the time of admission. We use condition categories (CCs), which are clinically meaningful groupings of more than 15,000 ICD-9-CM diagnosis codes. A file which contains a list of the ICD-9-CM codes and their groupings into CCs is available at http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1182785083979.

In addition, only comorbidities that convey information about the patient at admission or in the 12-months prior, and not complications that arise during the course of the hospitalization, are included in the risk-adjustment. Hence, we do not risk adjust for CCs that may represent adverse events of care and that are only recorded in the index admission.

The final set of risk-adjustment variables is:

Demographics

Age-65 (years above 65, continuous)

Male

Comorbidities

History of coronary artery bypass graft (CABG) surgery

History of infection (CC 1, 3-6)

0506 Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization

Septicemia/shock (CC 2)
Metastatic cancer and acute leukemia (CC7)
Lung, upper digestive tract, and other severe cancers (CC8)
Lymphatic, head and neck, brain, and other major cancers; breast, prostate, colorectal and other cancers and tumors (CC 9-10)
Diabetes mellitus (DM) and DM complications (CC 15-20, 119-120)
Protein-calorie malnutrition (CC 21)
Disorders of fluid/electrolyte/acid-base (CC 22-23)
Other gastrointestinal disorders (CC 36)
Severe hematological disorders (CC 44)
Iron deficiency and other/unspecified anemias and blood disease (CC 47)
Dementia and senility (CC 49-50)
Drug/alcohol abuse/dependence/psychosis (CC 51-53)
Major psychiatric disorders (CC 54-56)
Other psychiatric disorders (CC 60)
Hemiplegia, paraplegia, paralysis, functional disability (CC67-69, 100-102, 177-178)
Cardio-respiratory failure and shock (CC 79)
Congestive heart failure (CC 80)
Acute coronary syndrome (CC 81-82)
Chronic atherosclerosis (CC 83-84)
Valvular and rheumatic heart disease (CC 86)
Arrhythmias (CC 92-93)
Stroke (CC 95-96)
Vascular or circulatory disease (CC 104-106)
Chronic obstructive pulmonary disease (CC 108)
Fibrosis N/A
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Administrative claims
Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** MPR: Mathematica Policy Research; RTI-Research Triangle Institute

IMPLEMENTATION COMMENTS
- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**
1a. Impact: H-19; M-0; L-0; I-0; **1b. Performance Gap: H-13; M-5; L-0; I-1**
Rationale:

- Clear measure of quality and a companion to measure #0458, 30-day mortality rate - both are needed.
- Current readmission rate is 18.2% for Medicare patients.

1c. Evidence (*based on decision logic*): **Y-19; N-0; I-0**
Rationale:

- Use with 0458 for optimal quality assessment.
- This is an outcome measure.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed reliability and validity.**
2a. Reliability: H-14; M-5; L-0; I-0; 2b. Validity: H-11; M-7; L-0; I-1
Rationale:

- Extensive risk-adjustment with 12 month look-back for risk factors.
- Newly tested risk model to include all payer data is appropriate, reliable, and valid for use for all patients admitted with pneumonia.

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- Standardization of the age to 18 years and older aligns with most other adult measures.
- For younger patients a readmission is less likely to be related to the pneumonia admission, except for cystic fibrosis patients, but the numbers will be rare and random.
- The developer noted that the measure performs better in the younger age group perhaps due to fewer comorbidities.
- CMS is now tracking patients who go in to observation and are not formally admitted to see if this impacts the measure. Data will be provided when it is made publicly available.

3. Usability: H-9; M-6; L-3; I-2
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:

- This measure is publicly reported on Hospital Compare.

4. Feasibility: H-17; M-2; L-1; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:

- Uses administrative data.

Steering Committee Recommendation for Endorsement: Y-18; N-2
Rationale:

- Publicly reported outcome measure that has been in use for several years.
- The measure has been expanded beyond the Medicare population.

Public & Member Comment
Comments included:

- Concerns that the claims-based definition of pneumonia lacks sufficient validity and requests that the definition be updated to reflect coding trends, noting that this measure does not include patients with a primary diagnosis of sepsis or respiratory failure and a secondary diagnosis of pneumonia. A recent published study shows that hospital admissions with a primary diagnosis of pneumonia are declining over time, while at the same time admissions with a primary diagnosis of sepsis or respiratory failure and a secondary diagnosis of pneumonia are on the rise possibly due to the performance measure.
  Developer response: The recent paper by Dr. Lindenauer is useful and informative. CMS has an annual process to maintain and re-evaluate the measures and this process incorporates any important recent literature. The analyses in Dr. Lindenauer's paper suggest some additional cohort codes that could be incorporated into the measure in the future. Because the pneumonia mortality measure has been successfully used in public reporting for four years now and changes to the cohort will have an impact on hospitals and stakeholders, any potential changes must be undertaken with careful consideration. Dr. Lindenauer's paper was a patient-level analysis and our maintenance evaluation will need to take into account the implications for hospital results as well as the potential benefits and risks of changing the cohort definition.
- Request for data on the performance of the risk adjustment model for this measure. It is not clear how readmissions unrelated to the index admission are mitigated in this measure.
  Developer resposne: The NQF submission includes substantial data on the performance of the risk-model. As to the question of "unrelated" readmissions, CMS recently developed the algorithm for identifying planned readmissions that is used in the hospital-wide readmission measure. CMS plans to adapt the algorithm for use in the COPD and pneumonia readmission measures. We will bring the updated algorithm and measure results back to the subsequent Steering Committee meeting.
- AHA submitted a letter which is posted on the NQF project page outlining concerns with the following issues:
  - Failure to adjust for factors beyond the hospital's control such as patient characteristics, extreme circumstances, patient compliance and quality of post-acute care.
  - Reliability – A recent CMS study required by the Accountable Care Act "shows the claims-based measures are unreliable." Additional reliability analyses are provided by KNG showing similar results.
  - Harmonization with the recently endorsed measure 1789: Hospital-wide all-cause readmission measure to exclude planned readmissions; harmonization of exclusions in the COPD measures compared to the pneumonia

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measures that include exclusions for discharged alive on day 0 or 1.
- Exclusions for all Medicare patients in Hospice rather than just FFS Medicare patients enrolled in hospice.

Developer response: Detailed responses to the AHA comments from the developer are posted on the NQF project page. CMS will provide additional information on including exclusions for planned readmissions by July 11 for the Committee to consider.

Steering Commitee Response:

- The Committee reviewed the extensive responses provided by the developer. The Committee indicated that the responses adequately addressed the issues raised by AHA.
- The Committee supports the plan of Yale/CMS to include the algorithm for planned readmissions in measures 0506 and 1891 and looks forward to reviewing the additional data in the next few weeks.
- In response to the comment, CMS/Yale requested additional time to work on harmonization of exclusions using a new algorithm for planned readmission for the all readmission measures, including pneumonia and COPD.

Steering Committee Review – October 16, 2012

The Committee reviewed the additional information on the algorithm for planned readmissions submitted by Yale CORE.
- The Committee agreed that the list of planned readmission exclusions were reasonable and noted the change in raw readmission rate was less than 1% and the minimal impact on the risk model.
- The Committee unanimously maintained their recommendation for endorsement.

Steering Committee Reassessment of Recommendation for Endorsement: Y-14; N-0

Additional Public & Member Comment

- Commenters voiced various concerns including: excluding patients with medical conditions or comorbidities that often require multiple episodes of care; concerns about reliability and potential unintended consequenses.
  Developer response: The measures address clinical differences in hospitals' case-mix through risk adjustment rather than through excluding patients from the measure as suggested by the commenter. The goal in developing outcomes measures is to create a clinically cohesive cohort that includes as many patients as possible admitted with the given condition. Greatly expanding our list of exclusions would result in a measure that was less useful and meaningful, because it would reflect the care of fewer patients and diverse clinical conditions. To fairly profile hospitals' performance, it is critical to place hospitals on a level playing field and account for their differences in the patients that present for care. This is accomplished through adequate risk-adjustment for patients' clinical presentation rather than exclusion of patients. In addition, the expanded planned readmission definitions for the measures will identify as planned and not count in the outcome readmissions for procedures for procedures, such as wound debridement, that represent routine care for patients with chronic conditions.
  We appreciate the points AHA raises about reliability. In a June 19, 2012 memo to NQF we responded to the KNH Health Consulting work in detail. We note that CMS uses 3 years of data to calculate the measure results for the Inpatient Quality Reporting and Hospital Readmission Reduction programs to increase the measures' reliability.

- Additional comments were received voicing concerns incuding: distinguishing between related and unrelated admissions; accounting for socioeconomic factors; and use of hierarchical modeling in the risk adjustment methodology. A commenter suggested that there is an opportunity to use the field experience going forward to determine whether additional changes are warranted and request that the developer provide an assessment at the annual update.
  Developer response: We agree that the field experience with the measures can be informed by the planned readmission algorithm. We made several revisions to the algorithm based on input from the national dry run of CMS's hospital-wide readmission measure. We will continue to evaluate potential additional changes identified by hospitals as the measures are tested and used in CMS programs.

- A commenter commended the NQF, the Steering Committee and the measure developer (Yale/CMS) for their consideration of the concerns voiced by the AHA and other stakeholders during the initial project comment period in June 2012.

- A commenter recommended that the exclusion/inclusion selection criteria methodology be improved with frequent

reviews and revisions. Unplanned readmissions that are not related to the index admission should be excluded from this measure and the measure be controlled for socioeconomic status, nonreversible comorbidities, and circumstances outside of the control of the provider.

Developer Response: The pneumonia readmission measure was developed to be an all-cause measure for several reasons. There are several reasons for using all cause readmission as the outcome. First, from the patient perspective, readmission from any cause is an adverse event. Second, although we would expect few hospitals to use gaming strategies, measures should not create incentives for them to do so. Limiting the measures to readmissions for pneumonia related admissions only may make it susceptible to gaming by coding readmissions with a different diagnosis. Third, it is often hard to exclude quality issues and accountability based on the documented cause of readmission.

The measure does not adjust for patient characteristics such as socioeconomic status (SES). The association between SES and health outcomes can be due, in part, to the differences in the quality of health care. Risk-adjusting for patient characteristics such as SES would suggest that hospitals with high proportions of such patients are held to different standards for the risk of readmission than hospitals treating higher-SES patient populations. For example, if patients of low socioeconomic status have higher readmission rates, then adjusting for SES in the model will lower the risk-standardized rates for hospitals with a higher proportion of these patients relative to other hospitals with clinically similar patients and similar outcomes. CMS does not want to hold hospitals with different SES mixes to different standards. Adjusting for SES would also obscure differences that are important to identify if we want to reduce disparities where they do exist. Thus, the choice was to adjust only for clinical differences in the populations among hospitals. This is consistent with guidance from the National Quality Forum recommending against adjusting for patient characteristics such as socioeconomic status in outcomes measures.

- A commenter requested a formal evaluation of the qualifying readmissions in the first year of the Readmission Reduction Program to determine if there should be further modifications to the planned readmission methodology.
  Developer response: We appreciate the AAMC's request for a "formal review" of the planned readmission algorithm in the first year of the Readmission Reduction Program. We note that the algorithm has undergone four rounds of public comment, as well as structured input from surgical subspecialists, technical expert panels, NQF committees, and hospitals participating in a national dry run of the hospital-wide and hip and knee arthroplasty readmission measures. The developer and CMS welcome continued comments and suggestions on the components of the algorithm as the revised measures are used.

Steering Committee Response: The Committee reviewed the comments and responses from developers and made no changes to their recommendations.

Consensus Standards Approval Committee (CSAC) Review (February 2013): Y-14; N-0
- Decision: Approved for continued endorsement

Board of Directors (March 6, 2013):
- Decision: Ratified for continued endorsement

Critical Care Measures Endorsed

0334: PICU Severity-adjusted length of stay

Paired with 0335 PICU Unplanned readmission rate

Submission |Specifications
Status: Maintenance, Original Endorsement: May 15, 2008
Description: The number of days between PICU admission and PICU discharge.
Numerator Statement: Number of PICU days, PICU days = Number of days between PICU admission and PICU discharge
Denominator Statement: Discharges from the PICU (including tranfers to other units) during the time period being reported
Exclusions: Patients => 18 years of age
Adjustment/Stratification: Statistical risk model Selection criteria for risk adjustment tool for pediatric ICU's:

0334: PICU Severity-adjusted length of stay
Paired with 0335 PICU Unplanned readmission rate
- Tool must allow quality assessment and comparison between intensive care units, and must be widely used - Tool must be valid and reliable for severity adjustment and measurement of quality Risk-adjustment using approved severity of illness tool. **Level of Analysis:** Facility **Type of Measure:** Outcome **Data Source:** Administrative claims, Electronic Clinical Data : Registry, Paper Records **Measure Steward:** Virtual PICU Systems, LLC **Other organizations:** National Association of Children´s Hospitals and Related Institutions, Child Health Corporation of America, Medical Management Planning, VPS
Steering Committee Evaluations
1. Importance to Measure and Report (*based on decision logic*)**: Passed all three subcriteria** **1a. Impact: H-9; M-7; L-1; I-1**; **1b. Performance Gap: H-8; M-9; L-0; I-1** **Rationale:** • The measure has high impact and demonstrates significant resource utilization. • The developer's database, Virtual PICU Systems, Inc. (VPS), includes approximately 1/3 of PICUs in the US and it allows hospitals to compare length of stay against similar institutions. • The Steering Committee agreed that measure had a significant performance gap, which varied from 1.71 - 4.02 days. • An analysis of eight PICUs also noted that 5.1 - 17.2% of ICU days of care could be saved through earlier discharge. • Additionally, disparities were demonstrated between insured and uninsured children. **1c. Evidence** (*based on decision logic*)**: Y-15; N-0; I-3** **Rationale:** • The evidence demonstrates the importance of a risk adjustment model and supports the use of a length of stay outcome metric.
2. Scientific Acceptability of Measure Properties (*based on decision logic*)**: Passed both subcriteria** **2a. Reliability: H-12; M-6; L-0; I-0; 2b. Validity: H-8; M-9; L-0; I-1** **Rationale:** • The measure uses the PRISM III algorithm, a proprietary risk adjustment scheme, which is currently the only validated severity of illness tool for pediatric use in the United States.
3. Usability: H-8; M-8; L-1; I-0 (*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*) **Rationale:** • The measure data is not aggregated and publicly reported; however, some hospitals participating in the VPS system may individually publicly report their data. • It was noted that the funding body for California pediatric healthcare, California Children's Services, has mandated public reporting through VPS.
4. Feasibility: H-0; M-7; L-8; I-3 (*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*) **Rationale:** • The fee schedule for participation in VPS is detailed in the submission form . For hospitals with total annual unit admissions of <500 the participation fee is $15,625 and for >2000 admissions it is $31,250. • The Steering Committee was concerned about the measure's feasibility since it uses a prioprietary risk adjustment methodology that requires participation in the VPS sytem and involves a schedule of fees based on total annual unit admisions. • However, they noted that collecting the measure data would improve understanding of care delivery.

0334: PICU Severity-adjusted length of stay
Paired with 0335 PICU Unplanned readmission rate
Steering Committee Recommendation of Endorsement: Y-11; N-7   <u>Rationale:</u>   • The measure has been clearly demonstrated as reliable and valid and can be used to improve resource utilization.   • The measure rates low on feasibility due to the proprietary nature of the risk model and availability of the model only through participation with VPS.   <u>Additional Comments/Questions</u>:   • This measure will be paired with measure *0335 PICU Unplanned readmission rate,* since they provide related data on hospital discharges, and taken together, reduce the potential for prematurely discharging patients.
Public & Member Comment   **Comments included:**   • Question about harmonization with other risk stratification models.   **Developer response:** This is a great question. We would be very interested to harmonize with other like risk stratification models. The limiting factor, however, is that no other risk stratification measures for pediatric intensive care that have been validated on the US population (with results published in a peer reviewed journal) exist other than PRISM III.   **Steering Commitee response:**   • The Committee reviewed the comment and developer response and made no changes in their recommendations.
Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0   • Decision: Approved for continued endorsement
Board of Directors (July 31, 2012):   • Decision: Ratified for continued endorsement

0335: PICU Unplanned readmission rate
Paired with 0334 PICU Severity-adjusted length of stay
[Submission](#) |[Specifications](#)   **Status:** Maintenance, Original Endorsement: May 15, 2008   **Description:** The total number of patients requiring unscheduled readmission to the ICU within 24 hours of discharge or transfer.   **Numerator Statement:** Total number of unplanned readmissions within 24 hours after discharge/transfer from the PICU   **Denominator Statement:** 100 PICU Discharges, <18 yrs of age   **Exclusions:** Patients =>18 years of age,   **Adjustment/Stratification:** No risk adjustment or risk stratification   NONE   **Level of Analysis:** Facility   **Type of Measure:** Outcome   **Data Source:** Electronic Clinical Data : Electronic Health Record, Paper Records   **Measure Steward:** Virtual PICU Systems, LLC **Other organizations:** National Association of Children´s Hospitals and Related Institutions, Child Health Corporation of America, Medical Management Planning, VPS
IMPLEMENTATION COMMENTS   • None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.
Steering Committee Evaluations
1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**   **1a. Impact: H-6; M-9; L-4; I-0**; **1b. Performance Gap: H-1; M-11; L-7; I-0**   **Rationale:**   • In VPS data from 80 PICUs, unplanned readmission rates vary from 0 to 3.14% of discharged patients.   • The Steering Committee noted only small opportunity for improvement.   **1c. Evidence** (*based on decision logic*): **Y-15; N-1; I-3**   **Rationale:**   • The Steering Committee described the evidence as moderate due to the small number of studies cited but the high quality of evidence.   • It was noted that some of the studies cited focused on adult critical care patients and rapid response teams rather than pediatric readmissions.
2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria**   **2a. Reliability: H-15; M-1; L-3; I-0; 2b. Validity: H-0; M-12; L-6; I-1**   **Rationale:**   • The Steering Committee agreed that the numerator and denominators were well defined, which adds consistency to the measure.   • Unplanned PICU readmissions were characterized as patients under 18, with an unplanned readmission within 24 hours following discharge or transfer.
3. Usability: H-4; M-12; L-3; I-0   (*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)   **Rationale:**   • The measure is not currently publicly reported; however, it is meaningful, understandable and useful for quality improvement for hospitals participating in the VPS system..
4. Feasibility: H-1; M-15; L-2; I-1   (*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)   **Rationale:**   • This measure does not use the proprietary risk model, but should be paired with measure 0334 that does.   • The fee schedule for participation in VPS is detailed in [the submission form](#) . For hospitals with total annual unit admissions of <500 the participation fee is $15,625 and for >2000 admissions it is $31,250.   • It was noted that in the future additional information on the susceptibility to inaccuracies and unintended consequences would be useful.

0335: PICU Unplanned readmission rate
Paired with 0334 PICU Severity-adjusted length of stay
Steering Committee Recommendation for Endorsement: Y-16; N-3 <u>Rationale</u>: • Important outcome measure that mirrors the outcome measures for adults. • Important to balance the length of stay measure. <u>**Additional Comments/Questions**</u> • This measure will be paired with measure *0334 PICU Severity-adjusted length of stay,* since they provide related data on hospital discharges, and taken together, reduce the potential for prematurely discharging patients.
Public & Member Comment **Comments included:** **Steering Commitee response:** • The Committee made no changes to their recommendations.
Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0 • Decision: Approved for continued endorsement
Board of Directors (July 31, 2012): • Decision: Ratified for continued endorsement

0343: PICU Standardized Mortality Ratio

Submission |Specifications
Status: Maintenance, Original Endorsement: May 15, 2008
Description: The ratio of actual deaths over predicted deaths for PICU patients.
Numerator Statement: Actual number of deaths occurring in PICU.
Denominator Statement: Predicted mortality, "Predicted mortality" = Number of deaths expected based on assessed physiologic risk of mortality
Include all PICU patients < 18 year of age admitted to the PICU for greater than 2 hours or with at least two consecutive sets of vital signs consistent with life with risk of mortality assessment
Exclusions: Preterm infants and/or adults who are admitted to the PICU in addition to patients admitted solely for palliative care
Adjustment/Stratification: Statistical risk model Selection criteria for risk adjustment tool for pediatric ICU's:
- Tool must allow quality assessment and comparison between intensive care units, and must be widely used
- Tool must be valid and reliable for severity adjustment and measurement of quality No additional stratification occurs beyond the risk adjustment inherent to this measure. That is, the expected mortality that serves as the denominator in this measure specifically accounts for the severity of illness of patients included in the measure. No further stratification is appropriate based on current literature.
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Administrative claims, Electronic Clinical Data : Registry, Paper Records
Measure Steward: Virtual PICU Systems, LLC **Other organizations:** National Association of Children´s Hospitals and Related Institutions, Child Health Corporation of America, Medical Management Planning, VPS

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**
1a. Impact: H-13; M-5; L-0; I-0; **1b. Performance Gap: H-10; M-6; L-1; I-0**
Rationale:
- The measure asseses the overall quality of PICU care and can be used to compare outcomes between facilities.
- The performance gap varies from 0.00 to 1.76.
- Disparities were observed in mortailty rates between uninsured children at 8.1% and insured children 3.6-3.7%.

1c. Evidence (*based on decision logic*): **Y-17; N-1; I-0**
Rationale:
- The literature indicates that a standardized mortality ratio is an appropriate measure for ICU settings.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria**
2a. Reliability: H-13; M-5; L-0; I-0; 2b. Validity: H-12; M-6; L-0; I-0
Rationale:
- The measure is well defined and has been demonstrated to be scientifically reliable and valid.
- PRISM III is a well-established risk model for PICU.

3. Usability: H-15; M-3; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- This measure provides a vehicle for the public reporting of SMR and represents an important aspect of outcomes measurements. Consumers find the information particularly meaningful. Additionally, data is reported to various agencies**.**
- While the measure is not required to be publicly reported, several hospitals report the metric voluntarily.

0343: PICU Standardized Mortality Ratio

4. Feasibility: H-4; M-6; L-5; I-3

(4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

Rationale:

- The Steering Committee was concerned about the measure's feasibility since it uses a prioprietary risk adjustment methodology that requires participation in the VPS sytem and involves a schedule of fees based on total annual unit admisions.
- The fee schedule for participation in VPS is detailed in [the submission form](). For hospitals with total annual unit admisions of <500 the participation fee is $15,625 and for >2000 admisions it is $31,250.
- Committee members noted that collecting the measure data would improve understanding of care delivery.
- Concern was expressed that electronic records may not be available in all facilities and no definite method of electronic data collection was indicated.

Steering Committee Recommendation for Endorsement: Y-16; N-2

Rationale:

- This is an important outcome measure that uses well-established risk methodology for mortality assessment.

Public & Member Comment

- No comments submitted.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

- Decision: Approved for continued endorsement

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0

- Decision: Approved for continued endorsement

Imaging Measure Endorsed

0513: Thorax CT: Use of contrast material

Submission |Specifications

Status: Maintenance, Original Endorsement: Oct 28, 2008

Description: This measure calculates the percentage of thorax studies that are performed with and without contrast out of all thorax studies performed (those with contrast, those without contrast, and those with both). The measure is calculated based on a one year window of Medicare claims data. The measure has been publicly reported annually by the measure steward, the Centers for Medicare & Medicaid Services since summer 2010 as a component of its Hospital Outpatient Quality Reporting (OQR) Program.

OQR is a quality data reporting program implemented by the Centers of Medicare & Medicaid Services (CMS) for outpatient hospital services. Under this program, hospitals report data using standardized measures of care to receive the full annual update to their Outpatient Prospective Payment System (OPPS) payment rate, effective for payments beginning in calendar year (CY) 2009. The Hospital OQR Program is modeled on the current quality data reporting program for inpatient services, the Hospital Inpatient Quality Reporting Program.

To meet Hospital OQR requirements and receive the full Annual Payment Update (APU) under the OPPS, hospitals must meet administrative, data collection and submission, and data validation requirements. Participating hospitals agree that they will allow CMS to publicly report data for the quality measures (as stated in the current OPPS Final Rule.) In the context of this measures reporting program, NQF #0513 is referred to as "OP-11."

Regarding interpreting this measure, a high value indicates a higher facility-level use of both a contrast and non-contrast CT Thorax studies at the same time. As indicated below in the Scientific Acceptability section, we could find no clinical guidelines or peer reviewed literature that supports so-called CT Thorax "combined studies" (i.e., CT Thorax with and without contrast).

Numerator Statement: The number of thorax CT studies with and without contrast (combined studies).

Sum of global and technical units associated with CPT codes:

CPT 71270 – Thorax CT With and Without Contrast

A technical unit can be identified by a modifier code of TC. A global unit can be identified by the absence of a TC or 26 modifier code.

Thorax CT studies can be billed separately for the technical and professional components, or billed globally to include both the professional and technical components.

Professional component claims will out number Technical component claims due to over-reads.

To capture all outpatient volume facility claims typically paid under the OPPS/APC methodology global and TC claims should be should be considered, and to avoid double counting of professional component claims (i.e., 26 modifier).

Denominator Statement: The number of thorax CT studies performed (with contrast, without contrast or both with and without contrast) on Medicare beneficiaries within a 12 month time window.

Sum of global and technical units for CPT codes:

71250 - Thorax Without Contrast

71260 – Thorax CT With Contrast

71270 – Thorax CT With and Without Contrast

Exclusions: This measure has no exclusions.

Adjustment/Stratification: No risk adjustment or risk stratification N/A N/A

Level of Analysis: Facility

Type of Measure: Efficiency

Data Source: Administrative claims

Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** The following consultants have participated in measure maintenance since the measure was initially endorsed:

(1) Michael J. pentecost, M.D

 Associate Chief Medical Officer

 Thomas Dehn, M.D., F.A.C.P

 Chief Medical Officer

 Staci Barnett, M

0513: Thorax CT: Use of contrast material

IMPLEMENATION COMMENTS
- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*)**: Passed all three subcriteria**
1a. Impact: H-3; M-10; L-7; I-0; **1b. Performance Gap: H-3; M-10; L-7; I-0**
Rationale:
- The reporting of this measure on a publicly available website has already had impact in reducing the frequency with which these combined contrast and non-contrast studies are performed.
- Rapid changes in practice since providers' performance metrics were reported relative to peers on Hospital Compare.
- This measure is reported on Hospital Compare for hospital outpatient imaging facilities and the national average reported is 0.052 on a scale of 0 to 1.

1c. Evidence (*based on decision logic*)**: Y-15; N-1; I-4**
Rationale:
- This measure relates to both overuse and patient safety due to unnecessary cost as well as radiation exposure and potential reactions to contrast dye.
- There is almost no circumstance under which the American College of Radiology recommends thoracic CT with and without contrast. The rare exception might be CT tumor perfusion studies which are performed in very high level academic medical centers who perform radiofrequency and cryoablations for lung cancer and do not represent mainstream practice.

2. Scientific Acceptability of Measure Properties (*based on decision logic*)**: Passed both subcriteria**
2a. Reliability: H-16; M-4; L-0; I-0; 2b. Validity: H-13; M-6; L-0; I-1
Rationale:
- The Committee agreed that there is a high degree of reliability and validity because it's a straightforward metric and is based on billing data.

3. Usability: H-9; M-11; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- The Committee voiced some concern on the understandability of a metric in which the goal is a low number. Is this easily understandable or confusing to end users?
- The title of the measure could be more descriptive of the intent of the measure.

4. Feasibility: H-17; M-3; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Uses administrative billing data.

Steering Committee Recommendation for Endorsement: Y-20; N-0
Rationale:
- Publicly reported measure of overuse and patient safety.
- Needs good context in presentation of the results that lower is better.

0513: Thorax CT: Use of contrast material
Public & Member Comment **Comments included:**   - Clarify of the measure description and exclusions**.** **Developer response**: Thank you for your comment. CMS appreciates your feedback and will carefully consider it as we refine the CT Thorax measure. The measure as described on QualityNet and reported on Hospital Compare is calculated from Medicare claims data. Reported performance is thus limited to Medicare beneficiaries, including eligible individuals with disabilities under age 18. However, the measure is appropriate for use in other settings and can be calculated using non-Medicare claims.   - Disapprove with comments. On behalf of the American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC) appreciates the opportunity to comment on this measure. The QIC has never seen a gap demonstrated that would necessitate a performance measure.   **NQF response**: The Committee reviewed the performance rates for this measure currently reported on Hospital Compare. The developer submitted the following: "Of the 3,652 hospital outpatient facilities meeting a minimum case count for Hospital Compare public reporting in 2011, the 10% of facilities (n=365) in the 90th percentile or above on the measure performed "combined" CT studies in calendar year 2009 a minimum of 23.2% of the time. This percentage of studies performed with and without contrast is approximately 12 times the 50th percentile, 2.0%."   **Steering Commitee response:** The Committee reviewed the comments and the responses and made no changes to their recommendations.
Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-15; N-0   Decision: Approved for continued endorsement
Board of Directors (July 31, 2012):   Decision: Ratified for continued endorsement

Measures Not Recommended

Asthma Measures Not Recommended

0338: CAC-3 Home management plan of care (HMPC) document given to patient /caregiver

Status: Maintenance, Original Endorsement: May 15, 2008
Description: This measure assesses the proportion of pediatric asthma patients discharged from an inpatient hospital stay with a Home Management Plan of Care (HMPC) document in place. This measure is one of a set of three nationally implemented measures that address children's asthma care (CAC-1: Relievers for Inpatient Asthma, and CAC-2: Systemic Corticosteroids for Inpatient Asthma) that are used in The Joint Commission's accreditation process.
Numerator Statement: Pediatric asthma inpatients with documentation that they or their caregivers were given a written Home Management Plan of Care (HMPC) document that addresses all of the following:
1. Arrangements for follow-up care
2. Environmental control and control of other triggers
3. Method and timing of rescue actions
4. Use of controllers
5. Use of relievers

Denominator Statement: Pediatric asthma inpatients (age 2 years through 17 years) discharged with a principal diagnosis of asthma.
Exclusions: Excluded Populations:
• Patients with an age less than 2 years or 18 years or greater
• Patients who have a Length of Stay greater than 120 days
• Patients enrolled in clinical trials

Adjustment/Stratification: No risk adjustment or risk stratification None None
Level of Analysis: Facility, Population : National
Type of Measure: Process
Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Records
Measure Steward: The Joint Commission

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*)**: Did not pass all three subcriteria**
1a. Impact: H-6; M-9; L-2; I-3; **1b. Performance Gap: H-7; M-12; L-1; I-0**
Rationale:
• Current national performance rate reported on Hospital Compare is 79%.
1c. Evidence (*based on decision logic*): **Y-4; N-6: I-10**
Rationale:
• The Committee agreed that patient education is clearly an essential component in successful asthma management.
• The evidence is not as strong for care plan as for use of ICS. The Committee noted the recent publication in JAMA by Morse in October 5, 2011 that found "Among children admitted to pediatric hospitals for asthma, there was high hospital-level compliance with CAC-1 and CAC-2 quality measures and moderate compliance with the CAC-3 measure but no association between CAC-3 compliance and subsequent ED visits and asthma-related readmissions". http://jama.ama-assn.org/content/306/13/1454.abstract
• There were also concerns over the lack of standardization of a quality care plan, how language is constructed and health literacy issues.

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Importance to Measure and Report.

0338: CAC-3 Home management plan of care (HMPC) document given to patient /caregiver

Public & Member Comment

Comments included:

- Support of the Committee's recommendation for future development of better measures of comprehensive asthma education, noting that the concept of patient/family education and engagement in asthma management is an important one.
- Request for reconsideration because it is important for care coordination efforts and there is a lack of quality measures addressing the high-priority area in the current NQF measures portfolio.

Steering Commitee response: This measure fails to meet the NQF criteria for evidence. The Committee noted the recent publication in JAMA by Morse in October 5, 2011 that found "Among children admitted to pediatric hospitals for asthma, there was high hospital-level compliance with CAC-1 and CAC-2 quality measures and moderate compliance with the CAC-3 measure but no association between CAC-3 compliance and subsequent ED visits and asthma-related readmissions".

http://jama.ama-assn.org/content/306/13/1454.abstract

0620: Asthma - Short-acting beta agonist inhaler for rescue therapy

Status: Maintenance, Original Endorsement: Dec 04, 2009

Description: The percentage of patients 2 years or older with asthma who have a refill for a short-acting beta agonist in the past 12 months.

Numerator Statement: Patients who have at least one refill for a short acting beta agonist for rescue therapy in the past 12 months.

Denominator Statement: Patients 2 years and older with a diagnosis of asthma who had at least one office visit in the past 12 months.

Exclusions: 1.General exclusion for Terminal Illness

2.General exclusion for cancer

3.Provider or patient feedback stating patient does not have a diagnosis of asthma

Adjustment/Stratification: No risk adjustment or risk stratification This specific measure addresses all asthmatics, regardless of severity of the disease, across the entire measured population. Using our highly specific rule algorithms, people with a confirmed diagnosis of asthma will be included in the denominator. Therefore, no risk adjustment or risk stratification is necessary for this unique measure. This specific measure addresses all asthmatics, regardless of severity of the disease, across the entire measured population. Using our highly specific rule algorithms, people with a confirmed diagnosis of asthma will be included in the denominator. Therefore, no risk adjustment or risk stratification is necessary for this unique measure.

Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Facility, Health Plan, Integrated Delivery System, Population : County or City, Population : National, Population : State

Type of Measure: Process

Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy, Healthcare Provider Survey, Patient Reported Data/Survey

Measure Steward: ActiveHealth Management

IMPLEMENTATION COMMENTS

- The ACCP QIC notes that this measure should be harmonized with Measure 0548: Suboptimal asthma control (SAC) and absence of controller therapy (ACT).

Steering Committee Evaluation

1. Importance to Measure and Report (*based on decision logic*): Did not pass all three subcriteria

1a. Impact: H-9; M-9; L-1; I-1; **1b. Performance Gap: H-3; M-8; L-2; I-7**

Rationale:

- The mean performance rate was reported to be 42%. The Committee was concerned that with such a low performance rate perhaps there are other explanations for the results, such as the accuracy of the medication data or what patients are included.

1c. Evidence (*based on decision logic*): Y-5; N-1; I-13

Rationale:

- The Committee indicated the definition of asthma in this measure was very broad. The Committee questioned whether all the patients who would be captured would be expected to have a current prescription, especially mild asthmatics.
- The Committee noted that patients may have medicines with a 2 year shelf life, or samples that were provided to the patient. Committee members noted that this measure has nothing to do with asthma control since it does not assess use of inhaled corticosteroids.
- The Committee had concerns about the reliability of identifying asthma for 2-5 year olds.
- The Committee asked for the evidence that having a rescue inhaler available at all times improved patient outcomes, even for mild or intermittent asthmatics.

The developers responded:

- This measure is really directed at ensuring that anyone with asthma regardless of severity have access to at least one inhaler.
- The measure is trying to address that everyone should have a rescue inhaler handy even if they have mild or asthma that flares up maybe once every year. It would certainly lead to dire consequences should they not have a rescue inhaler at their home or on them at the time.

0620: Asthma - Short-acting beta agonist inhaler for rescue therapy
• We're looking to decrease the number of not only emergency room visits but urgent care visits as well when if the patient should just need a quick burst of relief before getting into see their primary care doctor that they have that available to them. • The measure is not looking to alleviate or not to respond to the overuse of short acting inhalers but really address the fact that everyone should have at least one available to them. • The data may come from pharmacy claims or patient data in PHRs or HIE. • The measure looks specifically in the past year for multiple diagnoses overlapping with office visits, overlapping with asthma medications that are not short term, that are not rescue inhalers to confirm that the patient is truly asthmatic. Also a lot of our patient and provider feedback is telling us that the patient truly doesn't have asthma, and if they do give us that feedback, we pull them out of the denominator. When it comes to samples, we allow for patients and providers to also tell us that they have given the patient samples. The shelf life for the medication is addressed.
Steering Committee Recommendation for Endorsement: No The measure did not pass the criterion of Importance to Measure and Report.
Public & Member comment: • No comments received

1876: Optimal asthma care

Status: New Submission
Description: The Optimal Asthma Care measure is an all-or-none, composite measure. The measure reflects the percentage of patients ages 5-50 (pediatrics ages 5-17) who have optimally managed asthma with all of following components met: a) Asthma is well-controlled; b) Patient is not at increased risk of exacerbations; and c) Patient has been educated and has a current, written asthma action/management plan.
Asthma control is assessed using one of three validated asthma control tools. Asthma risk of exacerbations is assessed by asking the patient about emergency department visits and hospitalizations due to asthma in the past 12 months. Asthma education with a current, written asthma management/action plan is completed using an asthma action plan that contains information on: medication doses and purposes, how to recognize and what to do during an exacerbation, and the patient´s triggers.
Numerator Statement: The numerator is the number of patients ages 5-50 who meet all components of the measure (see below). (MN Community Measurement stratifies data by age group: Children ages 5-17 and Adults ages 18-50).
a) Asthma well-controlled as demonstrated by the use of one of four validated asthma control tests that scores the patient as "in-control" or "well-controlled".
b) Patient is not at elevated risk of exacerbation as evidenced by patient reported emergency department visits and inpatient hospitalizations due to asthma in the past 12 months. The total number of emergency department visits and hospitalizations due to asthma must be less than 2.
c) Patient has been educated about his or her asthma and self-management of the condition with a written asthma management plan present (created or reviewed and revised within the measurement period) that contains information about the patient´s triggers, the patients medication doses and effects of those medications, and what to do during an exacerbation.
Denominator Statement: Patients ages 5 to 50 with asthma who have at least two visits for this diagnosis in the last 24 months (established patient) and who have had at least one visit in the last 12 months.
Exclusions: Valid exclusions include patients who only had one visit to the clinic for asthma during the last two years, patients who are nursing home residents, in hospice, or have died, or patients who have COPD, emphysema, cystic fibrosis, or acute respiratory failure.
Adjustment/Stratification: Other Case-mix adjustment Risk adjustment for the Optimal Asthma Care measure is based on case mix (health plan product). Health plan product was selected because it can serve as a proxy for socioeconomic status if more specific variables are not reliably and consistently availabl -Patient age group (children ages 5-17 and adults ages 18-50)
-Patient gender
-Patient zip code, primary residence (format text: XXXXX)
-Race and ethnicity code or codes (up to five) as defined in the Optimal Asthma Care Data Collection Guide 2011 (format numeric: see guide for codes)
-Country of origin as defined in the Optimal Asthma Care Data Collection Guide 2011 (format numeric: see guide for codes)
-Primary language as defined in the Optimal Asthma Care Data Collection Guide 2011 (format numeric: see guide for codes)
-Insurance coverage code as defined in the Optimal Asthma Care Data Collection Guide 2011 (format numeric: see guide for codes)
Level of Analysis: Clinician : Group/Practice
Type of Measure: Outcome
Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Measure Steward: MN Community Measurement

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*)**: Did not pass all three subcriteria**
1a. Impact: H-13; M-6; L-0; I-1; **1b. Performance Gap: H-11; M-5; L-0; I-4**
Rationale:
- This is an all or none composite measure of optimal asthma care that looks at three different components.
- The MN statewide average for optimal control was 15.7 percent for adults and 24% for children. The Committee thought these results were very low and questioned the accuracy of the results.
  - The developer responded that this is a first year measure that was implemented on a statewide basis under the MN health reform act which required all providers to submit data. 34% of the eligible, established patients with asthma did not have a control test assessment, count of ED visits or hospital stays or a written asthma action

plan. Of the patients who did have all three components present during the measurement year, 63% achieved the composite all-or-none optimal care rate.

1c. Evidence (*based on decision logic*): **Y-6; N-1; I-13**

Rationale:

- Component 1 – asthma control tests – The Committee noted that the asthma control survey is a survey that was developed and authenticated by performance testing in asthma clinics of allergists and -- areas likely to have individuals who probably had a higher degree of severity of asthma and also a relationship with their asthma that probably made them good candidates for testing the survey and repeated testing of surveys. The committee had concerns that there would likely be significant numbers of patients with very mild asthma included included in the broad population.

- Component 2 – The Committee asked about the evidence that < 2 ED visits or hospitalizations means optimal control. The Committee questioned why the absence of ED visits or hospitalizations would not be an indication of optimal control. With the measure's threshold, one hospitalization is considered well-controlled but two ED visits is not. The Committee questioned how the thresholds were selected. Committee members also questioned treating hospitalization and emergency department visits as essentially equal weights since they may be dramatically different events.

- Component 3: An asthma care plan is recommended in the NHLBI guidelines for asthma care. The specifications for asthma management plan seemed to have a large degree of variability.
  - The developer responded that they are not requiring a standard asthma plan to be used by all clinics. They require that the plans contain written components including medications, dose and purpose, triggers, recognizing what to do during an exacerbation, and validation process against what was stated.
  - The developer provided additional documentation of evidence which stated "Written asthma action plan – Research unclear if the presence of an action plan vs. no action plan improves health outcomes. Research does link written action plans when combined with self-management education to improved health outcomes."

- While there are studies on the individual elements, there are no studies on the composite. The Committee agreed the measure is likely to prove to be an important one, but more data is needed.

Additional comments:

- Some Committee members suggested that the components should be evaluated (particularly testing) as indiviudal measures before considering the composite.
  - The developer responded that the measures were not tested individually before the composite was developed.

- The measure, as specified, includes both the outcome of control (survey, ED/hospitalization) and a method by which control may be achieved (action plan). As long as control is achieved, the Committee questioned why the the action plan was identified as the method that must be included in order for a provider to be successful (as opposed to other methods that promote control).

- The Committee was generally supportive of a composite measure as an important move forward in asthma measurement and encouraged continued work to improve the measure.

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Importance to Measure and Report.

Public & Member comments:
- No comments received

0549: Pharmacotherapy management of COPD exacerbation (PCE)

Status: Maintenance, Original Endorsement: Aug 05, 2009
Description: This measure assesses the percentage of COPD exacerbations for members 40 years of age and older who had an acute inpatient discharge or ED encounter on or between January 1–November 30 of the measurement year and who were dispensed appropriate medications.
Two rates are reported.
1. Dispensed a systemic corticosteroid within 14 days of the event
2. Dispensed a bronchodilator within 30 days of the event
Note: The eligible population for this measure is based on acute inpatient discharges and ED visits, not on members. It is possible for the denominator to include multiple events for the same individual.
Numerator Statement: This measure looks at the number of patients with an acute exacerbation related to COPD who were discharged and were dispensed medications following the discharge with appropriate medications. Two rates are reported for the numerator.
Rate 1: Dispensed prescription for systemic corticosteroid (Table PCE-C) on or 14 days after the Episode Date.
Rate 2: Dispensed prescription for a bronchodilator (Table PCE-D) on or 30 days after the Episode Date.
Denominator Statement: The eligible population for the measure includes all health plan members 40 years or older as of January 1 of the measurement year discharged from an inpatient setting (acute inpatient or ED) with a principal diagnosis of COPD
Exclusions: 1) Exclude any episodes on which the patient was transferred directly to an acute or nonacute care facility for any diagnosis.
2) Exclude inpatient ED Episodes on which the patient was readmitted to an acute or nonacute care facility for any diagnosis on or seven days after discharge.
Adjustment/Stratification: No risk adjustment or risk stratification N/A N/A
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy
Measure Steward: National Committee for Quality Assurance

IMPLEMENTATION COMMENTS
- America's Health Insurance Plans: Measures #0549 and 0577 are not very useful as they are subject to small numbers issues. Additionally, there are issues with data availability. For example, if a spirometry test is performed in the hospital these data may not be captured and the patient could be classified as non-compliant. The measure is also designed to identify new diagnosis of COPD and the timeline is insufficient to have data on new enrollees.
- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **PASSED all three sub-criteria**
1a. Impact: H-15; M-3; L-0; I-0; **1b. Performance Gap: H-2; M-13; L-2; I-1**
Rationale:

- 1a: Measure focuses on high impact condition affecting 12 million Americans and contributing to significant mortality.
- 1b: Limited evidence presented regarding under utilization of pharmacotherapy management
- Developer submitted the following current performance:
  Rate 1 (steroids): commercial health plan means: 69.8% (2010); 66.1% (2009); 67% (2008)
  Rate 2 (bronchodilator): commercial health plan means: 77.8% (2010); 78.7% (2009)
- There is lack of evidence that measure is currently informing quality improvement.

1c. Evidence (*based on decision logic*): **Y-15; N-1; I-2**
Rationale:

- Developer's assessment of evidence is inconsistent with materials presented.
- Does not cite original literature, uses concensus statements only.

0549: Pharmacotherapy management of COPD exacerbation (PCE)

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Did not pass validity**
2a. Reliability: H-1; M-11; L-5; I-1; 2b. Validity: H-1; M-7; L-8; I-2
Rationale:

- Testing results provided at the health plan level only.
- Reliability and validity testing are difficult to interpret.
- RELIABILITY: specifications – claims-based measure
  - Numerator for rate 1 includes both inhaled and oral steroids
  - Age 40 and over – concerns with lack of harmonization with other COPD measures
  - Uses only a primary discharge diagnosis of COPD. The Committee asked about inclusion of respiratory failure with a secondary diagnosis of COPD.
- VALIDITY: The Committee raised a series of questions.
  - Does the measure capture inhalers that were given to patients in the ED – something that is happpening with growing frequency to encourage compliance. Are the medications only captured if the patient is charged for it?
  - What if the patient has existing medications and does not need a new prescription? Is there a pharmacy look back period?
  - How does the measure handle medications that are "stockpiled" for use in the event of an exacerbation?
  - The developer replied that there is not an active look back period but considers whether there is an active prescription and noted that the measures is "dispensed" based and not prescription based.
  - The measure lacks assessment of need for stratification for disparities.
  - A validation test was conducted in 2006 to determine the ability to capture COPD exacerbations (the denominator data element) in administrative claims data compared to chart review; testing on the numerator data elements was not provided.

Additional developer response to discussion of reliability and validity:

- *1) Does our measure capture samples providing in the ED or hospital?* There currently is no mechanism for capturing this practice in any setting or level of accountability, whether that is a health plan, a hospital, ED or physician office. Additionally, since this is a health plan specified measure (for patients with insurance coverage) we have found that there are positive incentives for providers of all types to submit claims to insurers for payment, including medications. We would also like to add that all NCQA medication related measures rely on dispensed drugs (not prescribed) which we believe best captures patient adherence. Health plans are clearly accountable for performance and in a position to drive improved performance.
- *2) Does our measure capture prescriptions provided at the ED?* Yes ED visits and related prescription medication claims are captured by the health plans, the same way as any outpatient visit and related dispensed medications.
- *3) How do you capture listed medications that are in current use (active prescription) at the time of the event (i.e., is there a look back period)?* If the member is on a prescription prior to the date of the exacerbation, any days supply left from that script can be used to count the person as a numerator hit. For example, if the member filled a script on December 1, of the measurement year with a 60 day supply, then had a COPD exacerbation on January 2, of the measurement year, that person would have some days supply. That active script would be counted as a numerator hit for this member's event. We are not prescriptive about how long to look back, so regardless of what method the health plan is using, if the method meets the intent, it is acceptable. I can tell you that most industry vendors look back 90 or 120 days. Very rarely is a prescription issued for more than 90 days at a time. There are some inhalers on the list, so it is harder to predict exactly how long those will last. We do know that some vendors prefer to use 120 days for this reason. They want to make sure they are catching anything that might be relevant. As a reminder, all of HEDIS health plan measures are audited by certified vendors.

The Committee considered the responses from the developer in the weeks after the meeting.

- The majority of the Committee agreed that the additional information did not resolve their questions. The key issue is whether or not administrative claims-based data can reliably and accurately capture whether a patient hospitalized or in the ED for a COPD exacerbation receives systemic steroids within 14 days post discharge (e.g., including those that may already have supplies or those who received samples from the hospital or ED).

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Scientific Acceptability of Measure Properties.

0549: Pharmacotherapy management of COPD exacerbation (PCE)

Public & Member Comment

Comments included:

- The developer requests reconsideration. Developer believes the Committee discussed issues outside of the scope of the measure evaluation sub-criteria. For example, during the discussion of Importance, the SC discussion focused exclusively on the sub-criteria of validity with no further discussion of this measure's high impact, performance gap, and evidence.

Steering Commitee response:

- After reviewing the developers' letter, the Committee agreed that they had given a fair evaluation of the measure as well as reconsideration folowing the in-person meeting. When the developer offered to provided recently discovered testing data from 2005 on the Committee call on June 21st, the Committee agreed it was too late in the process to accept additional information that could have been provided in the submission or at previous meetings and conference calls. The Committee encourages the developer to re-submit the measure at the next opportunity.

Consesnsus Standards Approval Committee (CSAC) (Agust 2012)

The developer requested a reconsideration of this measure from the CSAC.

The CSAC co-chairs discussed the issues all CSAC members and the Pulmonary Steering Committee co-chairs. In reviewing of the documents NCQA presented as well as the original submission information and the summary of the Steering Committee's evaluation the CSAC determined:

- The original submission did not contain information on validity testing of the critical data elements of the numerator. The Committee's evaluation that the measure did not meet the criteria for Validity and Scientific Acceptability is consistent with the lack of testing of the numerator data elements information. Particularly with absence of testing of the numerator data elements, the Committee voiced concerns regarding capturing of all possible pharmacotherapy provided for the patient.

- The 2006 testing document that NCQA included in the request for reconsideration on July 5, 2012 does provide information on "numerator validation" in Tables 26 and 27 of the *Testing of the Feasibility of Performance Measure of Chronic Obstructive Pulmonary Disease (COPD) - Field Test Report, January 25, 2005.*

  Page 25 of the report states "Table 26a-26b shows that, on average there was 64.2% data consistency for **steroid use** between administrative and MR data for plans". On page26 the report states that "Tables 27a-27b shows that, on average, there was 66.6% consistency for **bronchodilator use** between administrative and MR data for plans". We question NCQA's statement on page 3 of the request for reconsideration which states "There were no issues identified with numerator validity, as numerator agreement between administrative and medical record data for steroid and bronchodilator use was moderate to high, 64 percent and 68 percent, respectively when rated by plan". The fact that many patients appropriately cared for according to the medical record (28.9% for steroids and 26.4% for bronchodilators), were not captured by this measure is quite troubling. This is a large discrepancy for a performance measure that is used for accountability. This data supports the Committee's concern that the measure results are not a valid reflection of the performance of providers assessed by this measure.

  CSAC conclusion: The evaluation of this measure has been very thorough. CSAC supports the Pulmonary and Critical Care Committee's evaluation and recommendation against measure 0549 Pharmacotherapy Management of COPD Exacerbation (PCE).

0148: Blood cultures performed in the emergency department prior to initial antibiotic received in hospital

Status: Maintenance, Original Endorsement: Mar 09, 2007
Description: Percentage of pneumonia patients 18 years of age and older who have had blood cultures performed in the emergency department prior to initial antibiotic received in hospital
Numerator Statement: Number of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics
Denominator Statement: Pneumonia patients 18 years of age and older who have an initial blood culture collected in the emergency department
Exclusions: •Received in transfer from another acute care or critical access hospital, including another emergency department
•No working diagnosis of pneumonia at the time of admission
•Receiving comfort measures only4
•<18 years of age
•Do not receive antibiotics or a blood culture
•No chest x-ray or CT scan that indicated positive infiltrate within 24 hours prior to hospital arrival or anytime during this hospitalization
Adjustment/Stratification: No risk adjustment or risk stratification N/A N/A
Level of Analysis: Facility
Type of Measure: Process
Data Source: Administrative claims, Paper Records
Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** The Joint Commission, Centers for Disease Control and Prevention, Infectious Diseases Society of America, American Thoracic Society, Johns Hopkins University, Northeastern Ohio Univ. College of Medicine, Pneumonia Patient Outcomes Team, New Jersey Medical

IMPLEMENTATION COMMENTS

- APIC does not approve measure 0148. The IDSA/ATS Guidelines do not recommend routine collection of blood culture – even for those who are subsequently admitted. Instead these Guidelines indicate diagnostic testing should be obtained for patients with certain clinical indications or if findings from same would alter maintenance antibiotic therapy.
  Developer response: The epidemiology of community-acquired pneumonia is well described and empiric antibiotic recommendations are explicitly defined in guidelines from IDSA/ATS. The CMS performance measure is based on that guideline with ongoing technical expert panel input from members of the guideline-writing committee of IDSA/ATS, as well as other experts. The inpatient measure relies on collection of the actual antibiotic administered (consistent with guidelines) based on the clinical presentation of the patient. The PQRS measure does not provide specificity with regards to antibiotic selection.

- The ACCP QIC noted that the data that has been collected from this measure may show evidence for unintended consequences.
  Developer response: Not sure what unintended consequences of the blood culture measure you are referencing. The performance measure specifications leave the decision to do a blood culture entirely to the physician at the bedside so there is no requirement to collect a culture. However, if the practitioner decides to do a blood culture, there is good data that the yield of cultures is reduced substantially if the patient has already received antibiotics. Indeed the usefulness of the cultures is markedly reduced (Metersky et al).
  In the past we have evaluated the usefulness of blood cultures for patients with pneumonia. We agree that requiring all pneumonia patients to have a blood culture is associated with unintended consequences because the majority of cultured organisms reported are contaminants and not pathogens. However, we have addressed this problem with blood cultures years ago and no longer require that a culture be obtained on all pneumonia patients. There has been some ongoing confusion about this in the performance measure but a patient is only eligible for this measure if the bedside clinician decides to order a blood culture.

Steering Committee Evaluations

0148: Blood cultures performed in the emergency department prior to initial antibiotic received in hospital

Importance to Measure and Report (*based on decision logic*)**: Did not pass all three subcriteria**

1a. Impact: H-4; M-4; L-8; I-2; **1b. Performance Gap: H-; M-; L-; I-**

Rationale:

- Not congruent with ICU measure 0356.
- There is no requirement that a blood culture is done appropriately.
- Current national rate as reported on Hospital Compare for the quality indicator "Pneumonia Patients Whose Initial Emergency Room Blood Culture Was Performed Prior To The Administration Of The First Hospital Dose Of Antibiotics" is 96%.

1c. Evidence (*based on decision logic*)**: Y-; N-:I-**

Rationale:

- The measure as written has no direct link to an outcome or a particular physician or care provider behavior that could be linked to a patient care outcome.
- The evidence from a systematic review (Afshar et al, 1999) demonstrates that blood culutres have very limited utility in immunocompetent patients hospitalized with CAP.
- The data are observational, small in number, absent rigor in confounding search, and not clearly linked to an outcome of importance.

Steering Committee Recommendation for Endorsement: No

The measure did not pass the criterion of Importance to Measure and Report.

Public & Member comment

- No comments received

0232: Vital signs for community-acquired bacterial pneumonia

Status: Maintenance, Original Endorsement: May 01, 2007
Description: Percentage of patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia with vital signs documented and reviewed
Numerator Statement: Patients with vital signs documented and reviewed
Denominator Statement: All patients aged 18 years and older with the diagnosis of community-acquired bacterial pneumonia
Exclusions: None
Adjustment/Stratification: No risk adjustment or risk stratification None We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Measure Steward: American Medical Association - Physician Consortium for Performance Improvement **Other organizations:** This measure is jointly copyrighted by the AMA-PCPI and the National Committee for Quality Assurance. The measure set was also developed in collaboration with the American College of Emergency Medicine.

IMPLEMENTATION COMMENTS

- The American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC): None of the QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **PASSED all three subcriteria**
1a. Impact: H-10; M-7; L-2; I-1; **1b. Performance Gap: H-7; M-11; L-0; I-2**
Rationale:

- 1a. Pneumonia is the number one cause of death due to infection and high cost.
- 1b.Committee members expect 100% in ED patients and note that the gap is likely in office-based care.
- The developers presented PQRS 2008 data; 22.32%of patients reported on did not meet the measure:
  10th percentile: 36.36 %
  25th percentile: 66.67 %
  50th percentile: 92.59 %
  75th percentile: 100.00%
  90th percentile: 100.00%

1c. Evidence (*based on decision logic*): **Y-16; N-1; I-3**
Rationale:

- Vital signs are a key component to the validated severity score such Pneumonia Severity Index (PSI) or Port score, which impacts the ability to determine the appropriate level of care for CAP patients.
- Important for decision-making, though the measure does not capture the decision-making part.
- All prognostic tools use vital signs and the use of the tools drive care and outcomes.
- The measure specifies "bacterial" pneumonia – About 30% of patients have a laboratory confirmation of bacterial infection.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **PASSED both reliability and validity**
2a. Reliability: H-10; M-8; L-2; I-0; 2b. Validity: H-7; M-9; L-3; I-1
Rationale:

- Tested in EHRs and paper records at the data element level
  - The Committee questioned how "and reviewed" measured aside from self-attestation or chart review?
- Face validity assessment by expert panel
  - There is a chasm between documentation of the vital sign and, or the measuring of the vital sign and someone actually using the information appropriately to treat the patient.

0232: Vital signs for community-acquired bacterial pneumonia

3. Usability: H-13; M-5; L-2; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- Basic concept; easy to understand.

4. Feasibility: H-9; M-7; L-3; I-1
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- Collecting vital signs is not a challenge.
- Committee memebers noted that errors in vitals signs exist but are not systematic.

Steering Committee Recommendation for Endorsement: Y-17; N-3
Rationale:
- Vital signs are a key component to severity assessment and further treatment decisions.
- This is a documentation measure – it is a leap of faith that the information will be acknowledged and used appropriately.

Additional Comments/Questions:
- Clarify intent of "bacterial" pneumonia since a minority of patients have confirmed bacterial infection
  Developer response: We would like to thank the Pulmonary and Critical Care Steering Committee members for their comments and recommendations on the PCPI Community-acquired Bacterial Pneumonia measures. We can readily agree to clarify the care setting (ambulatory, including the ED) in either the measure titles or descriptions. However, we cannot confirm the harmonization and language changes suggested for individual measures until we have assured approval from our measure development panel, for which additional time will be needed. We hope that the lack of a final determination on these measure-specific recommendations will not preclude the continued endorsement of the pneumonia measures.

COMPETING AND RELATED MEASURES

The Committee determined that these three outpatient measures are related and are harmonized:
- **0232 Vital signs for community-acquired bacterial pneumonia (AMA PCPI)**
- **1895 Assessment of mental status for community-acquired bacterial pneumonia (AMA PCPI)**
- **0147 Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (AMA PCPI)**

0232: Vital signs for community-acquired bacterial pneumonia

Public & Member Comment
Comments included:

- Concerns that the measure is a standard of care and that it should become part of a composite measure that includes all elements of assessment by the physician and hospital.
  Developer response: The initial assessment of severity is crucial to almost all major clinical decisions regarding the diagnosis and treatment of CAP including the site of care. Using vital signs to assess illness severity can help optimize patient care by helping to determine if a patient requires hospitalization. Unfortunately, as indicated by PQRS data, performance rates for this measure reflect a continued opportunity to improve the care provided for pneumonia patients.

- Questions aboutt the availability of recent data to support a performance gap.
  Developer response: This measure was used in the 2007-2011 CMS Physician Quality Reporting Initiative/System. The most recent PQRS data reflect a continued gap in care although an improvement in performance rates has occurred. It is important to note that PQRS is currently a voluntary reporting program, with about 24% of eligible professionals participating in 2010, and therefore performance rates may not be nationally representative.
  10th percentile: 92.11 %
  25th percentile: 100.00 %
  50th percentile: 100.00 %
  75th percentile: 100.00%
  90th percentile: 100.00%

Steering Commitee response:
After reviewing the comments, the Committee agreed that a composite measure would be preferable to individual measures. In the absence of a composite measure to recommend at this time, the Committee agreed to maintain their current recommendations, but indicated that at the next maintenance review, individual measures should not be endorsed. The Committee also noted that the data on the opportunity for improvement for these measures was very limited and data on a larger sample of health professionals over time are needed to understand the gap.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-5; N-10

- Decision: Not Recommended for Endorsement
- During the CSAC discussion, several members stated that assessing a patient's assessment of vital signs for community-acquired pneumonia was part of the standard of care and signaled that the measure would not improve quality.

0233: Assessment of Oxygen Saturation for Community-Acquired Bacterial Pneumonia

Status: Maintenance, Original Endorsement: May 01, 2007
Description: Percentage of patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia with oxygen saturation documented and reviewed
Numerator Statement: Patients with oxygen saturation documented and reviewed
Denominator Statement: All patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia
Exclusions: Documentation of medical reason(s) for not documenting and reviewing oxygen saturation
Documentation of patient reason(s) for not documenting and reviewing oxygen saturation
Documentation of system reason(s) for not documenting and reviewing oxygen saturation
Adjustment/Stratification: No risk adjustment or risk stratification None We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Measure Steward: American Medical Association - Physician Consortium for Performance Improvement **Other organizations:** This measure is jointly copyrighted by the AMA-PCPI and the National Committee for Quality Assurance. The measure set was also developed in collaboration with the American College of Emergency Medicine.

IMPLEMENTATION COMMENTS

- The American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC): None of the QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): Did not pass all three sub-criteria
1a. Impact: H-15; M-4; L-1-; I-0; **1b. Performance Gap: H-13; M-4; L-0; I-3**
Rationale:

- 1a. Impact of pneumonia the same as other measures.
- 1b. Developer provided PQRS 2008 data; 20.30% of patients reported on did not meet the measure.
  10th percentile: 38.89%
  25th percentile: 71.43%
  50th percentile: 93.33%
  75th percentile: 100.00%
  90th percentile: 100.00%
- The Committee notes there is some opportunity for improvement.
- The 2009 PQRS mean rate is 86%.
- The developer asserts that this is the "fifth vital sign" and is routinely done when patients enter the ED. If so, the Committee wonders whether the gap in performance represents a documentation gap. It is likely to be very high in EDs and less known in clinician offices.
- A similar inpatient measure was topped out at 100%.

1c. Evidence (*based on decision logic*): Y-5; N-2; I-12
Rationale:

- All pneumonia severity assessment tools include this factor. There is significant evidence that the degree of O_2 saturation influences morbidity and mortality and detemination of whether a patient is hositalized or put in the ICU.
- Timing is not specified – this should be done early on when seeing the patient.
- The FIO_2 should also be reported to interpret the O_2 saturation value.
- Several unanswered questions: Does the evidence also apply to patients seen in the clinician office? What is the evidence that failure to assess oximetry in an office setting associated with diagnosis of pneumonia leads to a poorer outcome? What is the proportion of patients seen in ED versus clinician office for this measure?

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Importance to Measure and Report.

0233: Assessment of Oxygen Saturation for Community-Acquired Bacterial Pneumonia

Public & Member Comment
Comments included:

- Request for reconsideration. Commenter noted that there is widespread significant evidence that the degree of O_2 saturation influences morbidity and mortality and determination of whether a patient is hospitalized or admitted to the ICU.

Steering Commitee response:
After reviewing the comments, the Committee agreed that a composite measure would be preferable to individual measures the severity assessment. In the absence of a composite measure to recommend at this time, the Committee agreed to maintain their current recommendation to not recommend the measure, but indicated that at the next maintenance review individual measures should not be endorsed. The Committee also noted that the data on the opportunity for improvement for these measures was very limited and much better data is needed to understand the gap.

0356 PN3a--Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival

Status: Maintenance, Original Endorsement: May 15, 2008
Description: Percent of pneumonia patients, age 18 years or older, transferred or admitted to the ICU within 24 hours of hospital arrival who had blood cultures performed within 24 hours prior to or 24 hours after arrival at the hospital.
Numerator Statement: Number of pneumonia patients transferred or admitted to the ICU within 24 hours of hospital arrival who had blood cultures performed within 24 hours prior to or 24 hours after arrival at the hospital
Denominator Statement: Patients, age 18 years or older, discharged with: ICD-9-CM principal diagnosis code of pneumonia OR ICD-9-CM principal diagnosis code of septicemia or respiratory failure (acute or chronic) AND an ICD-9-CM Other diagnosis code of pneumonia
Table 3.1 Pneumonia (PN)
ICD-9 Code Shortened Description
481 PNEUMOCOCCAL PNEUMONIA
482.0 K. PNEUMONIAE PNEUMONIA
482.1 PSEUDOMONAL PNEUMONIA
482.2 H.INFLUENZAE PNEUMONIA
482.30 STREPTOCOCCAL PNEUMN NOS
482.31 PNEUMONIA STRPTOCOCCUS A
482.32 PNEUMONIA STRPTOCOCCUS B
482.39 PNEUMONIA OTH STREP
482.40 STAPHYLOCOCCAL PNEU NOS
482.41 METH SUS PNEUM D/T STAPH
482.42 METH RES PNEU D/T STAPH
482.49 STAPH PNEUMONIA NEC
482.82 PNEUMONIA E COLI
482.83 PNEUMO OTH GRM-NEG BACT
482.84 LEGIONNAIRES´ DISEASE
482.89 PNEUMONIA OTH SPCF BACT
482.9 BACTERIAL PNEUMONIA NOS
483.0 PNEU MYCPLSM PNEUMONIAE
483.1 PNEUMONIA D/T CHLAMYDIA
483.8 PNEUMON OTH SPEC ORGNSM
485 BRONCHOPNEUMONIA ORG NOS
486 PNEUMONIA, ORGANISM NOS
Table 3.2 Septicemia
ICD-9 Code Shortened Description
038.0 STREPTOCOCCAL SEPTICEMIA

0356 PN3a--Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival

038.10 STAPHYLCOCC SEPTICEM NOS
038.11 METH SUSC STAPH AUR SEPT
038.12 MRSA SEPTICEMIA
038.19 STAPHYLCOCC SEPTICEM NEC
038.2 PNEUMOCOCCAL SEPTICEMIA
038.3 ANAEROBIC SEPTICEMIA
038.40 GRAM-NEG SEPTICEMIA NOS
038.41 H. INFLUENAE SEPTICEMIA
038.42 E COLI SEPTICEMIA
038.43 PSEUDOMONAS SEPTICEMIA
038.44 SERRATIA SEPTICEMIA
038.49 GRAM-NEG SEPTICEMIA NEC
038.8 SEPTICEMIA NEC
038.9 SEPTICEMIA NOS
995.91 SEPSIS
995.92 SEVERE SEPSIS
Table 3.3 Respiratory Failure
ICD-9 Code Shortened Description
518.81 ACUTE RESPIRATRY FAILURE
518.84 ACUTE & CHRONC RESP FAIL
Table 3.1 Pneumonia (PN)
ICD-10 Code Shortened Description
J 13 Pneumonia due to Streptococcus pneumoniae
J 18.1 Lobar pneumonia, unspecified organism
J 15.0 Pneumonia due to Klebsiella pneumoniae
J 15.1 Pneumonia due to Pseudomonas
J 14 Pneumonia due to Hemophilus influenzae
J 15.4 Pneumonia due to other streptococci
J 15.3 Pneumonia due to streptococcus, group B
J 15.20 Pneumonia due to staphylococcus, unspecified
J 15.21 Pneumonia due to staphylococcus aureus
Z 16 Infection and drug resistant microorganisms
J 15.29 Pneumonia due to other staphylococcus
J 15.5 Pneumonia due to Escherichia coli
J 15.6 Pneumonia due to other aerobic Gram-negative bacteria
A 48.1 Legionnaires' disease
J 15.8 Pneumonia due to other specified bacteria
J 15.9 Unspecified bacterial pneumonia
J 15.7 Pneumonia due to Mycoplasma pneumoniae
J 16.0 Chlamydial pneumonia
J 16.8 Pneumonia due to other specified infectious organisms
J 18.0 Bronchopneumonia, unspecified organism
J 18.8 Other pneumonia, unspecified organism
J 18.9 Pneumonia, unspecified organism
J 17 Pneumonia in diseases classified elsewhere
J 18.2 Hypostatic pneumonia, unspecified organism
J 85.1 Abscess of lung with pneumonia
Table 3.2 Septicemia
ICD-10 Code Shortened Description
A 40.0 Sepsis due to streptococcus, group A

0356 PN3a--Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival

A 40.1 Sepsis due to streptococcus, group B
A 40.3 Sepsis due to Streptococcus pneumoniae
A 40.8 Other streptococcal sepsis
A 40.9 Streptococcal sepsis, unspecified
A 41.9 Sepsis unspecified
A 41.2 Sepsis due to other unspecified specified staphylococcus
A 41.0 Sepsis due to Staphylococcus aureus
A 41.0 AND U80.1 Sepsis due to Staphylococcus aureus AND Methicillin-resistant staph aureus infection
A 41.1 Sepsis due to other specified staphylococcus
A 41.89 Other specified sepsis
A 41.4 Sepsis due to anaerobes
A 41.50 Gram-negative sepsis, unspecified
A 41.3 Sepsis due to Hemophilus influenzae
A 41.51 Sepsis due to Escherichia coli (E coli)
A 41.52 Sepsis due to pseudomonas
A 41.53 Sepsis due to Serratia
A 41.59 Other Gram-negative sepsis
A 41.81 Sepsis due to Enterococcus
A 42.7 Actinomycotic sepsis
A 41.9 Sepsis, unspecified
R65.20 Severe sepsis without septic shock
R65.21 Severe sepsis with septic shock
Table 3.3 Respiratory Failure
ICD-10 Code Shortened Description
J 96.0 Acute respiratory failure
J 96.9 Respiratory failure, unspecified
J 96.2 Acute and chronic respiratory failure
J 96.1 Chronic respiratory failure
J 80 Acute respiratory syndrome
J 22 Unspecified acute lower respiratory infection
J 98.8 Other specified respiratory disorders
Exclusions: Patients less than 18 years of age,
Patients with a length of stay greater than 120 days,
Patients with Cystic Fibrosis,
Patients who had not chest x-ray or CT scan that indicated abnormal findings within 24 hours prior to hospital arrival or anytime during this hospitalization,
Patients with Comfort Measures Only,
Patients enrolled in clinical trial,
Patients received as a transfer from emergency/observation department of another hospital,
Patients received as a transfer from an inpatient or outpatient department of another hospital,
Patients received as a transfer from an ambulatory surgery center,
Patients who had no diagnosis of pneumonia either as an ED final diagnosis/impression or direct admission diagnosis/impression and
Patients who have a duration of stay less than or equal to one day
Adjustment/Stratification: No risk adjustment or risk stratification N/A This measure is not stratified.
Level of Analysis: Facility, Population : National, Population : Regional, Population : State
Type of Measure: Process
Data Source: Administrative claims, Paper Records
Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** The Joint Commission, Centers for Disease Control and Prevention, Infectious Diseases Society of America, American Thoracic Society, Johns Hopkins University,

0356 PN3a--Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival

Northeastern Ohio Univ. College of Medicine, Pneumonia Patient Outcomes Team, New Jersey Medical

IMPLEMENTATION COMMENTS

- APIC does not approve measure 0356. As outlined with our comment on measure 0148, we recommend NQF engage IDSA/ATS and other societies that represent intensivists on the value of use of this measure to assess and compare provider performance in relationship to timing. We agree that samples of blood and sputum for culture and urinary antigen testing are clear-cut for those with severe CAP who need critical care. We're not as sure of use of the timing of such testing for performance measurement.
  - Developer response: The performance measure simply asks whether a blood culture was obtained within 24 hours of hospital arrival for those patients who are admitted to the ICU within 24 hours of hospital arrival. This is consistent with recommendations from the IDSA/ATS 2007 guidelines for management of community-acquired pneumonia (see Table 5) that recommend routine blood cultures in ICU-admitted pneumonia patients. There are representatives of both the IDSA and ATS that participate on the technical expert panel that developed this performance measure.
- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.
  - Developer response: First Quarter of 2011, 3,152 hospitals reported this measure. The quarterly national rates and benchmarks for PN-3a are publicly available as a downloadable Excel of PDF files at the bottom of this CMS webpage: http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1228768205297

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **Passed all three subcriteria**
1a. Impact: H-16; M-3; L-0; I-0; **1b. Performance Gap: H-8; M-10; L-1; I-0**
<u>Rationale:</u>

- The impact and need for improvement in compliance is well documented in the Hospital Inpatient Quality Reporting Program.
- The performance indicates that a blood culture is performed 96.9% of the time on ICU patients.
- Data on disparities indicate variation across all demographic groups that could be reduced. The Steering Committee discussed the potential of the measure being topped out, but noted that if CMS determines a measure is topped out they do not include it in the Value Based Purchasing Program.

1c. Evidence (*based on decision logic*): **Y-18; N-1; I-0**
<u>Rationale:</u>

- The joint guidelines by the Infectious Disease Society of America (IDSA) and American Thoracic Society (ATS) state "Pretreatment blood samples for culture and an expectorated sputum sample for stain and culture should be obtained from hospitalized patients with clinical indications listed on Table 5 [ICU is listed] but are optimal for patients without these conditions." Additionally, the quantity and quality of evidence is recent and reported in large datasets, consistent across reported outcomes. Taken together, the metric reflects scientific evidence and the opinion within the field.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Passed both subcriteria**
2a. Reliability: H-15; M-4; L-0; I-0; 2b. Validity: H-17; M-1; L-0; I-1
<u>Rationale:</u>

- The measure is precisely specified and targeted to a high risk population of patients transfered into the ICU for pneumonia.
- Challenges will always exist with administrative data but routine use for many years has likely decreased the variation in collection of the data.

0356 PN3a--Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival

3. Usability: H-16; M-3; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:

- The measure has been nationally reported as part of the CMS performance measure set for the Hospital Inpatient Quality Reporting Program since 2002; however, it is not publicly reported.
- The national rate of this measure has been reported on a quarterly basis.
- It is also used by The Joint Commission for acceditation.

4. Feasibility: H-16; M-3; L-0; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:

- The specificatins are modified every 6 months according to feedback from hosptial staff and clinicians.

Steering Committee Recommendation for Endorsement: Y-19; N-0
Rationale:

- This measure has been widely reported and is in use by several programs.
- It has been proven to have a direct impact on patient care and is consistent with IDSA/ATS guidelines

Additional Comments/Questions:

- The Steering Committee requested that the title be further specified to state that it focuses on "pneumonia patients".

Public & Member Comment
Comments included:

- Lack of support for this measure from ACIP, SCCM and ACEP. Comments included the lack of high level evidence that this process measure is directly linked to improved patient outcomes for pneumonia patients; concerns the measure does not state that blood cultures should be obtained before the initiation of treatment; and the measure may create an unnecessary distraction from the delivery of more important care that needs to be delivered in the ED or ICU settings for not supporting this measure.
  Developer response: Patients who are admitted to the ICU because of pneumonia are more likely to have positive blood cultures that reflect true pathogens. The performance measure does not require that all emergency department patients with pneumonia have a blood culture performed. But, if the patient is sick enough to require admission to the ICU and the reason for transfer to the ICU is pneumonia (both requirements for the denominator of this measure), a blood culture is more likely to provide information that will support pathogen-directed therapy. The IDSA/ATS guidelines for community-acquired pneumonia do recommend the performance of blood cultures for all patients who require admission to the ICU. Many of these patients are initially treated in the emergency department and subsequently require transfer to the ICU for their pneumonia because of clinical deterioration and these patients are included in the denominator of the performance measure to do blood cultures on ICU-admitted pneumonia patients.

Steering Commitee response:
After reviewing the comments received on this measure, particularly the lack of support from APIC, SCCM and ACEP, the Committee changed their recommendation of this measure to "do not recommend" (Yes-5; No-10) for not meeting the evidence criterion. In response to the second vote, the developer offered additional justification for this measure that was not previously presented to the Committee pertaining to antibiotic stewardship and that the measure focuses on a small group of critically ill patients admitted to the ICU. Additionally, staff has requested input from the guideline developer, IDSA, as well as offered the three organizations that commented against the measure to expand on their rationale for not supporting the measure.

Additional Steering Committee Review – October 16, 2012:

- The Committee reviewed the additional information submitted by the developer addressing issues of antibiotic stewardship and the focus of this measure on the highest risk patients.
- The Committee reviewed the comments submitted by the three organizations that did not support the measure and

0356 PN3a--Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival
again considered the evidence for blood cultures in patients with pneumonia. Committee members concluded that the arguments from the three organization on lack of evidence have merit and agreed that the evidence is not sufficient to meet the importance criterion. The Committee also agreed not to make an exception to the evidence criteria.
Steering Committee Reassessment of Recommendation for Endorsement: Y-4; N-10
Steering Committee Recommendation for Endorsement: No The measure did not pass the criterion of Importance to Measure and Report.
Additional Public and Member Comment: • A question about how the retirement of this measure will be harmonized with the Surviving Sepsis Guidelines for blood cultures among patients with sepsis due to pneumonia. • **NQF response:** Elements of a bundled measure may not meet the crtieria for endorsement as a stand alone measure. However, they may be part of a bundle that is demonstrated to have a relationship to improved outcomes.

1895: Assessment of mental status for community-acquired bacterial pneumonia

Status: New Submission
Description: Percentage of patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia with mental status assessed
Numerator Statement: Patients for whom mental status was assessed
Denominator Statement: All patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia
Exclusions: None
Adjustment/Stratification: No risk adjustment or risk stratification None We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected
Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Measure Steward: American Medical Association - Physician Consortium for Performance Improvement **Other organizations:** This measure is jointly copyrighted by the AMA-PCPI and the National Committee for Quality Assurance. The measure set was also developed in collaboration with the American College of Emergency Medicine.

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): **PASSED all three subcriteria**
1a. Impact: H-8; M-8; L-1; I-1; **1b. Performance Gap: H-6; M-13; L-0; I-0**
Rationale:

- Similar to vital signs it is a key prognostic tool.
- 1b. Developer submitted PQRS 2008 data; 19.42% of patients reported on did not meet the measure.
  10th percentile: 50.00 %
  25th percentile: 75.00 %
  50th percentile: 95.00 %
  75th percentile: 100.00%
  90th percentile: 100.00%

1c. Evidence (*based on decision logic*): **Y-14; N-5**
Rationale:

- Confusion is the single biggest factor in any severity assessment score.
- Variation in measuring mental status exist.
- Developer clarified that it is really the presence of "confusion" or "disorientation" rather than a formal assessment of mental status.
- Evidence for the ambulatory setting is extrapolated from the ED/inpatient arena.
- Documentation only – no assessment of how the information is used.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **PASSED both reliability and validity**
2a. Reliability: H-5; M-11; L-2; I-1; 2b. Validity: H-6; M-12; L-0; I-0
Rationale:

- Tested in EHRs and paper records at the data element level only
  - Variation in exact tool used to assess – documentation of confusion is sufficient
  - Timing and tools used for the assessment may vary, which could potentially lead to some variability.
  - No specification as to timing of assessment
- Face validity assessment by the measure developer work group
  - What about patients with dementia?
    - The developer notes that the measure looks at change in mental status.
  - It is implied that if the clinician evaluated the patient for altered mental status, that in fact that would be part of his decision-making process. However, the measure does not assess the decision-making.

1895: Assessment of mental status for community-acquired bacterial pneumonia

3. Usability: H-7; M-12; L-0; I-0
(*Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting and 3b. Quality Improvement*)
Rationale:
- Basic measure of patient care.

4. Feasibility: H-6; M-12; L-1; I-0
(*4a. Clinical data generated during care process; 4b. Electronic data; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented*)
Rationale:
- eSpecifications available.

Steering Committee Recommendation for Endorsement: Y-19; N-0
Rationale:

- Important for patient assessment.
- Basic assessment measure that seems to indicated underperformance in the community.
- Documentation measure.

Additional Comments/Questions:
- If it is really "disorientation" or "confusion" and not "mental status", consider changing the wording.
  Developer response: We would like to thank the Pulmonary and Critical Care Steering Committee members for their comments and recommendations on the PCPI Community-acquired Bacterial Pneumonia measures. We can readily agree to clarify the care setting (ambulatory, including the ED) in either the measure titles or descriptions. However, we cannot confirm the harmonization and language changes suggested for individual measures until we have assured approval from our measure development panel, for which additional time will be needed. We hope that the lack of a final determination on these measure-specific recommendations will not preclude the continued endorsement of the pneumonia measures.

RELATED AND COMPETING MEASURES
The Committee determined that these three outpatient measures are related and are harmonized:

- **0232 Vital signs for community-acquired bacterial pneumonia (AMA PCPI)**
- **1895 Assessment of mental status for community-acquired bacterial pneumonia (AMA PCPI)**
- **0147 Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (AMA PCPI)**

1895: Assessment of mental status for community-acquired bacterial pneumonia

Public & Member Comment
Comments included:

- Suggest the wording "worsening mental status" be changed to mental status functionally declining.
  Developer response: The measure development panel would need to determine changes in language or measure construction.

- Concern that the measure is a basic expectation of care and recommend that it become part of a composite.
  Developer response: This measure was used in the 2007-2011 CMS Physician Quality Reporting Initiative/System. The most recent PQRS data reflects a continued gap in care although an improvement in performance rates has occurred. It is important to note that PQRS is currently a voluntary reporting program, with about 24% of eligible professionals participating in 2010, and therefore performance rates may not be nationally representative.
  10th percentile: 94.44 %
  25th percentile: 100.00 %
  50th percentile: 100.00 %
  75th percentile: 100.00%
  90th percentile: 100.00%
  The measure development panel would need to determine changes in language or measure construction and the inclusion of this measure in a composite that addressess various elements related to CAP care.

- Question about why mental status was selected as a specific element of pneumonia severty assessment as a measure, thereby suggesting this individual item is more important than a more comprehensive assessment utilizing a validated score. Developer response.
  Developer response: The measure development methodology of the PCPI is based on the use of clinical practice guidelines and clinical recommendations from which performance measures are derived. The 2001 ATS guidelines recommend an assessment of severity of pneumonia, relying on radiographic and physical findings including mental status. The 2007 IDSA/ATS guidelines state that direct admission to an ICU or high-level monitoring unit is recommended for patients with 3 of the minor criteria for severe CAP that include confusion/disorientation. Based on these recommendations, the panel chose to develop this measure. In adherence to the PCPI measure maintenance process, the measure development panel would need to determine changes in language or measure construction, and the inclusion of this measure in a bundled or composite measure that addressess more than one element or variable related to CAP care.

Steering Commitee response:
After reviewing the comments, the Committee agreed that a composite measure would be preferable to individual measures. In the absence of a composite measure to recommend at this time, the Committee agreed to maintain their current recommendations, but indicated that at the next maintenance review individual measures should not be endorsed. The Committee also noted that the data on the opportunity for improvement for these measures was very limited and data on a larger sample of health professionals over time are needed to understand the gap.

Consensus Standards Approval Committee (CSAC) Review (July 2012): Y-5; N-10

- Decision: Not Recommended for Endorsement
- During the CSAC discussion, several members stated that assessing a patient's mental status was part of the standard of care and signaled that the measure would not improve quality.

Critical Care Measures Not Recommended

0336: Review of Unplanned PICU Readmissions

Status: Maintenance, Original Endorsement: May 15, 2008
Description: Periodic clinical review of unplanned readmissions to the PICU that occurred within 24 hours of discharge or transfer from the PICU.
Numerator Statement: Number of unplanned readmissions that occurred within 24 hours after discharge or transfer from the PICU for which a clinical review is documented within the specified time period (time period to be determined through pilot testing)
Denominator Statement: Total number of unplanned readmissions occurring within 24 hours of discharge/transfer from PICU for which clinical review is documented within specified time period, patients <18 yrs of age
Exclusions:
Adjustment/Stratification: No risk adjustment or risk stratification NA
Level of Analysis: Facility
Type of Measure: Process
Data Source: Electronic Clinical Data : Electronic Health Record, Paper Records
Measure Steward: Virtual PICU Systems, LLC **Other organizations:** National Association of Children´s Hospitals and Related Institutions, Child Health Corporation of America, Medical Management Planning, VPS

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*): Did not pass all three subcriteria
1a. Impact: H-15; M-4; L-1; I-0; **1b. Performance Gap: H-13; M-4; L-0; I-3**
<u>Rationale:</u>
- This measure addresses a high impact area. Unplanned readmission to ICUs are associated with both increased mortality and resource utilization.
- The Committee agreed there wasn't strong data showing optimal performance or disparities.

1c. Evidence (*based on decision logic*): Y-5; N-2; I-12
<u>Rationale:</u>
- The Committee had difficulty determining use of this measure in addition to 0335 and questioned benefits of use for comparative purposes, accountability and public reporting. The functionality and score as a performance measure is unclear.
- The developer confirmed that there wasn't any objective evidence submitted with this measure. There was consensus among the Committee that there was insufficient evidence to meet the criterion.

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Importance to Measure and Report.

Public & Member comment:
- No comments received

0342: PICU periodic pain assessment

Status: Maintenance, Original Endorsement: May 15, 2008
Description: Percentage of PICU patients receiving: a periodic pain assessment
Numerator Statement: Number of PICU patients who are assessed for pain at a minimum of every six hours during the PICU stay.
Denominator Statement: Total number of patients in the PICU
PICU patients <18 yrs of age
Exclusions: Exclude patients >= 18 years old.
Adjustment/Stratification: No risk adjustment or risk stratification n/a Stratification is not part of the measure specifications.
Level of Analysis: Facility
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data : Pharmacy, Electronic Clinical Data : Registry, Paper Records
Measure Steward: Virtual PICU Systems, LLC **Other organizations:** National Association of Children´s Hospitals and Related Institutions, Child Health Corporation of America, Medical Management Planning, VPS

Steering Committee Evaluations

1. Importance to Measure and Report (*based on decision logic*)**: Passed all three subcriteria**
1a. Impact: H-12; M-6; L-1; I-0; **1b. Performance Gap: H-5; M-14; L-0; I-0**
Rationale:
- A high impact area, as pain assessment and management are critical to the well-being and care experience of children.
- The data provided results from 14 PICUs in VPS database and ranged from 77-100 percent.

1c. Evidence (*based on decision logic*)**: Y-14; N-3; I-3**
Rationale:
- The Committee agreed that although existing evidence is limited, there is some evidence suggesting that implementation of an ongoing assessment will improve compliance. One center demonstrated a 12% improvement in pain and sedation management through implementation of ongoing assessments.

2. Scientific Acceptability of Measure Properties (*based on decision logic*)**: Did not pass both subcriteria**
2a. Reliability: H-0; M-6; L-4; I-9; 2b. Validity: H-; M-; L-; I-
Rationale:
- Previously in use by Joint Commission as a standard.
- The Committee felt that greater specification was needed to standardize and validate the measure.
- Testing results were not provided for the evaluation of reliability and validity for this measure. The measure did not pass this criterion.

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Importance to Measure and Report.

Public & Member Comment
Comments included:
- Request for reconsideration because there are very few endorsed measures available for pediatric inpatient care and these measures were included in the proposed rule for Stage 2 of Meaningful Use**.**
Steering Commitee response: The Committee first recommended that measure 0342 PICU periodic pain assessment and 0341: PICU pain assessment on admission be combined as periodic assessment can easily include the first assessment on admission. On further evaluation of the measures the Committee found there was no testing data or information for the measure and therefore does not meet NQF's criteria for Scientific Acceptability.

1861: National healthcare safety network (NHSN) ventilator-associated event (VAE) outcome measure

Status: New Submission

Description: The measures are two Standardized Incidence Ratios (SIR) for healthcare-associated, ventilator-associated events (VAEs) among adult patients, >=18 years old, in acute and long-term acute care hospitals and inpatient rehabilitation facilities, receiving conventional mechanical ventilator support for >=3 calendar days. Persons receiving rescue mechanical ventilation therapies are excluded. The two SIRS are for:

1.   Ventilator-Associated Conditions (VAC)
2.   Infection-related Ventilator-Associated Complications (IVAC)

These "Standardized Incidence Ratios" are analogous to the "Standardized Infection Ratios" for selected healthcare-associated infections that have previously been submitted to NQF by the Centers for Disease Control and Prevention (CDC). Because the VAE algorithm will capture events that are not infection-related, as well as some that are infection-related, "SIR" in the context of this submission refers to "Standardized Incidence Ratio."

The SIRs for VAC and IVAC are proposed to replace the previously-endorsed NQF measure for Ventilator-Associated Pneumonia (VAP) that had been maintained by CDC: Ventilator-associated pneumonia for ICU and high-risk nursery [HRN] patients (NQF measure #0140). CDC no longer supports that measure and plans to discontinue its use in the National Healthcare Safety Network (NHSN).

The transition from reporting infection or event rates to reporting SIRs is consistent with CDC's decision to use the Standardized Infection Ratio (SIR) as the summary measure for healthcare-associated infections (HAIs), including catheter-associated urinary tract infections (CAUTIs), central line-associated bloodstream infections (CLABSIs), and surgical site infections (SSIs). CDC previously submitted SIR-based measure proposals to NQF for CAUTIs, CLABSIs, and SSIs. The SIR enables summarization of healthcare-associated event data across multiple strata, e.g., different ICU types, into a single statistic, adjusting for differences in event incidence among those strata and obviating the need to report separate event rates for each stratum. The SIR compares the observed to expected infection experience (or event experience, in the case of VAEs) for each stratum. The number of expected infections or other healthcare-associated events is derived from the infection or event experience for a specific stratum in a standard population during a baseline time period. For example, the expected value for a HAI among medical intensive care unit (MICU) patients may be derived from the infection experience among all MICU patients reported to NHSN for the years 2006-2008.

The VAE algorithm included in this measure proposal was developed in collaboration with the CDC Prevention Epicenters and with the Ventilator-Associated Pneumonia Surveillance Definition Working Group. The Working Group is composed of representatives of several key societies and organizations. Member organizations and individual representatives are listed in Co.6. And Ad.1. of this submission.

Numerator Statement: VAC: Total number of observed healthcare-associated VACs among adult patients in acute and long-term acute care hospitals and inpatient rehabilitation facilities

IVAC: Total number of observed healthcare-associated IVACs among adult patients in acute and long-term acute care hospitals and inpatient rehabilitation facilities

Denominator Statement: VAC: Total number of expected VACs, calculated by multiplying the number of ventilator days for each location under surveillance for VAEs during the period by the VAC rate for the same types of locations obtained from the standard population.

IVAC: Total number of expected IVACs, calculated by multiplying the number of ventilator days for each location under surveillance for VAEs during the period by the IVAC rate for the same types of locations obtained from the standard population.

Exclusions: Patients receiving non-conventional (rescue) mechanical ventilation therapies are excluded. Rescue mechanical ventilation therapies that are excluded from VAC and IVAC surveillance include (but are not limited to) the following: high-frequency mechanical ventilation, mechanical ventilation in the prone position, and extracorporeal membrane oxygenation.

Adjustment/Stratification: Stratification by risk category/subgroup SIR is an indirect standardization method for summarizing healthcare-associated event experience across any number of stratified groups of data. VAC and IVAC incidence rates will be stratified by patient care location and in some instances, location bed s 1. CDC location: A CDC-defined designation given to a patient care area housing patients who have similar disease conditions or who are receiving care for similar medical or surgical specialties. Each facility location that is monitored is "mapped" to a CDC location. The specific CDC location code is determined by the type of patients cared for in that area according to the 80% Rule. That is, if 80% of patients are of a certain type (e.g., adult patients with orthopedic problems) then that area is designated as that type of location (in this case, an Inpatient Adult Orthopedic Ward).

1861: National healthcare safety network (NHSN) ventilator-associated event (VAE) outcome measure

2. Facility-specific data for individual patient locations (i.e., bed size of location, affiliation and level of affiliation with a medical school based on teaching status: major, graduate, limited, not affiliated) -
- Major: A hospital that is an important part of the teaching program of a medical school and the majority of medical students rotate through multiple clinical services.
- Graduate: Hospital is used by the medical school for graduate trainings only (residency and/or fellowships).
- Limited: Hospital is used in the medical school's teaching program to only a limited extent.

Level of Analysis: Facility, Population : National, Population : State
Type of Measure: Outcome
Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Laboratory, Electronic Clinical Data : Pharmacy, Paper Records
Measure Steward: Centers for Disease Control and Prevention Other organizations: Critical Care Societies Collaborative—Society of Critical Care Medicine, American Association of Critical Care Nurses, American Thoracic Society, American College of Chest Physicians
Society for Healthcare Epidemiology of America
Infectious Diseases Society of America

Steering Committee Evaluation

Importance to Measure and Report (*based on decision logic*): **Did not pass all three subcriteria**
1a. Impact: H-14; M-3; L-; I-1; **1b. Performance Gap: H-5; M-6; L-; I-7**
Rationale:
- Intended to replace the current ventilator-associated pneumonia measure *0140 Ventilator-associated pneumonia for ICU and high-risk nursery (HRN) patients (CDC)* which is being retired.
- Important area to measure with 50,000 cases a year and a, mortality rate between 50-60 percent.
- New metric with new definitions. Evidence citations of a performance gap with ventilator-associated events support that there is a performance issue in this area.

1c. Evidence (*based on decision logic*): **Y-13; N-1: I-4**
Rationale:
- The Committee found the rationale provided for this outcome measure to be acceptable evidence. The ventilator-associated events are reducible through process change.
- The developer revealed that a recent small pilot study showed that patients with events detected by a similar definition algorithm to VAE do tend to have longer length of stay, even higher mortality than patients who do not meet the definition.

2. Scientific Acceptability of Measure Properties (*based on decision logic*): **Did not pass – measure has not been tested**
2a. Reliability: H-; M-; L-2; I-16; 2b. Validity: H-; M-; L-; I-
Rationale:
- There are published data on variations of the definition algorothim, however prior analyses do not utilize the new definition algorithm.
- Data demonstrating that the measure is reliable and valid was not available at the time of review. The measure developer reiterated that they are currently working on these analyses and that additional information would be available in the next one totwo years .
- The Committee agreed that the measure has not yet been adequated tested for reliabilty and validity at this time.

Additional Comments/Questions:
- The Committee appreciated the importance of this measure and is looking forward to the opportunity to evaluate the measure after testing is completed.

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Scientific Acceptability of Measure Properties.

Public & Member Comment
Comments included:
- Support of the importance of the measure concept; encourage CDC to continue testing the reliability and validity.

Dyspnea Measure Not Recommended

0179: Improvement in dyspnea

Status: Maintenance, Original Endorsement: Mar 31, 2009
Description: Percentage of home health episodes of care during which the patient became less short of breath or dyspneic.
Numerator Statement: Number of home health episodes of care where the patient has less dyspnea at discharge than at start (or resumption) of care.
Denominator Statement: Number of home health episodes of care ending with a discharge during the reporting period, other than those covered by generic or measure-specific exclusions.
Exclusions: All home health episodes where at the start (or resumption) of care assessment the patient had no impairment, or the episode of care ended in transfer to inpatient facility or death at home, or was covered by the generic exclusions.
Adjustment/Stratification: Statistical risk model Logistic regression models for risk adjustment were developed using three million episodes of care based on OASIS national repository data from assessments submitted between January 1, 2010 and September 30, 2010. Details of the model are available at: http://collegebasketballtalk.nbcsports.com/2012/03/13/syracuse-wont-have-fab-melo-for-ncaa-tournament/related/: Not stratified
Level of Analysis: Facility
Type of Measure: Outcome
Data Source: Electronic Clinical Data
Measure Steward: Centers for Medicare & Medicaid Services **Other organizations:** Abt Associates, Inc.
Case Western Reserve University
University of Colorado at Denver, Division of Health Care Policy and Research

IMPLEMENTATION COMMENTS

- None of the ACCP QIC members use this measure at their institution and have never seen any data related to this measure. The QIC questions whether or not this measure sees widespread use.

Steering Committee Evaluation

1. Importance to Measure and Report (*based on decision logic*)**: Did not pass all three sub-criteria**
1a. Impact: H-0; M-7; L-7; I-6; **1b. Performance Gap: H-; M-; L-; I-**
Rationale:

- 1a: Evidence of measures impact, such as number of home care patients impacted and cost are not provided
- Only one published study was cited regarding: impact. The source of the measure developer reference to "70% have some dyspnea"" is not clear.
- Measure applies to all home health patients and seems overly broad. The Committee suggested that it might be more meaningful if restricted to patients with cardiopulmonary conditions.
- How does individual patient improvement due to natural resolution of their original problem (i.e., recovering from surgery, regaining activity level) impact the improvement that is attributable to the home health agency?
- The Committee had questions regarding the interpretability of the impact: Does the 58% improved outcome mean that the 42% not improved should have improved due to action on the part of the home health agency?
- Trend data over time would help understand the impact of this measure.

1c. Evidence (*based on decision logic*)**: Y-; N-; I-**
Rationale:

- Developer's assessment of the evidence in the areas of quality and consistency seem strong.
- Limited quantity of evidence that only addresses COPD population - not general home health population for which this measure is intended.

Steering Committee Recommendation for Endorsement: No
The measure did not pass the criterion of Importance to Measure and Report.

0179: Improvement in dyspnea

Public & Member Comment

Comments included:

- CMS noted Committee members discussed lack of data supporting widespread use of this measure.
  Developer response: It's possible that a lack of experience with the home health setting is responsible for this misperception. The data for this measure was collected and reported during the 7/1/2010 -6/30/11 reporting period by 8,794 Medicare certified HHAs (see 1b.3-submission form) that met the reporting criteria for public reporting on the Medicare Home Health Compare website. 2.67 million quality episodes met the measure denominator criteria during this period of time (see 1b.5 –submission form). Of the nine publicly-reported home health measures, the "Improvement in Dyspnea" measure was one of the top three measures selected as a target for improvement by state QIOs, in the 8th Scope of Work.

- CMS noted Committee members noted a lack of evidence was provided, and sources were unclear**.**
  Developer response: The source of the "70%" reference is in the data provided with the submission form but we agree this could have been stated more clearly (see sections 1b2, 1b3, 2b3.3-submission form). Episodes in which the patient, at start/resumption of care, was not short of breath at any time: % of total quality episodes: 30.2%.

- CMS noted Committee members questioned how individual patient improvement due to natural resolution of their original problem impacts the improvement that is attributable to the home health agency?
  Developer response: Many NQF endorsed home health outcome measures (e.g., improvement in ambulation, bathing, and transferring),as well as outcome measures reported in other settings, can reflect improvement attributable both due to intervention by the provider and "natural resolution" of the problem that initiated the need for care. The point of these risk-adjusted measures is not to provide a comparison of agency performance to a prescribed benchmark, but to allow consumers to compare rates between agencies and for agencies to assess internal quality improvement by comparing their own agency performance over different time periods and against their competitors. There is no reason to believe that the rate of "natural resolution" would differ between agencies on this risk-adjusted measure.

Steering Commitee response: The Committee reviewed the responses to their comments or questions. The Committee did not change their recommendation of the measure.

Measures Withdrawn From Consideration

Measure	Steward	Description	Reason Withdrawn
0001: Asthma assessment	AMA-PCPI	Percentage of patients who were evaluated during at least one office visit for the frequency (numeric) of daytime and nocturnal asthma symptoms.	Withdrawn and no longer supported by evidence.
0025: Management plan for people with asthma	IPRO	Percentage of patients for whom there is documentation that a written asthma management plan was provided either to the patient or the patient's caregiver or, at minimum, specific written instructions on under what conditions the patient's doctor should be contacted or the patient should go to the emergency room.	IPRO is no longer using and will not be maintaining the measure.
0080: Chronic Obstructive Pulmonary Disease (COPD): assessment of oxygen saturation	AMA-PCPI	Percentage of patients with COPD with oxygen saturation assessed at least annually.	Withdrawn and superseded by new measure.
0140: Ventilator-associated pneumonia for ICU and high-risk nursery (HRN) patients	CDC	Percentage of ICU and HRN patients who over a certain amount of days have ventilator-associated pneumonia.	CDC is currently working on developing a new measure for VAE outcomes.
0151: Initial antibiotic received within 6 hours of hospital arrival	CMS	Percentage of pneumonia patients 18 years of age and older who receive their first dose of antibiotics within 6 hours after arrival at the hospital.	CMS will no longer be maintaining the measure.
0332: Severity-Standardized ALOS - Special Care	The Leapfrog Group	Standardized ALOS for special inpatient care (i.e., care provided in intensive care units).	Leapfrog does not have the resources to take the measure through maintenance.
0341: PICU pain assessment on admission	VPS	Percentage of PICU patients receiving: a. Pain assessment on admission, b. Periodic pain assessment.	Withdrawn from consideration and combined with 0342.
0628: COPD with exacerbations – use of long-acting bronchodilator therapy	ActiveHealth Management	Percentage of patients 40 years and older with COPD exacerbations that are receiving a long acting bronchodilator	ActiveHealth indicated that this measure is no longer in line with evidence-based medical literature and has developed a new measure that they feel is better supported.

Notes

1 American Lung Association. Available at www.lungusa.org/assets/documents/publications/lung-disease-data/solddc_2010.pdf. Last accessed October 2011.

2. Ibid.

3. National Heart, Lung and Blood Institute. Available at www.nhlbi.nih.gov/resources/docs/2009_ChartBook.pdf . Last accessed October 2011.

4. American Lung Association.

5. Ibid.

6. Society of Critical Care Medicine. Available at http://sccmwww.sccm.org/Documents/WebStatisticsPamphletFinalJune06.pdf. Last accessed October 2011.

Appendix A – Measure Specifications

	0036: Use of appropriate medications for people with asthma (National Committee for Quality Assurance)
Description	The measure assesses the percentage of members 5-64 years of age during the measurement year who were identified as having moderate to severe persistent asthma and who were appropriately prescribed medication during the measurement year. The percentage of members 5-64 years of age during the measurement who were identified as having persistent asthma and who were appropriately prescribed medication during the measurement year.
Numerator	The number of members who were dispensed at least one prescription for a preferred therapy during the measurement year
Numerator Details	The number of members who were dispensed at least one prescription for a preferred therapy (Table ASM-D) during the measurement year
	Table ASM-D: Preferred Asthma Therapy Medications
	Antiasthmatic combinations: dyphylline-guaifenesin, guaifenesin-theophylline, potassium iodide-theophylline
	Antibody inhibitor: omalizumab
	Inhaled steroid combinations: budesonide-formoterol, fluticasone-salmeterol, mometasone-formoterol
	Inhaled corticosteroids: beclomethasone, budesonide, ciclesonide, flunisolide, fluticasone CFC free, mometasone, triamcinolone
	Leukotriene modifiers: montelukast, zafirlukast, zileuton
	Mast cell stabilizers: cromolyn, nedocromil
	Methylxanthines: aminophylline, dyphylline, oxtriphylline, theophylline
Denominator	All health plan members 5–64 years of age during the measurement year who were identified as having moderate to severe persistent asthma

	0036: Use of appropriate medications for people with asthma (National Committee for Quality Assurance)
Denominator Details	The steps below are used to identify eligible members with persistent asthma for inclusion in the denominator: Step 1. Identify members as having persistent asthma who met at least one of the following criteria during both the measurement year and the year prior to the measurement year. Criteria need not be the same across both years. • At least one ED visit (Table ASM-B) with asthma as the principal diagnosis (Table ASM-A) • At least one acute inpatient discharge (Table ASM-B) with asthma as the principal diagnosis (Table ASM-A) • At least four outpatient asthma visits (Table ASM-B) with asthma as one of the listed diagnoses (Table ASM-A) and at least two asthma medication dispensing events (Table ASM-C) • At least four asthma medication dispensing events (Table ASM-C) Step 2. A member identified as having persistent asthma because of at least four asthma medication dispensing events, where leukotriene modifiers were the sole asthma medication dispensed in that year, must also meet the following criterion. • Have at least one diagnosis of asthma, in any setting, in the same year as the leukotriene modifier (i.e., measurement year or year prior to the measurement year). Table ASM-A: Codes to Identify Asthma Description: ICD-9-CM Diagnosis Asthma: 493.0, 493.1, 493.8, 493.9 Table ASM-B: Codes to Identify Visit Type Outpatient: CPT 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99382-99386, 99392-99396, 99401-99404, 99411, 99412, 99420, 99429; UB Revenue 051x, 0520-0523, 0526-0529, 057x- 059x, 0982, 0983 Acute inpatient: CPT 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291; UB Revenue 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x, 021x, 072x, 0987 ED: CPT 99281-99285; UB Revenue 045x, 0981 Table ASM-C: Asthma Medications Antiasthmatic combinations: dyphylline-guaifenesin, guaifenesin-theophylline, potassium iodide-theophylline Antibody inhibitor: omalizumab Inhaled steroid combinations: budesonide-formoterol, fluticasone-salmeterol, mometasone-formoterol Inhaled corticosteroids: beclomethasone, budesonide, ciclesonide, flunisolide, fluticasone CFC free, mometasone, triamcinolone Leukotriene modifiers: montelukast, zafirlukast, zileuton Long-acting, inhaled beta-2 agonists: aformoterol, formoterol, salmeterol Mast cell stabilizers: cromolyn, nedocromil Methylxanthines: aminophylline, dyphylline, oxtriphylline, theophylline Short-acting, inhaled beta-2 agonists: albuterol, levalbuterol, metaproterenol, pirbuterol
Exclusions	Exclude any members who had at least one encounter, in any setting, with any code to identify a diagnosis of emphysema, COPD, cystic fibrosis, or acute respiratory failure (Table ASM-E) any time on or prior to December 31 of the measurement year.

	0036: Use of appropriate medications for people with asthma (National Committee for Quality Assurance)
Exclusion details	Table ASM-E: Codes to Identify Exclusions Emphysema: 492, 506.4, 518.1, 518.2 COPD: 491.2, 493.2, 496 Cystic fibrosis: 277.0 Acute respiratory failure: 518.81
Risk Adjustment	No risk adjustment or risk stratification
Stratification	The NCQA age strata for asthma measures are designed to align with both clinical practice guidelines and reporting requirements for child health quality improvement programs. Clinical guidelines specify appropriate age cohorts for measuring use of asthma medications as 5–11 years of age and 12–50 years of age, to account for the differences in medication regimens for children vs. for adolescents and adults. Implementation requires further stratification of the age ranges, to enable creation of comparable cohorts that align with child health populations. Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the member's age as of December 31st of the Measurement Year. 1) 5–11 years 2) 12–18 years 3) 19-50 years 4) 51-64 years 5) Total
Numerator Time window	The measurement year (one calendar year)
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Laboratory, Electronic Clinical Data : Pharmacy, Paper Records
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Health Plan, Integrated Delivery System, Population : National, Population : Regional, Population : State
Setting	Ambulatory Care : Clinician Office

	0047: Asthma: Pharmacologic Therapy for Persistent Asthma (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Description	Percentage of patients aged 5 through 50 years with a diagnosis of persistent asthma who were prescribed long-term control medication. Three rates are reported for this measure: 1. Patients prescribed inhaled corticosteroids (ICS) as their long term control medication 2. Patients prescribed other alternative long term control medications (non-ICS) 3. Total patients prescribed long-term control medication

	0047: Asthma: Pharmacologic Therapy for Persistent Asthma (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Numerator	Patients who were prescribed long-term control medication Numerator Definitions: Long Term Control Medication Includes: Patients prescribed inhaled corticosteroids (the preferred long-term control medication at any step of asthma pharmacological therapy) OR Patients prescribed alternative long-term control medications (inhaled steroid combinations, anti-asthmatic combinations, antibody inhibitor, leukotriene modifiers, mast cell stabilizers, methylxanthines) Prescribed – May include prescription given to the patient for inhaled corticosteroid OR an acceptable alternative long-term control medication at one or more visits in the 12-month period OR patient already taking inhaled corticosteroid OR an acceptable alternative long-term control medication as documented in current medication list.
Numerator Details	For EHR: See attached eMeasure For Claims/Administrative Data: To submit the numerator option for Long-Term Control Medication or Acceptable Alternative Treatment Prescribed, report the following: CPT II 4140F: Inhaled corticosteroids prescribed OR CPT II 4144F: Alternative long-term control medication prescribed
Denominator	All patients aged 5 through 50 years with a diagnosis of persistent asthma
Denominator Details	For EHR: See attached eMeasure For Claims/Administrative Data: Patients aged 5 through 50 years on date of encounter AND Diagnosis for asthma (ICD-9-CM): 493.00, 493.02, 493.10, 493.12, 493.20, 493.22, 493.81, 493.82, 493.90, 493.92 AND Diagnosis for asthma (ICD-10-CM): J45.20, J45.30, J45.31, J45.40, J45.41, J45.50, J45.21, J44.9, J44.1, J45.901, J45.909, J45.990, J45.991, J45.998, J45.51 AND Patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99341, 99241, 99242, 99243, 99244, 99245, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350 AND CPT II 1038F: Persistent asthma (mild, moderate or severe) Note: If ICD-10 CM is used to identify the denominator, CPT II code for 1038F is not required; ICD-10 CM codes capture "persistent asthma".
Exclusions	Documentation of patient reason(s) for not prescribing either an inhaled corticosteroid (ICS) or an alternative long-term control medication

	0047: Asthma: Pharmacologic Therapy for Persistent Asthma (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Exclusion details	The PCPI methodology uses three categories of reasons for which a patient may be excluded from the denominator of an individual measure. These measure exception categories are not uniformly relevant across all measures; for each measure, there must be a clear rationale to permit an exception for a medical, patient, or system reason. Examples are provided in the measure exception language of instances that may constitute an exception and are intended to serve as a guide to clinicians. For measure 0047, exceptions may include patient reason(s) for not prescribing either an inhaled corticosteroid (ICS) or an alternative long-term control medication. Where examples of exceptions are included in the measure language, these examples are coded and included in the eSpecifications. Although this methodology does not require the external reporting of more detailed exception data, the PCPI recommends that physicians document the specific reasons for exception in patients' medical records for purposes of optimal patient management and audit-readiness. The PCPI also advocates the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exception. Additional details by data source are as follows: For EHR: See attached eMeasure For Claims/Administrative Data: Documentation of patient reason(s) for not prescribing either the preferred long-term control medication (inhaled corticosteriod) or an acceptable alternative treatment. Append modifier 2P to CPT Category II code 4140F to report documented circumstances that appropriately exclude patients from the denominator: 4140F-2P
Risk Adjustment	No risk adjustment or risk stratification
Stratification	
Numerator Time window	At least once during the measurement period
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Medical Records
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Setting	Ambulatory Care : Clinician Office/Clinic

	0091: COPD: spirometry evaluation (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Description	Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented
Numerator	Patients with documented spirometry results in the medical record (FEV1 and FEV1/FVC)

	0091: COPD: spirometry evaluation (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Numerator Details	Numerator Instructions: Look for most recent documentation of spirometry evaluation results in the medical record; do not limit the search to the reporting period. For EHR: eSpecification currently under development. Data elements (using the Quality Data Model) required for the measure attached. For Claims/Administrative Data: To submit the numerator option for spirometry results documented and reviewed, report the following: CPT II 3023F: Spirometry results documented and reviewed
Denominator	All patients aged 18 years and older with a diagnosis of COPD
Denominator Details	For EHR: eSpecification currently under development. Data elements (using the Quality Data Model) required for the measure attached. For Claims/Administrative Data: Patients aged >= 18 years on date of encounter AND Diagnosis for COPD (ICD-9-CM): 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 496 Diagnosis for COPD (ICD-10-CM): J41.0, J41.1, J41.8, J42, J43.0, J43.1, J43.2, J43.8, J43.9, J44.0, J44.1, J44.9 AND Patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99241, 99242, 99243, 99244, 99245
Exclusions	Documentation of medical reason(s) for not documenting spirometry results; Documentation of patient reason(s) for not documenting spirometry results; Documentation of system reason(s) for not documenting spirometry results

	0091: COPD: spirometry evaluation (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Exclusion details	The PCPI methodology uses three categories of reasons for which a patient may be excluded from the denominator of an individual measure. These measure exception categories are not uniformly relevant across all measures; for each measure, there must be a clear rationale to permit an exception for a medical, patient, or system reason. Examples may be provided in the measure exception language of instances that may constitute an exception and are intended to serve as a guide to clinicians. Where examples of exceptions are included in the measure language, these examples are coded and included in the eSpecifications. Although this methodology does not require the external reporting of more detailed exception data, the PCPI recommends that physicians document the specific reasons for exception in patients' medical records for purposes of optimal patient management and audit-readiness. The PCPI also advocates the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exception. Additional details by data source are as follows: For EHR: eSpecification currently under development. Data elements (using the Quality Data Model) required for the measure attached. For Claims/Administrative Data: Documentation of medical, patient, or system reason(s) for not documenting and reviewing spirometry results. • Append modifier 1P to CPT Category II code 3023F to report documented medical reason(s) that appropriately exclude patients from the denominator: 3023F-1P • Append modifier 2P to CPT Category II code 3023F to report documented patient reason(s) that appropriately exclude patients from the denominator: 3023F-2P • Append modifier 3P to CPT Category II code 3023F to report documented system reason(s) that appropriately exclude patients from the denominator: 3023F-3P
Risk Adjustment	No risk adjustment or risk stratification
Stratification	We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.
Numerator Time window	At least once during the measurement period
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Setting	Ambulatory Care : Clinician Office

	0096: Empiric Antibiotic for Community-Acquired Bacterial Pneumonia (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Description	Percentage of patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia with an appropriate empiric antibiotic prescribed
Numerator	Patients with appropriate empiric antibiotic prescribed

	0096: Empiric Antibiotic for Community-Acquired Bacterial Pneumonia (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Numerator Details	Numerator Instructions: This measure is to be reported once for each occurrence of community-acquired bacterial pneumonia during the reporting period. Each unique occurrence is defined as a 45-day period from onset of community-acquired bacterial pneumonia. Numerator Definitions: Appropriate Empiric Antibiotic – For treatment of community-acquired bacterial pneumonia (CAP) should include any medication from one of the following four drug classes: Fluoroquinolones, Macrolides, Doxycycline, Beta Lactam with Macrolide or Doxycycline (classes as defined by current ATS/IDSA guidelines; antibiotics within these classes and FDA-approved for outpatient CAP treatment may be considered). Prescribed – Includes patients who are currently receiving medication(s) that follow the treatment plan recommended at an encounter during the reporting period, even if the prescription for that medication was ordered prior to the encounter. For EHR: eSpecification currently under development. Data elements (using Quality Data Model) required for the measure attached. For Claims/Administrative: CPT Category II code: 4045F: Appropriate empiric antibiotic prescribed
Denominator	All patients aged 18 years and older with a diagnosis of community-acquired bacterial pneumonia
Denominator Details	For EHR: eSpecification currently under development. Data elements (using Quality Data Model) required for the measure attached. For Claims/Administrative: Patients aged >= 18 years on date of encounter AND ICD-9-CM diagnosis codes: 481, 482.0, 482.1, 482.2, 482.30, 482.31, 482.32, 482.39, 482.40, 482.41, 482.42, 482.49, 482.81, 482.82, 482.83, 482.84, 482.89, 482.9, 483.0, 483.1, 483.8, 485, 486, 487.0 ICD-10-CM diagnosis codes: A48.1, J10.00, J10.08, J11.00, J11.08, J12.9, J13, J14, J15.0, J15.1, J15.20, J15.21, J15.29, J15.3, J15.4, J15.5, J15.6, J15.7, J15.8, J15.9, J16.0, J16.8, J18.0, J18.1, J18.8, J18.9 AND CPT Codes: 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99241, 99242, 99243, 99244, 99245, 99281, 99282, 99283, 99284, 99285, 99291*, 99324, 99325, 99326, 99327, 99328, 99334, 99335, 99336, 99337, 99341, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350 *Clinicians utilizing the critical care code (99291) must indicate the emergency department place-of-service (23) on the Medicare Part B claim form.
Exclusions	Documentation of medical reason(s) for not prescribing appropriate empiric antibiotic Documentation of patient reason(s) for not prescribing appropriate empiric antibiotic Documentation of system reason(s) for not prescribing appropriate empiric antibiotic

	0096: Empiric Antibiotic for Community-Acquired Bacterial Pneumonia (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Exclusion details	The PCPI methodology uses three categories of reasons for which a patient may be excluded from the denominator of an individual measure. These measure exception categories are not uniformly relevant across all measures; for each measure, there must be a clear rationale to permit an exception for a medical, patient, or system reason. Examples are provided in the measure exception language of instances that may constitute an exception and are intended to serve as a guide to clinicians. For measure Empiric Antibiotic for Community-Acquired Bacterial Pneumonia, exceptions may include medical reasons, patient reasons or system reasons. Where examples of exceptions are included in the measure language, these examples are coded and included in the eSpecifications. Although this methodology does not require the external reporting of more detailed exception data, the PCPI recommends that physicians document the specific reasons for exception in patients' medical records for purposes of optimal patient management and audit-readiness. The PCPI also advocates the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exception. Additional details by data source are as follows: For EHR: eSpecification currently under development. Data elements (using Quality Data Model) required for the measure attached. For Claims/Administrative: Documentation of medical reason(s) for not prescribing appropriate empiric antibiotic - Append modifier to CPT Category II code: 4045F-1P Documentation of patient reason(s) for not prescribing appropriate empiric antibiotic - Append modifier to CPT Category II code: 4045F-2P Documentation of system reason(s) for not prescribing appropriate empiric antibiotic - Append modifier to CPT Category II code: 4045F-3P
Risk Adjustment	No risk adjustment or risk stratification
Stratification	We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.
Numerator Time window	Once for each episode of CAP during measurement period
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy, Electronic Clinical Data : Registry, Paper Medical Records
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Setting	Ambulatory Care : Clinician Office/Clinic, Ambulatory Care : Urgent Care, Home Health, Hospital/Acute Care Facility, Other:Emergency Department, 'Domiciliary, Rest Home or Custodial Care Services', Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

	0102: COPD: inhaled bronchodilator therapy (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Description	Percentage of patients aged 18 years and older with a diagnosis of COPD and who have an FEV1/FVC < 70% and have symptoms who were prescribed an inhaled bronchodilator
Numerator	Patients who were prescribed an inhaled bronchodilator
Numerator Details	Numerator Definitions: Prescribed – Includes patients who are currently receiving medication(s) that follow the treatment plan recommended at an encounter during the reporting period, even if the prescription for that medication was ordered prior to the encounter. For EHR: See attached eMeasure For Claims/Administrative Data: To submit the numerator option for Patient Prescribed Inhaled Bronchodilator Therapy, report the following: CPT II 4025F: Inhaled bronchodilator prescribed
Denominator	All patients aged 18 years and older with a diagnosis of COPD, who have an FEV1/FVC <70% and have symptoms (e.g., dyspnea, cough/sputum, wheezing)
Denominator Details	For EHR: See attached eMeasure For Claims/Administrative Data: Patients aged >= 18 years on date of encounter AND Diagnosis for COPD (ICD-9-CM): 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 496 Diagnosis for COPD (ICD-10-CM): J41.0, J41.1, J41.8, J42, J43.0, J43.1, J43.2, J43.8, J43.9, J44.0, J44.1, J44.9 AND Patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99241, 99242, 99243, 99244, 99245 AND CPT II 3025F: Spirometry test results demonstrate FEV1/FVC < 70% with COPD symptoms (eg, dyspnea, cough/sputum, wheezing)
Exclusions	Documentation of medical reason(s) for not prescribing an inhaled bronchodilator; documentation of patient reason(s) for not prescribing an inhaled bronchodilator; documentation of system reason(s) for not prescribing an inhaled bronchodilator

	0102: COPD: inhaled bronchodilator therapy (American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI))
Exclusion details	The PCPI methodology uses three categories of reasons for which a patient may be excluded from the denominator of an individual measure. These measure exception categories are not uniformly relevant across all measures; for each measure, there must be a clear rationale to permit an exception for a medical, patient, or system reason. Examples may be provided in the measure exception language of instances that may constitute an exception and are intended to serve as a guide to clinicians. Where examples of exceptions are included in the measure language, these examples are coded and included in the eSpecifications. Although this methodology does not require the external reporting of more detailed exception data, the PCPI recommends that physicians document the specific reasons for exception in patients' medical records for purposes of optimal patient management and audit-readiness. The PCPI also advocates the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exception. Additional details by data source are as follows: For EHR: See attached eMeasure For Claims/Administrative Data: Documentation of medical, patient, or system reason(s) for not prescribing an inhaled bronchodilator. • Append modifier 1P to CPT Category II code 4025F to report documented medical reason(s) that appropriately exclude patients from the denominator: 4025F-1P • Append modifier 2P to CPT Category II code 4025F to report documented patient reason(s) that appropriately exclude patients from the denominator: 4025F-2P • Append modifier 3P to CPT Category II code 4025F to report documented system reason(s) that appropriately exclude patients from the denominator: 4025F-3P
Risk Adjustment	No risk adjustment or risk stratification
Stratification	We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.
Numerator Time window	At least once during the measurement period
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Registry, Paper Records
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team
Setting	Ambulatory Care : Clinician Office

	0143: CAC-1: Relievers for Inpatient Asthma (The Joint Commission)
Description	Use of relievers in pediatric patients, age 2 years through 17 years, admitted for inpatient treatment of asthma. This measure is a part of a set of three nationally implemented measures that address children's asthma care (CAC-2: Systemic Corticosteroids for Inpatient Asthma, and CAC-03: Home Management Plan of Care (HMPC) Document Given to Patient/Caregiver) that are used in The Joint Commission's accreditation process.
Numerator	Pediatric asthma inpatients who received relievers during hospitalization
Numerator Details	One data element is used to calculate the numerator: Relievers Administered. This data element is defined as: Documentation that the patient received reliever medication(s) for asthma exacerbation during this hospitalization. Inpatient hospitalization includes the time from arrival to the emergency department (ED) or observation area until discharge from the inpatient setting.
Denominator	Pediatric asthma inpatients (age 2 years through 17 years) who were discharged with a principal diagnosis of asthma.
Denominator Details	Six Data Elements are used to calculate the denominator: • Admission Date The month, day, and year of admission to acute inpatient care. • Birthdate The month, day, and year the patient was born. • Clinical Trial Documentation that during this hospital stay the patient was enrolled in a clinical trial in which patients with the same condition as the measure set were being studied. • Reason for Not Administering Relievers Reasons for not administering relievers during this hospitalization: o Allergy to relievers o Other reasons documented by physician/APN/PA or pharmacist • Discharge Date The month, day, and year the patient was discharged from acute care, left against medical advice, or expired during this stay. • ICD-9-CM Principal Diagnosis Code for asthma as defined in Appendix A. Table 6.1 below Table 6.1 Asthma Code -Shortened Description 493.00 -EXTRINSIC ASTHMA NOS 493.01 -EXT ASTHMA W STATUS ASTH 493.02 -EXT ASTHMA W(ACUTE) EXAC 493.10 -INTRINSIC ASTHMA NOS 493.11 -INT ASTHMA W STATUS ASTH 493.12 -INT ASTHMA W (AC) EXAC 493.81 -EXERCSE IND BRONCHOSPASM 493.82 -COUGH VARIANT ASTHMA 493.90 -ASTHMA NOS 493.91 -ASTHMA W STATUS ASTHMAT 493.92 -ASTHMA NOS W (AC) EXAC

	0143: CAC-1: Relievers for Inpatient Asthma (The Joint Commission)
Exclusions	Excluded Populations: • Patients with age less than 2 years or 18 years or greater • Patients who have a Length of Stay greater than 120 days • Patients enrolled in clinical trials • Patients with a documented Reason for Not Administering Relievers
Exclusion details	• The patient age in years is equal to the Admission Date minus the Birthdate. The month and day portion of the admission date and birthdate are used to yield the most accurate age. • Length of stay (LOS) in days is equal to the Discharge Date minus the Admission Date. If the LOS is greater than 120 days, the patient is excluded. • Patients are excluded if "Yes" is selected for Clinical Trial. • Reasons for not administering relievers during this hospitalization: Acceptable reasons include allergy to relievers, and other reasons documented by physician/APN/PA or pharmacist
Risk Adjustment	No risk adjustment or risk stratification
Stratification	This measure is stratified by age as noted in the following table: CAC-1a Relievers for Inpatient Asthma (age 2 years through 17 years) - Overall Rate CAC-1b Relievers for Inpatient Asthma (age 2 years through 4 years) CAC-1c Relievers for Inpatient Asthma (age 5 years through 12 years) CAC-1d Relievers for Inpatient Asthma (age 13 years through 17 years)
Numerator Time window	Episode of Care
Type	Process
Type of Score	
Data Source	Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Records
Level	Facility, Population : National
Setting	Hospital/Acute Care Facility

	0144: CAC-2 Systemic corticosteroids for Inpatient Asthma (The Joint Commission)
Description	Use of systemic corticosteroids in pediatric asthma patients (age 2 through 17 years) admitted for inpatient treatment of asthma. This measure is a part of a set of three nationally implemented measures that address children's asthma care (CAC-1: Relievers for Inpatient Asthma, CAC-3: Home Management Plan of Care (HMPC) Document Given to Parent/Caregiver) that are used in The Joint Commission's accreditation process.
Numerator	Pediatric asthma inpatients who received systemic corticosteroids during hospitalization.

	0144: CAC-2 Systemic corticosteroids for Inpatient Asthma (The Joint Commission)
Numerator Details	One data element is used to calculate the numerator: Systemic Corticosteroids Administered. This data element is defined as: Documentation that the patient received oral, IM, or intravenous (systemic) corticosteroids for asthma exacerbation during this inpatient hospitalization. Inpatient hospitalization includes the time from arrival to the emergency department (ED) or observation area until discharge from the inpatient setting.
Denominator	Pediatric asthma inpatients (age 2 years through 17 years) who were discharged with a principal diagnosis of asthma.
Denominator Details	Six data elements used to calculate the denominator: • Admission Date The month, day, and year of admission to acute inpatient care. • Birthdate The month, day, and year the patient was born. • Clinical Trial Documentation that during this hospital stay the patient was enrolled in a clinical trial in which patients with the same condition as the measure set were being studied. • Reason for Not Administering Systemic Corticosteroids Reasons for not administering Systemic Corticosteriods during this hospitalization: o Allergy to Systemic Corticosteroids o Other reasons documented by physician/APN/PA or pharmacist • Discharge Date The month, day, and year the patient was discharged from acute care, left against medical advice, or expired during this stay. • ICD-9-CM Principal Diagnosis Code for asthma as defined in Appendix A. Table 6.1 below Populations: Discharges with: Table 6.1 Asthma Code Shortened Description 493.00 EXTRINSIC ASTHMA NOS 493.01 EXT ASTHMA W STATUS ASTH 493.02 EXT ASTHMA W(ACUTE) EXAC 493.10 INTRINSIC ASTHMA NOS 493.11 INT ASTHMA W STATUS ASTH 493.12 INT ASTHMA W (AC) EXAC 493.81 EXERCSE IND BRONCHOSPASM 493.82 COUGH VARIANT ASTHMA 493.90 ASTHMA NOS 493.91 ASTHMA W STATUS ASTHMAT 493.92 ASTHMA NOS W (AC) EXAC
Exclusions	Excluded Populations: • Patients with an age less than 2 years or 18 years or greater • Patients who have a Length of Stay greater than 120 days • Patients enrolled in clinical trials • Patients with a documented Reason for Not Administering Systemic Corticosteroids

	0144: CAC-2 Systemic corticosteroids for Inpatient Asthma (The Joint Commission)
Exclusion details	• The patient age in years is equal to the Admission Date minus the Birthdate. The month and day portion of the admission date and birthdate are used to yield the most accurate age. • Length of stay (LOS) in days is equal to the Discharge Date minus the Admission Date. If the LOS is greater than 120 days the patient is excluded. • Patients are excluded if "Yes" is selected for Clinical Trial. • Reason for Not Administering Systemic Corticosteroids: Acceptable reasons include allergy to systemic corticosteroids, oral, IM, or intravenous (systemic) corticosteroids were administered to the patient within 24 hours prior to arrival AND patient was not a candidate to receive an additional dose during this hospitalization, or other reasons documented by physician/APN/PA or pharmacist
Risk Adjustment	No risk adjustment or risk stratification
Stratification	This measure is stratified by age as noted in the following table: CAC-2a Systemic Corticosteroids for Inpatient Asthma (age 2 years through 17 years) - Overall Rate CAC-2b Systemic Corticosteroids for Inpatient Asthma (age 2 years through 4 years) CAC-2c Systemic Corticosteroids for Inpatient Asthma (age 5 years through 12 years) CAC-2d Systemic Corticosteroids for Inpatient Asthma (age 13 years through 17 years)
Numerator Time window	Episode of care
Type	Process
Type of Score	
Data Source	Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Records
Level	Facility, Population : National
Setting	Hospital/Acute Care Facility

	0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)
Description	Percentage of pneumonia patients 18 years of age or older selected for initial receipts of antibiotics for community-acquired pneumonia (CAP)
Numerator	Pneumonia patients who received an initial antibiotic regimen consistent with current guidelines during the first 24 hours of hospitalization
Numerator Details	Hospitalized pneumonia patients who receive antibiotic consistent with current guidelines. The following data elements are used to calculate the numerator; Antibiotic Administration Date Antibiotic Administration Time Antibiotic Administration Route Antibiotic Name Antibiotic Allergy Arrival Date Arrival Time Pseudomonas Risk

	0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)
Denominator	Pneumonia patients 18 years of age or older Table 3.1 Pneumonia (PN) ICD-9 Code Shortened Description 481 PNEUMOCOCCAL PNEUMONIA 482.0 K. PNEUMONIAE PNEUMONIA 482.1 PSEUDOMONAL PNEUMONIA 482.2 H.INFLUENZAE PNEUMONIA 482.30 STREPTOCOCCAL PNEUMN NOS 482.31 PNEUMONIA STRPTOCOCCUS A 482.32 PNEUMONIA STRPTOCOCCUS B 482.39 PNEUMONIA OTH STREP 482.40 STAPHYLOCOCCAL PNEU NOS 482.41 METH SUS PNEUM D/T STAPH 482.42 METH RES PNEU D/T STAPH 482.49 STAPH PNEUMONIA NEC 482.82 PNEUMONIA E COLI 482.83 PNEUMO OTH GRM-NEG BACT 482.84 LEGIONNAIRES´ DISEASE 482.89 PNEUMONIA OTH SPCF BACT 482.9 BACTERIAL PNEUMONIA NOS 483.0 PNEU MYCPLSM PNEUMONIAE 483.1 PNEUMONIA D/T CHLAMYDIA 483.8 PNEUMON OTH SPEC ORGNSM 485 BRONCHOPNEUMONIA ORG NOS 486 PNEUMONIA, ORGANISM NOS Table 3.2 Septicemia ICD-9 Code Shortened Description 038.0 STREPTOCOCCAL SEPTICEMIA 038.10 STAPHYLCOCC SEPTICEM NOS 038.11 METH SUSC STAPH AUR SEPT 038.12 MRSA SEPTICEMIA 038.19 STAPHYLCOCC SEPTICEM NEC 038.2 PNEUMOCOCCAL SEPTICEMIA 038.3 ANAEROBIC SEPTICEMIA 038.40 GRAM-NEG SEPTICEMIA NOS 038.41 H. INFLUENAE SEPTICEMIA 038.42 E COLI SEPTICEMIA 038.43 PSEUDOMONAS SEPTICEMIA 038.44 SERRATIA SEPTICEMIA 038.49 GRAM-NEG SEPTICEMIA NEC 038.8 SEPTICEMIA NEC 038.9 SEPTICEMIA NOS 995.91 SEPSIS

0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)

995.92 SEVERE SEPSIS

Table 3.3 Respiratory Failure

ICD-9 Code Shortened Description

518.81 ACUTE RESPIRATRY FAILURE

518.84 ACUTE & CHRONC RESP FAIL

Table 3.1 Pneumonia (PN)

ICD-10 Code   Shortened Description

J 13   Pneumonia due to Streptococcus pneumoniae

J 18.1   Lobar pneumonia, unspecified organism

J 15.0   Pneumonia due to Klebsiella pneumoniae

J 15.1   Pneumonia due to Pseudomonas

J 14   Pneumonia due to Hemophilus influenzae

J 15.4   Pneumonia due to other streptococci

J 15.3   Pneumonia due to streptococcus, group B

J 15.20   Pneumonia due to staphylococcus, unspecified

J 15.21   Pneumonia due to staphylococcus aureus

Z 16   Infection and drug resistant microorganisms

J 15.29   Pneumonia due to other staphylococcus

J 15.5   Pneumonia due to Escherichia coli

J 15.6   Pneumonia due to other aerobic Gram-negative bacteria

A 48.1   Legionnaires' disease

J 15.8   Pneumonia due to other specified bacteria

J 15.9   Unspecified bacterial pneumonia

J 15.7   Pneumonia due to Mycoplasma pneumoniae

J 16.0   Chlamydial pneumonia

J 16.8   Pneumonia due to other specified infectious organisms

J 18.0   Bronchopneumonia, unspecified organism

J 18.8   Other pneumonia, unspecified organism

J 18.9   Pneumonia, unspecified organism

J 17   Pneumonia in diseases classified elsewhere

J 18.2   Hypostatic pneumonia, unspecified organism

J 85.1   Abscess of lung with pneumonia

Table 3.2 Septicemia

ICD-10 Code   Shortened Description

A 40.0   Sepsis due to streptococcus, group A

A 40.1   Sepsis due to streptococcus, group B

A 40.3   Sepsis due to Streptococcus pneumoniae

A 40.8   Other streptococcal sepsis

A 40.9   Streptococcal sepsis, unspecified

A 41.9   Sepsis unspecified

A 41.2   Sepsis due to other unspecified specified staphylococcus

A 41.0   Sepsis due to Staphylococcus aureus

A 41.0 AND U80.1   Sepsis due to Staphylococcus aureus AND Methicillin-resistant staph

0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)
aureus infection A 41.1   Sepsis due to other specified staphylococcus A 41.89   Other specified sepsis A 41.4   Sepsis due to anaerobes A 41.50   Gram-negative sepsis, unspecified A 41.3   Sepsis due to Hemophilus influenzae A 41.51   Sepsis due to Escherichia coli (E coli) A 41.52   Sepsis due to pseudomonas A 41.53   Sepsis due to Serratia A 41.59   Other Gram-negative sepsis A 41.81   Sepsis due to Enterococcus A 42.7   Actinomycotic sepsis A 41.9   Sepsis, unspecified R65.20   Severe sepsis without septic shock R65.21   Severe sepsis with septic shock Table 3.3 Respiratory Failure ICD-10 Code   Shortened Description J 96.0   Acute respiratory failure J 96.9   Respiratory failure, unspecified J 96.2   Acute and chronic respiratory failure J 96.1   Chronic respiratory failure J 80   Acute respiratory syndrome J 22   Unspecified acute lower respiratory infection J 98.8   Other specified respiratory disorders

	0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)
Denominator Details	The following data elements are used to determine the denominator;
	Admission Time
	Another Source of Infection
	Antibiotic Administration Date
	Antibiotic Administration Time
	Antibiotic Name
	Antibiotic Received
	Birthdate
	Chest X-Ray
	Clinical Trial
	Comfort Measures Only
	Compromised
	Discharge Date
	Healthcare Associated PN
	ICD-9-CM Other Diagnosis Codes
	ICD-9-CM Principal Diagnosis Code
	ICU Admission or Transfer
	Pneumonia Diagnosis: ED/Direct Admit
	Pseudomonas Risk
	Transfer from Another Hospital or ASC
	Table 3.1 Pneumonia (PN)
	ICD-9 Code Shortened Description
	481 PNEUMOCOCCAL PNEUMONIA
	482.0 K. PNEUMONIAE PNEUMONIA
	482.1 PSEUDOMONAL PNEUMONIA
	482.2 H.INFLUENZAE PNEUMONIA
	482.30 STREPTOCOCCAL PNEUMN NOS
	482.31 PNEUMONIA STRPTOCOCCUS A
	482.32 PNEUMONIA STRPTOCOCCUS B
	482.39 PNEUMONIA OTH STREP
	482.40 STAPHYLOCOCCAL PNEU NOS
	482.41 METH SUS PNEUM D/T STAPH
	482.42 METH RES PNEU D/T STAPH
	482.49 STAPH PNEUMONIA NEC
	482.82 PNEUMONIA E COLI
	482.83 PNEUMO OTH GRM-NEG BACT
	482.84 LEGIONNAIRES´ DISEASE
	482.89 PNEUMONIA OTH SPCF BACT
	482.9 BACTERIAL PNEUMONIA NOS
	483.0 PNEU MYCPLSM PNEUMONIAE
	483.1 PNEUMONIA D/T CHLAMYDIA
	483.8 PNEUMON OTH SPEC ORGNSM
	485 BRONCHOPNEUMONIA ORG NOS
	486 PNEUMONIA, ORGANISM NOS
	Table 3.2 Septicemia
	ICD-9 Code Shortened Description
	038.0 STREPTOCOCCAL SEPTICEMIA
	038.10 STAPHYLCOCC SEPTICEM NOS
	038.11 METH SUSC STAPH AUR SEPT

	0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)
Exclusions	Patients less than 18 years of age
	Patients who hae a length of stay greater than 120 days
	Patients with Cystic Fibrosis
	Patients who had no chest x-ray or CT scan that indicated abnormal findings within 24 hours prior to hospital arrival or anytime during the hospitalization
	Receiving comfort measures only documented the day of or the day after arrival
	Patients enrolled in clinical trial
	Patients received as a transfer from the emergency/observation department of another hospital
	Patients received as a transfer from an ambulatory surgery center
	Patients received as a transfer from an inpatient or outpatient department of another hospital
	Patients who have no diagnosis of pneumonia either as the ED final diagnosis/impression or direct admission diagnosis/impression
	Patients who are Compromised as defined in data dictionary (i.e., documentation that the patient had (1) any of the following compromising conditions: HIV positive, AIDS, cystic fibrosis, systemic chemotherapy within last three months, systemic immunosuppressive therapy within the past three months, leukemia documented in the past three months, lymphoma documented in the past three months, radiation therapy in the past three months; (2) a prior hospitalization within 14 days [the patient was discharged from an acute care facility for inpatient care to a non-acute setting—home, SNF, ICF, or rehabilitation hospital—before the second admission to the same or different acute care facility]) and abstraction guidelines
	With healthcare associated pneumonia as defined in data dictionary (i.e., presence of at least one of the following: (1) hospitalization for 2 days within the last 90 calendar days; (2) residence in a nursing home or extended care facility for any amount of time within the last 90 days; (3) chronic dialysis within the last 30 days; (4) wound care provided by a health care professional within the last 30 days) and abstraction guidelines
	Patients transferred/admitted to the ICU wihtin 24 hours after arrival to this hospital with a beta-lactam allergy
	Patients who have a duration of stay less than or equal to one day
	Patients with another source of infection who did not receive an antibiotic regimen recommened for pneumonia but did receive antibiotics within the first 24 hours of hospitalization
Exclusion details	All exclusions listed above.
	Table 3.4 Cystic Fibrosis
	ICD-9 Code Shortened Description
	277.00 CYSTIC FIBROSIS W/O ILEUS
	277.01 CYSTIC FIBROSIS W ILEUS
	277.02 CYSTIC FIBROSIS W PUL MAN
	277.03 CYSTIC FIBROSIS W GI MAN
	277.09 CYSTIC FIBROSIS NEC
	Table 3.4 Cystic Fibrosis
	ICD-10 Code Shortened Description
	E 84.9 Cystic fibrosis, unspecified
	E 84.11 Meconium ileus in Cystic Fibrosis
	E 84.0 Cystic fibrosis with pulmonary manifestations
	E 84.19 Cystic fibrosis with other intestinal manifestations
	E 84.8 Cystic fibrosis with other manifestations

	0147: Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients (Centers for Medicare and Medicaid Services)
Risk Adjustment	
Stratification	Can be stratified by ICU and non-ICU patients. However, CMS does not stratify.
Numerator Time window	From arrival to the hospital through 24 hours after hospital arrival.
Type	Process
Type of Score	Rate/proportion
Data Source	Electronic Clinical Data : Electronic Health Record, Paper Records
Level	Facility
Setting	Hospital/Acute Care Facility

	0231: Pneumonia Mortality Rate (IQI #20) (Agency for Healthcare Research and Quality)
Description	Percentage of patients, age 18 years and older, with an in-hospital death among discharges with an ICD-9-CM principal diagnosis code of pneumonia
Numerator	Number of in-hospital deaths among cases meeting the inclusion and exclusion rules for the denominator.
Numerator Details	In-hospital death (DISP=20)
Denominator	Number of discharges, age 18 years and older, with an ICD-9-CM principal diagnosis code of pneumonia.
Denominator Details	ICD-9-CM Pneumonia diagnosis codes: 00322 SALMONELLA PNEUMONIA 0212 PULMONARY TULAREMIA 0391 PULMONARY ACTINOMYCOSIS 0521 VARICELLA PNEUMONITIS 0551 POSTMEASLES PNEUMONIA 0730 ORNITHOSIS PNEUMONIA 1124 CANDIDIASIS OF LUNG 1140 PRIMARY COCCIDIOIDOMYCOS 1144 CHRONIC PULMONCOCCIDIOIDOMYCOSIS 1145 UNSPEC PULMON COCCIDIOIDOMYCOSIS 11505 HISTOPLASM CAPS PNEUMON 11515 HISTOPLASM DUB PNEUMONIA 11595 HISTOPLASMOSIS PNEUMONIA 1304 TOXOPLASMA PNEUMONITIS 1363 PNEUMOCYSTOSIS 4800 ADENOVIRAL PNEUMONIA 4801 RESP SYNCYT VIRAL PNEUM 4802

0231: Pneumonia Mortality Rate (IQI #20) (Agency for Healthcare Research and Quality)
PARINFLUENZA VIRAL PNEUM
4803
PNEUMONIA DUE TO SARS (OCT03)
4808
VIRAL PNEUMONIA NEC
4809
VIRAL PNEUMONIA NOS
481
PNEUMOCOCCAL PNEUMONIA
4820
K. PNEUMONIAE PNEUMONIA
4821
PSEUDOMONAL PNEUMONIA
4822
H.INFLUENZAE PNEUMONIA
4824
STAPHYLOCOCCAL PNEUMONIA
4831
CHLAMYDIA PNEUMONIA (OCT96)
4838
OTH SPEC ORG PNEUMONIA
4841
PNEUM W CYTOMEG INCL DIS
4829
BACTERIAL PNEUMONIA NOS
4830
MYCOPLASMA PNEUMONIA
4843
PNEUMONIA IN WHOOP COUGH
4845
PNEUMONIA IN ANTHRAX
4846
PNEUM IN ASPERGILLOSIS
4847
PNEUM IN OTH SYS MYCOSES
4848
PNEUM IN INFECT DIS NEC
485
BRONCOPNEUMONIA ORG NOS
486
PNEUMONIA, ORGANISM NOS
48230
STREP PNEUMONIA UNSPEC
48231

	0231: Pneumonia Mortality Rate (IQI #20) (Agency for Healthcare Research and Quality)
	GRP A STREP PNEUMONIA
	48232
	GRP B STREP PNEUMONIA
	48239
	OTH STREP PNEUMONIA
	48240
	STAPH PNEUMONIA UNSP (OCT98)
	48241
	METHICILLIN SUSCEPTIBLE PNEUMONIA DUE TO STAPHYLOCOCCUS AUREUS (OCT08)
	48242
	METHICILLIN RESISTANT PNEUMONIA DUE TO STAPHYLOCOCCUS AUREUS (OCT08)
	48249
	STAPH PNEUMON OTH (OCT98)
	48281
	ANAEROBIC PNEUMONIA
	48282
	E COLI PNEUMONIA
	48283
	OTH GRAM NEG PNEUMONIA
	48284
	LEGIONNAIRES DX (OCT97)
	48289
	BACT PNEUMONIA NEC
	4870
	INFLUENZA WITH PNEUMONIA
Exclusions	Exclude cases:
	-Transferring to another short-term hospital
	-MDC 14 (pregnancy, childbirth, and puerperium)
	-Missing value for discharge disposition, gender, age, quarter, year or principal diagnosis
Exclusion details	Transferring to another short-term hospital (DISP=2)
	Missing value:
	Discharge disposition (DISP=missing)
	Gender (SEX=missing)
	Age (AGE=missing)
	Quarter (DQTR=missing)
	Year (YEAR=missing)
	Principal diagnosis (DX1=missing)
Risk Adjustment	Statistical risk model
Stratification	Not applicable
Numerator Time window	Users may select the time window, but generally one calendar year
Type	Outcome

0231: Pneumonia Mortality Rate (IQI #20) (Agency for Healthcare Research and Quality)	
Type of Score	Rate/proportion
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility

0334: PICU Severity-adjusted Length of Stay (Virtual PICU Systems, LLC)	
Description	The number of days between PICU admission and PICU discharge.
Numerator	Number of PICU days, PICU days = Number of days between PICU admission and PICU discharge
Numerator Details	All patients < 18 years of age
Denominator	Discharges from the PICU (including tranfers to other units) during the time period being reported
Denominator Details	Patient age, Date of discharge
Exclusions	Patients => 18 years of age
Exclusion details	Patient age
Risk Adjustment	Statistical risk model
Stratification	Risk-adjustment using approved severity of illness tool.
Numerator Time window	Submitted quarterly for all discharges during that time period
Type	Outcome
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data : Registry, Paper Records
Level	Facility
Setting	Hospital/Acute Care Facility

0335: PICU Unplanned Readmission Rate (Virtual PICU Systems, LLC)	
Description	The total number of patients requiring unscheduled readmission to the ICU within 24 hours of discharge or transfer.
Numerator	Total number of unplanned readmissions within 24 hours after discharge/transfer from the PICU
Numerator Details	Inclusion: All PICU patients < 18 years of age Exclusions: • Patients = 18 years of age • Readmissions > 24 hours following discharge/transfer from PICU • All planned readmissions
Denominator	100 PICU Discharges, <18 years of age

0335: PICU Unplanned Readmission Rate (Virtual PICU Systems, LLC)	
Denominator Details	All PICU patients <18 years of age
Exclusions	Patients =>18 years of age,
Exclusion details	Patients not yet discharged from PICU
Risk Adjustment	No risk adjustment or risk stratification
Stratification	NONE
Numerator Time window	Unplanned readmission within 24 hours of discharge/transfer. Data submission quarterly with reporting on annual basis.
Type	Outcome
Type of Score	Rate/proportion
Data Source	Electronic Clinical Data : Electronic Health Record, Paper Records
Level	Facility
Setting	Hospital/Acute Care Facility

0343: PICU Standardized Mortality Ratio (Virtual PICU Systems, LLC)	
Description	The ratio of actual deaths over predicted deaths for PICU patients.
Numerator	Actual number of deaths occurring in PICU.
Numerator Details	Exclusions: • PICU patients >=18 years of age • PICU patients under the age of 18 years with a stay < 2 hours in the PICU or < 2 consecutive sets of vital signs consistent with life • Patients admitted to PICU for palliative care • Preterm infants post-gestational age 36 weeks
Denominator	Predicted mortality, "Predicted mortality" = Number of deaths expected based on assessed physiologic risk of mortality Include all PICU patients < 18 year of age admitted to the PICU for greater than 2 hours or with at least two consecutive sets of vital signs consistent with life with risk of mortality assessment
Denominator Details	Inclusions: • All PICU patients < 18 year of age admitted to the PICU for greater than 2 hours or with at least two consecutive sets of vital signs consistent with life with risk of mortality assessment
Exclusions	Preterm infants and/or adults who are admitted to the PICU in addition to patients admitted solely for palliative care
Exclusion details	All PICU patients >= 18 years of age, PICU patients with a stay < 2 hours or < 2 consecutive sets of vital signs consistent with life, Deaths occurring outside the PICU, Preterm infants post-gestational age < 36 weeks, Patients admitted to PICU for palliative care: AAP Committee on Bioethics
Risk Adjustment	Statistical risk model

	0343: PICU Standardized Mortality Ratio (Virtual PICU Systems, LLC)
Stratification	No additional stratification occurs beyond the risk adjustment inherent to this measure. That is, the expected mortality that serves as the denominator in this measure specifically accounts for the severity of illness of patients included in the measure. No further stratification is appropriate based on current literature.
Numerator Time window	All PICU patients < 18 year of age admitted to the PICU for greater than 2 hours or with at least two consecutive sets of vital signs consistent with life with risk of mortality assessment. Data submission quarterly with reporting on annual basis.
Type	Outcome
Type of Score	Ratio
Data Source	Administrative claims, Electronic Clinical Data : Registry, Paper Records
Level	Facility
Setting	Hospital/Acute Care Facility

	0468: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Description	The measure estimates a hospital-level risk-standardized mortality rate (RSMR) defined as death for any cause within 30 days of the admission date for the index hospitalization for patients discharged from the hospital with a principal diagnosis of pneumonia. The target population is patients 18 and over. CMS annually reports the measure for patients who are 65 years or older and are either enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities.
	Since NQF-endorsement, the measure has been tested and shown to perform well in an all-payer population aged 18 and older and has been re-specified for this broader age group. The full details of the all-payer analysis and testing are attached.
Numerator	The outcome for this measure is 30-day all-cause mortality. We define all-cause mortality as death from any cause within 30 days of the index admission date for patients discharged from the hospital with a principal diagnosis of pneumonia.
	The numerator of the risk-adjusted ratio is the predicted number of deaths within 30 days given the hospital's performance with its observed case mix. The term "predicted" describes the numerator result, which is calculated using the hospital-specific intercept term. (See details below in the 2a1.13 Statistical risk model and variables.)
Numerator Details	Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we use this field to define the measure outcome.
	The measure counts deaths from any cause within 30 days from admission date of the index hospitalization.
	Identifying deaths in the FFS measure
	As currently reported, we identify deaths for FFS Medicare patients 65 years and older in the Medicare Enrollment Database (EDB).
	Identifying deaths in the all-payer measure
	For the purposes of development, deaths were identified using the California vital statistics data file. Nationally, post-discharge deaths can be identified using an external source of vital status, such as the Social Security Administration's Death Master File (DMF) or the Centers for Disease Control and Prevention's National Death Index (NDI)

	0468: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Denominator	The cohort includes admissions for patients 18 and over hospitalized for pneumonia. The measure is currently publicly reported by CMS for patients 65 years and older who are either enrolled in Medicare FFS and admitted to non-federal , or admitted to VA hospitals.
	The measure includes admissions for patients discharged from the hospital with a principal diagnosis of pneumonia and with a complete claims history for the 12 months prior to admission. If a patient has more than one pneumonia admission in a year, one hospitalization is randomly selected for inclusion in the measure.
Denominator Details	This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we use this field to define the measure cohort.
	The denominator includes patients 18 and over hospitalized for pneumonia. The measure is currently publicly reported by CMS for patients 65 years and older who are either enrolled in Medicare FFS and admitted to non-federal hospitals, or admitted to a VA hospital. To be included in the Medicare FFS cohort the patients must have been continuously enrolled in Medicare FFS Parts A and B for the 12 months prior to the index hospitalization.
	The denominator includes admissions for patients discharged from the hospital with a principal diagnosis of pneumonia (ICD-9-CM codes 480.0, 480.1, 480.2, 480.3, 480.8, 480.9, 481, 482.0, 482.1, 482.2, 482.30, 482.31, 482.32, 482.39, 482.40, 482.41, 482.42, 482.49, 482.81, 482.82, 482.83, 482.84, 482.89, 482.9, 483.0, 483.1, 483.8, 485, 486, 487.0, and 488.11; ICD-10-CM codes J120, J121, J122, J1281, J1289, J129, J13, J181, J150, J151, J14, J154, J154, J153, J154, J1520, J1521, J1521, Z16, J1529, J158, J155, J156, A481, J158, J159, J157, J160, J168, J180, J189, J1100, J129, J09119).
Exclusions	The measure excludes admissions for patients:
	For all cohorts, the measure excludes admissions for patients:
	• discharged alive on the day of admission or the following day and did not get transferred (because it is unlikely they had a significant pneumonia diagnosis);
	• transferred from another acute care hospital (because the death is attributed to the hospital where the patient was initially admitted);
	• with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes admission date);
	• discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);
	For Medicare FFS patients, the measure additionally excludes admissions for patients:
	• enrolled in the Medicare Hospice program any time in the 12 months prior to the index hospitalization including the first day of the index admission (since it is likely these patients are continuing to seek comfort measures only);

	0468: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Exclusion details	Measure exclusions are determined as follows For all cohorts, the measure excludes admissions for patients: • Admissions for patients who were discharged alive on the day of admission or the following day and did not get transferred are identified by comparing the admission and discharge dates and examining the discharge destination indicator; • Admissions for patients who were transferred from another acute care hospital or VA hospital are identified in the claims when a patient with a qualifying admission is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day; • Inconsistent vital status or unreliable data are identified if any of the following conditions are met 1) the patient's age is greater than 115 years: 2) if the discharge date for a hospitalization is before the admission date; 3) if the patient has a sex other than "male" or "female"; • Discharges against medical advice (AMA) are identified by examining the discharge destination indicator; For Medicare FFS patients, the measure additionally excludes admissions for patients: • with Hospice enrollment in the 12 months prior to or on the index admission is identified using enrollment status derived from the EDB and the Inpatient SAF;
Risk Adjustment	Statistical risk model
Stratification	N/A
Numerator Time window	We define this as death from any cause within 30 days from the admission date for the index pneumonia hospitalization.
Type	Outcome
Type of Score	Rate/proportion
Data Source	Administrative claims, Other
Level	Facility
Setting	Hospital/Acute Care Facility

	0506: Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Description	The measure estimates a hospital-level risk-standardized readmission rate (RSRR) defined as unplanned readmissions for any cause within 30 days of the discharge date for the index hospitalization for patients discharged from the hospital with a principal diagnosis of pneumonia. The target population is patients 18 and over. CMS annually reports the measure for patients who are 65 years or older and are either enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities. Since NQF-endorsement, the measure has been tested and shown to perform well in an all-payer population aged 18 and older and has been re-specified for this broader age group. The full details of the all-payer analysis and testing are attached.

	0506: Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Numerator	The outcome for this measure is 30 day all-cause readmission. We define all-cause readmission as an inpatient admission for any cause, with the exception of planned readmissions, within 30 days from the date of discharge from the index pneumonia admission. If a patient has one or more admissions (for any reason) within 30 days of the date of discharge of the index admission, only one was counted as a readmission. For the detailed definition of planned readmissions, please refer to the attached report, Respecifying the Hospital 30-Day Pneumonia and 30-Day Chronic Obstructive Pulmonary Disease Readmission Measures by adding a Planned Readmission Algorithm.
	The numerator of the risk-adjusted ratio is the predicted number of readmissions within 30 days given the hospital's performance with its observed case mix. The term "predicted" describes the numerator result, which is calculated using the hospital-specific intercept term. (See details below in the 2a1.13 Statistical risk model and variables.)
Numerator Details	Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we use this field to define the measure outcome.
	The measure counts readmissions to any acute care hospital for any cause within 30 days of the date of discharge of the index pneumonia admission.
	Planned admissions not counted as readmissions
	Unplanned readmissions are acute clinical events experienced by a patient that require urgent hospitalizations. Higher than expected unplanned readmission rates suggest lower quality of hospital and post-discharge care and are the focus of hospital quality measurement as part of quality improvement efforts. In contrast, planned readmissions are generally not a signal of quality of care. Furthermore, there is concern that including planned readmissions in a readmission measure could create a disincentive to provide appropriate care to patients who are scheduled for elective or necessary procedures, unrelated to the quality of the prior admission, within 30 days of discharge. We have, therefore, developed an algorithm for using claims data to identify "planned readmissions" that will not count as outcomes in the readmission measure.
	In Medicare FFS data from the July 2008 to June 2011, 0.6% of index hospitalizations for pneumonia were followed by a planned readmission within 30 days of discharge. After accounting for planned readmissions, the crude 30-day measure readmission rate decreased from 18.5% to 17.8%.
	The detailed algorithm for identifying planned readmissions is in the attached report, Respecifying the Hospital 30-Day Pneumonia and 30-Day Chronic Obstructive Pulmonary Disease Readmission Measures by adding a Planned Readmission Algorithm.
Denominator	The cohort includes admissions for patients 18 and over hospitalized for pneumonia. The measure is currently publicly reported by CMS for patients 65 years and older who are either enrolled in Medicare FFS and admitted to non-federal hospitals, or admitted to VA hospitals.
	The measure includes admissions for patients discharged from the hospital with a principal diagnosis of pneumonia and with a complete claims history for the 12 months prior to admission.

	0506: Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Denominator Details	This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we use this field to define the measure cohort. The denominator includes patients 18 and over hospitalized for pneumonia. The measure is currently publicly reported by CMS for patients 65 years and older who are either enrolled in Medicare FFS and admitted to non-federal hospitals, or admitted to a VA hospital. To be included in the Medicare FFS cohort the patients must have been continuously enrolled in Medicare FFS Parts A and B for the 12 months prior to the index hospitalization. The denominator includes admissions for patients discharged from the hospital with a principal diagnosis of pneumonia (ICD-9-CM codes 480.0, 480.1, 480.2, 480.3, 480.8, 480.9, 481, 482.0, 482.1, 482.2, 482.30, 482.31, 482.32, 482.39, 482.40, 482.41, 482.42, 482.49, 482.81, 482.82, 482.83, 482.84, 482.89, 482.9, 483.0, 483.1, 483.8, 485, 486, 487.0, and 488.11; ICD-10-CM codes J120, J121, J122, J1281, J1289, J129, J13, J181, J150, J151, J14, J154, J154, J153, J154, J1520, J1521, J1521, Z16, J1529, J158, J155, J156, A481, J158, J159, J157, J160, J168, J180, J189, J1100, J129, J09119).
Exclusions	The measure excludes admissions for patients: For all cohorts, the measure excludes admissions for patients: • with an in-hospital death (because they are not eligible for readmission); • transferred to another acute care hospital (because the readmission is attributed to the hospital that discharges the patient to a non-acute setting); • discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge); • admitted with pneumonia within 30 days of discharge from a qualifying index admission (Admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as a readmission and an index admission. The next eligible admission after the 30-day time period following an index admission will be considered another index admission.) For Medicare FFS patients, the measure additionally excludes admissions for patients: • without at least 30 days post-discharge enrollment in FFS Medicare (because the 30-day readmission outcome cannot be assessed in this group).
Exclusion details	Measure exclusions are determined as follows For all cohorts, the measure excludes admissions for patients: • Admissions with an in-hospital death are identified in the discharge disposition indicator in claims data. • Admissions for patients who were transferred to another acute care hospital or VA hospital are identified in the claims when a patient with a qualifying admission is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day; • Discharges against medical advice (AMA) are identified by examining the discharge destination indicator in claims data; • Pneumonia admissions within 30 days of discharge from a qualifying index admission are identified by comparing the discharge date from the index admission with the readmission date For Medicare FFS patients, the measure additionally excludes admissions for patients who: • Admissions without at least 30 days post-discharge enrollment in FFS Medicare is obtained by examining the Medicare Enrollment Database (EDB)
Risk Adjustment	Statistical risk model
Stratification	N/A

	0506: Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization (Centers for Medicare and Medicaid Services)
Numerator Time window	We define this as readmission for any cause within 30 days from the date of discharge of the index pneumonia hospitalization.
Type	Outcome
Type of Score	Rate/proportion
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility

	0513: Thorax CT: Use of Contrast Material (Centers for Medicare and Medicaid Services)
Description	This measure calculates the percentage of thorax studies that are performed with and without contrast out of all thorax studies performed (those with contrast, those without contrast, and those with both). The measure is calculated based on a one year window of Medicare claims data. The measure has been publicly reported annually by the measure steward, the Centers for Medicare & Medicaid Services since summer 2010 as a component of its Hospital Outpatient Quality Reporting (OQR) Program.
	OQR is a quality data reporting program implemented by the Centers of Medicare & Medicaid Services (CMS) for outpatient hospital services. Under this program, hospitals report data using standardized measures of care to receive the full annual update to their Outpatient Prospective Payment System (OPPS) payment rate, effective for payments beginning in calendar year (CY) 2009. The Hospital OQR Program is modeled on the current quality data reporting program for inpatient services, the Hospital Inpatient Quality Reporting Program.
	To meet Hospital OQR requirements and receive the full Annual Payment Update (APU) under the OPPS, hospitals must meet administrative, data collection and submission, and data validation requirements. Participating hospitals agree that they will allow CMS to publicly report data for the quality measures (as stated in the current OPPS Final Rule.) In the context of this measures reporting program, NQF #0513 is referred to as "OP-11."
	Regarding interpreting this measure, a high value indicates a higher facility-level use of both a contrast and non-contrast CT Thorax studies at the same time. As indicated below in the Scientific Acceptability section, we could find no clinical guidelines or peer reviewed literature that supports so-called CT Thorax "combined studies" (i.e., CT Thorax with and without contrast).
Numerator	The number of thorax CT studies with and without contrast (combined studies).
	Sum of global and technical units associated with CPT codes:
	CPT 71270 – Thorax CT With and Without Contrast
	A technical unit can be identified by a modifier code of TC. A global unit can be identified by the absence of a TC or 26 modifier code.
	Thorax CT studies can be billed separately for the technical and professional components, or billed globally to include both the professional and technical components.
	Professional component claims will outnumber Technical component claims due to over-reads.
	To capture all outpatient volume facility claims typically paid under the OPPS/APC methodology global and TC claims should be should be considered, and to avoid double counting of professional component claims (i.e., 26 modifier).
Numerator Details	71270 – Thorax CT With and Without Contrast

	0513: Thorax CT: Use of Contrast Material (Centers for Medicare and Medicaid Services)
Denominator	The number of thorax CT studies performed (with contrast, without contrast or both with and without contrast) on Medicare beneficiaries within a 12 month time window. Sum of global and technical units for CPT codes: 71250 - Thorax Without Contrast 71260 – Thorax CT With Contrast 71270 – Thorax CT With and Without Contrast
Denominator Details	71250 - Thorax Without Contrast 71260 – Thorax CT With Contrast 71270 – Thorax CT With and Without Contrast
Exclusions	This measure has no exclusions.
Exclusion details	N/A
Risk Adjustment	No risk adjustment or risk stratification
Stratification	N/A
Numerator Time window	CT Thorax with and without contrast (a "combined study") occurring on the same day within a 12 month time window.
Type	Efficiency
Type of Score	
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility

	0548: Suboptimal Asthma Control (SAC) and Absence of Controller Therapy (ACT) (Pharmacy Quality Alliance, Inc.)
Description	Rate 1: The percentage of patients with persistent asthma who were dispensed more than 3 canisters of a short-acting beta2 agonist inhaler during the same 90-day period. Rate 2: The percentage of patients with persistent asthma during the measurement year who were dispensed more than three canisters of short acting beta2 agonist inhalers over a 90-day period and who did not receive controller therapy during the same 90-day period. The full detailed measure specifications have also been submitted as a separate attachment.
Numerator	Rate1: From the date of each prescription fill, count all of the canisters of short acting Beta2 Agonist Inhalers dispensed at that fill and dispensed within 90 days of that fill. If the patient receives 3 or more canisters in at least one 90 day period, then the patient is compliant for the numerator. Short-Acting Inhaled Beta Agonists: albuterol MDI, albuterol HFA, pirbuterol, levalbuterol HFA Rate 2: Patients who were not dispensed a controller therapy medication during the same 90-day period where they received more than three canisters of short-acting beta-agonist medication.

	0548: Suboptimal Asthma Control (SAC) and Absence of Controller Therapy (ACT) (Pharmacy Quality Alliance, Inc.)
Numerator Details	Long-Acting Beta Agonists: salmeterol, formoterol Inhaled Corticosteroids: beclomethasone, budesonide, flunisolide, fluticasone, fluticasone/salmeterol, mometasone, triamcinolone Leukotriene Inhibitors: zafirlukast, montelukast, zileuton Xanthines: long acting theophylline Mast Cell Stabilizers: nedocromil, cromolyn Short-Acting Inhaled Beta Agonists: albuterol MDI, albuterol HFA, pirbuterol, levalbuterol HFA
Denominator	Rate 1: Step 1: Identify patients 5 - 50 years of age as of the last day of the measurement year. Step 2: Identify patients who were dispensed at least two consecutive fills for any asthma medication during the measurement year. Step 3: Exclude patients identified in step 1 who meet any of the following criteria: • Any patient who filled one or more COPD medications during the measurement year. • Any patient who filled one or more prescriptions for pulmozyme during the measurement year. • Any patient who filled one or more nasal steroid medications during the measurement year. Short-Acting Inhaled Beta Agonists: albuterol MDI, albuterol HFA, pirbuterol, levalbuterol HFA Long-Acting Beta Agonists: salmeterol, formoterol Inhaled Corticosteroids: beclomethasone, budesonide, flunisolide, fluticasone, fluticasone/salmeterol, mometasone, triamcinolone Leukotriene Inhibitors: zafirlukast, montelukast, zileuton Xanthines: long acting theophylline Mast Cell Stabilizers: nedocromil, cromolyn COPD Medications: tiotropium, ipratropium/albuterol MDI, ipratropium MDI Nasal Steroids: beclomethasone, budesonide, flunisolide, fluticasone, mometasone, triamcinolone Rate 2: Step 1: Identify patients 5 - 50 years of age as of the last day of the measurement year. Step 2: Identify patients who were dispensed at least two consecutive fills for any asthma medication (Table ACT-A: Asthma Medications) during the measurement year. Step 3: Exclude patients identified in step 1 who meet any of the following criteria • Any patient who filled one or more COPD medications during the measurement year. • Any patient who filled one or more prescriptions for pulmozyme during the measurement year. • Any patient who filled one or more nasal steroid medications during the measurement year. Step 4: For the remaining patients, identify those who were dispensed more than five canisters of a short-acting beta-agonist medication during the same 90-day period in the measurement year. It is those patients who, from the date of each prescription fill, had at least 3 canisters of short acting Beta2 Agonist Inhalers dispensed at that fill or dispensed within 90 days of that fill. Note: This is a count of canisters dispensed, not prescriptions filled. If a patient received 2 canisters at one fill, it counts as 2 canisters.

	0548: Suboptimal Asthma Control (SAC) and Absence of Controller Therapy (ACT) (Pharmacy Quality Alliance, Inc.)
Denominator Details	Short-Acting Inhaled Beta Agonists: albuterol MDI, albuterol HFA, pirbuterol, levalbuterol HFA Long-Acting Beta Agonists: salmeterol, formoterol Inhaled Corticosteroids: beclomethasone, budesonide, flunisolide, fluticasone, fluticasone/salmeterol, mometasone, triamcinolone Leukotriene Inhibitors: zafirlukast, montelukast, zileuton Xanthines: long acting theophylline Mast Cell Stabilizers: nedocromil, cromolyn COPD Medications: tiotropium, ipratropium/albuterol MDI, ipratropium MDI Nasal Steroids: beclomethasone, budesonide, flunisolide, fluticasone, mometasone, triamcinolone
Exclusions	
Exclusion details	
Risk Adjustment	No risk adjustment or risk stratification
Stratification	
Numerator Time window	
Type	Process
Type of Score	
Data Source	Electronic Clinical Data : Pharmacy
Level	Health Plan
Setting	Ambulatory Care : Ambulatory Surgery Center (ASC), Ambulatory Care : Clinician Office/Clinic, Pharmacy

	0577: Use of Spirometry Testing in the Assessment and Diagnosis of COPD (National Committee for Quality Assurance)
Description	This measure assesses the percentage of members 40 years of age and older with a new diagnosis of COPD or newly active COPD, who received appropriate spirometry testing to confirm the diagnosis.
Numerator	The measure looks at the number of health plan members whose initial diagnosis of COPD is being confirmed using spirometry.
Numerator Details	Identify any members in the denominator with at least on claim/encounter with any code in Table SPR-B for spirometry in the 730 days before the index episode start date (IESD) to 180 days after the IESD. Index Episode Start Date is the earliest date of service for an eligible visit during the Intake Period with any diagnosis of COPD. Table SPR-B: Codes to Identify Spirometry Testing: CPT: 94010, 94014-94016, 94060, 94070, 94375, 94620
Denominator	Any health plan member 42 years or older as of December 31 of the measurement year, who had a diagnosis of COPD during the Intake Period.

	0577: Use of Spirometry Testing in the Assessment and Diagnosis of COPD (National Committee for Quality Assurance)
Denominator Details	At least one claim/encounter with any code in Table SPR-B for spirometry 2 years before the Index Episode Start Date (IESD) to 6 months after the IESD. The IESD is the earliest date of service for an encounter with any diagnosis of COPD during the intake period.. For an outpatient claim/encounter, the IESD is the date of service. For an inpatient (acute or nonacute) claim, the IESD is the date of discharge. For a transfer or readmission, the IESD is the discharge date of original admission. If the member had more than one diagnosis of COPD, include only the first one. Members must be continuously enrolled in the organization 730 days (2 years) prior to the IESD through 180 days after the IESD. The intake period is a 12 month window that beings July 1 of the year prior to the measurement year and ends on June 30 of the measurement year. The Intake Period captures the first COPD diagnosis. Table SPR -A: ICD-9-CM Diagnosis Codes to Identify COPD Chronic bronchitis: 491 Emphysema: 492 COPD: 496 Table SPR-B: Codes to Identify Spirometry Testing: CPT: 94010, 94014-94016, 94060, 94070, 94375, 94620 Table SPR-C: Codes to Identify Visit Type Outpatient: CPT: 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99385-99387, 99395-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456; UB Revenue: 051x, 0520-0523, 0526-0529, 057x-059x, 082x-085x, 088x, 0982, 0983 Acute inpatient: CPT: 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291; UB Revenue: 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x, 021x, 072x, 080x, 0987 ED: CPT: 99281-99285; UB Revenue: 045x, 0981
Exclusions	Members are excluded from the denominator if they had a claim/encounter with a COPD diagnosis during the 730 days (2 years) prior to the index episode start date (IESD).
Exclusion details	Any member with a claim/encounter (Table SPR-C) containing any diagnosis of COPD (Table SPR-A)_within the period of 730 days (2 years) prior to the IESD (inclusive). For an inpatient claim/encounter, use the date of admission to determine the Negative Diagnosis History.
Risk Adjustment	No risk adjustment or risk stratification
Stratification	N/A
Numerator Time window	The numerator is calculated over a 12 month intake period beginning on July 1 of year prior to the measurement year (calendar year) and ending June 30 of the measurement year.
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional
Setting	Ambulatory Care : Clinician Office, Home Health

	1799: Medication Management for People with Asthma (MMA) (National Committee for Quality Assurance)
Description	The percentage of members 5-64 years of age during the measurement year who were identified as having persistent asthma and were dispensed appropriate medications that they remained on during the treatment period. Two rates are reported.
	1. The percentage of members who remained on an asthma controller medication for at least 50% of their treatment period.
	2. The percentage of members who remained on an asthma controller medication for at least 75% of their treatment period.
Numerator	Numerator 1: The number of members who achieved a PDC* of at least 50% for their asthma controller medications during the treatment period
	Numerator 2: The number of members who achieved a PDC* of at least 75% for their asthma controller medications during the treatment period
	*PDC is the proportion of days covered by at least one asthma controller medication prescription in the measurement year.
Numerator Details	First the treatment period must be calculated. To determine the treatment period, calculate the number of days from the Index Prescription Start Date (IPSD) to the end of the measurement period. The IPSD is the earliest dispensing event for any asthma controller medication (Table ASM-D) during the measurement year.
	To determine numerator compliance, Count the days covered by at least one prescription for an asthma controller medication (Table ASM-D) dispensed during the treatment period. To ensure that the days supply does not exceed the treatment period, subtract any days supply that extends beyond December 31 of the measurement year. Members who have multiple overlapping prescriptions should count the overlap days once towards the numerator.
	Table ASM-D: Asthma Controller Medications:
	Antiasthmatic combinations: dyphylline-guaifenesin; guaifenesin-theophylline; potassium iodide-theophylline
	Antibody inhibitor: omalizumab
	Inhaled steroid combinations: budesonide-formoterol; fluticasone-salmeterol; mometasone-formoterol
	Inhaled corticosteroids; beclomethasone; budesonide; ciclesonide; flunisolide; fluticasone CFC free mometasone; triamcinolone
	Leukotriene modifiers: montelukast; zafirlukast; zileuton
	Mast cell stabilizers: cromolyn; nedocromil
	Methylxanthines: aminophylline; dyphylline; oxtriphylline theophylline
Denominator	All health plan members 5–64 years of age during the measurement year who were identified as having moderate to severe persistent asthma.

	1799: Medication Management for People with Asthma (MMA) (National Committee for Quality Assurance)
Denominator Details	The eligible population for the denominator is defined by following the series of steps below:

Step 1:

Identify members as having persistent asthma who met at least one of the following criteria during both the measurement year and the year prior to the measurement year. Criteria need not be the same across both years.

• At least one ED visit (Table ASM-B) with asthma as the principal diagnosis (Table ASM-A)

• At least one acute inpatient claim/encounter (Table ASM-B) with asthma as the principal diagnosis (Table ASM-A)

• At least four outpatient asthma visits (Table ASM-B) with asthma as one of the listed diagnoses (Table ASM-A) and at least two asthma medication dispensing events (Table ASM-C)

• At least four asthma medication dispensing events (Table ASM-C)

Step 2:

A member identified as having persistent asthma because of at least four asthma medication dispensing events, where leukotriene modifiers were the sole asthma medication dispensed in that year, must also have at least one diagnosis of asthma (Table ASM-A), in any setting, in the same year as the leukotriene modifier (i.e., measurement year or year prior to the measurement year).

Table ASM-A: Codes to Identify Asthma

ICD-9-CM Diagnosis: 493.0, 493.1, 493.8, 493.9

Table ASM-B: Codes to Identify Visit Type

Outpatient

CPT: 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99382-99386, 99392-99396, 99401-99404, 99411, 99412, 99420, 99429

UB Revenue: 051x, 0520-0523, 0526-0529, 057x- 059x, 0982, 0983

Acute inpatient

CPT: 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291

UB Revenue: 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x,021x, 072x, 0987

ED

CPT: 99281-99285

UB Revenue: 045x, 0981

Table ASM-C Asthma Medications

Antiasthmatic combinations: dyphylline-guaifenesin; guaifenesin-theophylline; potassium iodide-theophylline

Antibody inhibitor: omalizumab

Inhaled steroid combinations: budesonide-formoterol; fluticasone-salmeterol

Inhaled corticosteroids: beclomethasone; budesonide ; ciclesonide; flunisolide; fluticasone CFC free; mometasone ; triamcinolone

Leukotriene modifiers: montelukast; zafirlukast; zileuton

Long-acting, inhaled beta-2 agonists: aformoterol; formoterol; salmeterol

Mast cell stabilizers: cromolyn; nedocromil

Methylxanthines: aminophylline; dyphylline; oxtriphylline; theophylline

Short-acting, inhaled beta-2 agonists: albuterol; levalbuterol; metaproterenol; pirbuterol

	1799: Medication Management for People with Asthma (MMA) (National Committee for Quality Assurance)
Exclusions	1) Exclude any members who had at least one encounter, in any setting, with any code to identify a diagnosis of emphysema, COPD, cystic fibrosis or acute respiratory failure (Table ASM-E). Look as far back as possible in the member's history through December 31 of the measurement year. 2) Exclude any members who have no medications dispensed during the measurement year.
Exclusion details	Table ASM-E: Codes to Identify Required Exclusions Description: ICD-9-CM Diagnosis Emphysema: 492, 506.4, 518.1, 518.2 COPD: 491.2, 493.2, 496 Cystic fibrosis: 277.0 Acute respiratory failure: 518.81
Risk Adjustment	No risk adjustment or risk stratification
Stratification	The NCQA age strata for asthma measures are designed to align with both clinical practice guidelines and reporting requirements for child health quality improvement programs. Clinical guidelines specify appropriate age cohorts for measuring use of asthma medications as 5–11 years of age and 12–50 years of age, to account for the differences in medication regimens for children vs. for adolescents and adults. Implementation requires further stratification of the age ranges, to enable creation of comparable cohorts that align with child health populations. Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the member's age as of December 31st of the Measurement Year. 1) 5–11 years 2) 12–18 years 3) 19-50 years 4) 51-64 years 5) Total
Numerator Time window	The measurement year (one calendar year)
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional
Setting	Ambulatory Care : Clinician Office

	1800: Asthma Medication Ratio (AMR) (National Committee for Quality Assurance)
Description	The percentage of members 5–64 years of age who were identified as having persistent asthma and had a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.
Numerator	The number of members who have a medication ratio of at least 0.50

	1800: Asthma Medication Ratio (AMR) (National Committee for Quality Assurance)
Numerator Details	The steps below help to determine numerator-compliant members. Step 1: For each member, count the units of controller medications (Table ASM-A) dispensed during the measurement year. Each dispensing event is one unit. Step 2: For each member, count the units of reliever medications (Table ASM-A) dispensed during the measurement year. Each dispensing event is one unit. Step 3: For each member, sum the units calculated in step 1 and step 2 to determine units of total medications. Step 4: For each member, calculate the ratio of controller medications to total asthma medications using the following formula. AMR Ratio = Units of Controller Medications (step 1)/ Units of Total Medications (step 3) Step 5: Sum the total number of members who have a ratio of =0.50 in step 4. Table ASM-A: Asthma Controller and Reliever Medications Asthma Controller Medications Antiasthmatic combinations: dyphylline-guaifenesin; guaifenesin-theophyllinW; potassium iodide-theophylline Antibody inhibitor: omalizumab Inhaled steroid combinations: budesonide-formoterol: fluticasone-salmeterol; mometasone-formoterol; Inhaled corticosteroid; beclomethasone; budesonide; ciclesonide; flunisolide; fluticasone CFC free; mometasone; triamcinolone; Leukotriene modifier: montelukast; zafirlukas; zileuton Mast cell stabilizers: cromolyn; nedocromil Methylxanthines: aminophylline; dyphylline; oxtriphylline; theophylline Asthma Reliever Medications Short-acting, inhaled beta-2 agonists: albuterol; levalbuterol; metaproterenol; pirbuterol
Denominator	All health plan members 5–64 years of age during the measurement year who were identified as having moderate to severe persistent asthma

	1800: Asthma Medication Ratio (AMR) (National Committee for Quality Assurance)
Denominator Details	The eligible population for the denominator is defined by following the series of steps below: Step 1 Identify members as having persistent asthma who met at least one of the following criteria during both the measurement year and the year prior to the measurement year. Criteria need not be the same across both years. • At least one ED visit (Table ASM-B) with asthma as the principal diagnosis (Table ASM-A) • At least one acute inpatient claim/encounter (Table ASM-B) with asthma as the principal diagnosis (Table ASM-A) • At least four outpatient asthma visits (Table ASM-B) with asthma as one of the listed diagnoses (Table ASM-A) and at least two asthma medication dispensing events (Table ASM-C) • At least four asthma medication dispensing events (Table ASM-C) Step 2: A member identified as having persistent asthma because of at least four asthma medication dispensing events where leukotriene modifiers were the sole asthma medication dispensed in that year, must also have at least one diagnosis of asthma (Table ASM-A), in any setting, in the same year as the leukotriene modifier (i.e., the measurement year or the year prior to the measurement year). Table ASM-A: Codes to Identify Asthma ICD-9-CM Diagnosis: 493.0, 493.1, 493.8, 493.9 Table ASM-B: Codes to Identify Visit Type Outpatient CPT: 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99382-99386, 99392-99396, 99401-99404, 99411, 99412, 99420, 99429 UB Revenue: 051x, 0520-0523, 0526-0529, 057x- 059x, 0982, 0983 Acute inpatient CPT: 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291 UB Revenue: 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x,021x, 072x, 0987 ED CPT: 99281-99285 UB Revenue: 045x, 0981 Table ASM-C: Asthma Medications Antiasthmatic combinations: dyphylline-guaifenesin; guaifenesin-theophylline; potassium iodide-theophylline Antibody inhibitor: omalizumab Inhaled steroid combinations: budesonide-formoterol; fluticasone-salmeterol Inhaled corticosteroids: beclomethasone; budesonide ; ciclesonide; flunisolide; fluticasone CFC free; mometasone ; triamcinolone Leukotriene modifiers: montelukast; zafirlukast; zileuton Long-acting, inhaled beta-2 agonists: aformoterol; formoterol; salmeterol Mast cell stabilizers: cromolyn; nedocromil Methylxanthines: aminophylline; dyphylline; oxtriphylline; theophylline Short-acting, inhaled beta-2 agonists: albuterol; levalbuterol; metaproterenol; pirbuterol

	1800: Asthma Medication Ratio (AMR) (National Committee for Quality Assurance)
Exclusions	1) Exclude any members who had at least one encounter, in any setting, with any code to identify a diagnosis of emphysema, COPD, cystic fibrosis or acute respiratory failure (Table ASM-E). Look as far back as possible in the member's history through December 31 of the measurement year. 2) Exclude any members who have no medication events present in their record during the measurement year.
Exclusion details	Table ASM-E: Codes to Identify Required Exclusions Description: ICD-9-CM Diagnosis Emphysema: 492, 506.4, 518.1, 518.2 COPD: 491.2, 493.2, 496 Cystic fibrosis: 277.0 Acute respiratory failure: 518.81
Risk Adjustment	No risk adjustment or risk stratification
Stratification	The NCQA age strata for asthma measures are designed to align with both clinical practice guidelines and reporting requirements for child health quality improvement programs. Clinical guidelines specify appropriate age cohorts for measuring use of asthma medications as 5–11 years of age and 12–50 years of age, to account for the differences in medication regimens for children vs. for adolescents and adults. Implementation requires further stratification of the age ranges, to enable creation of comparable cohorts that align with child health populations. Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the member's age as of December 31st of the Measurement Year. 1) 5–11 years 2) 12–18 years 3) 19-50 years 4) 51-64 years 5) Total
Numerator Time window	The measurement year (one calendar year)
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Pharmacy
Level	Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : National, Population : Regional
Setting	Ambulatory Care : Clinician Office

	1825: COPD - Management of Poorly Controlled COPD (ActiveHealth Management)
Description	The percentage of patients age 18 years or older with poorly controlled COPD, who are taking a long acting bronchodilator.
Numerator	Patients age 18 years or older with poorly controlled COPD, who are taking a long acting bronchodilator

	1825: COPD - Management of Poorly Controlled COPD (ActiveHealth Management)
Numerator Details	(Words written in all capitals are element names. Please refer to the code set for full description) One of the following: 1. Presence of Health Information Exchange data indicating at least 1 refill of BRONCHODILATOR (LONG ACTING) in the past 12 months 2. Presence of at least 1 refill of BRONCHODILATOR (LONG ACTING) in the past 12 months 3. Presence of patient data confirming at least 1 refill of BRONCHODILATOR (LONG ACTING) in the past 12 months Presence of feedback from provider or patients indicating BRONCHODILATOR (LONG ACTING) already implemented Presence of feedback from provider or patients indicating BRONCHODILATOR (LONG ACTING) outside of benefit plan. Presence of feedback from provider or patients is taking BRONCHODILATOR (LONG ACTING)drug samples. See attachment for code set
Denominator	Patients age 18 years and older with poorly controlled COPD who are taking a short acting bronchodilator
Denominator Details	(Words written in all capitals are element names. Please refer to the code set for full description.) All of the following expressions: 1. If patient age is greater than or equal to 18 years 2. One of the following: a. Presence of Health Information Exchange data indicating PM COPD diagnosis in the past 12 months b. Presence of at least 2 PM COPD diagnosis in the past 12 months 3. One of the following: a. Presence of at least 2 refills of B-AGONIST (SHORT ACTING-INHALED) in the past 12 months b. Presence of at least 2 refills of INHALED ANTICHOLINERGIC DRUGS (SHORT-ACTING)in the past 12 months c. Presence of at least 2 refills of INHALED ANTICHOLINERGIC AND BETA-AGONIST COMBO in the past 12 months 4. One of the following: a. Presence of at least 1 PM COPD diagnosis overlaps within 3 days of 1 COPD ACUTE TREATMENT procedure in the past 12 months b. All of the following: i. Presence of 1 refill of 25 total days supply of STEROIDS >/ 5MG PREDNISONE in the past 12 months ii. Presence of at least 1 PM COPD diagnosis overlaps within 3 days of 1 Refill of STEROIDS >/ 5MG PREDNISONE in the past 12 months iii. Excluding presence of at least 2 STEROIDS-INDICATIONS diagnosis in the past 24 months See attachment for code set
Exclusions	Patients who had lung transplantation in the past 3 years.
Exclusion details	One of the following: 1. Presence of at least 1 TRANSPLANT LUNG (CPT) Procedure in the past 3 years 2. Presence of At Least 1 TRANSPLANT LUNG (ICD9) Diagnosis in the past 3 Years See attachment for code set

	1825: COPD - Management of Poorly Controlled COPD (ActiveHealth Management)
Risk Adjustment	No risk adjustment or risk stratification
Stratification	This specific measure addresses all COPD patients, regardless of the disease, across the entire measured population. Using our highly specific condition validation rule algorithms, people with a confirmed diagnosis of COPD will be included in the denominator. Therefore, no risk adjustment or risk stratification is necessary for this unique measure.
Numerator Time window	12 months
Type	Process
Type of Score	Rate/proportion
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Pharmacy, Healthcare Provider Survey, Patient Reported Data/Survey
Level	Clinician : Group/Practice, Clinician : Individual, Facility, Health Plan, Integrated Delivery System, Population : County or City, Population : National, Population : Regional, Population : State
Setting	Ambulatory Care : Clinic/Urgent Care, Ambulatory Care : Clinician Office, Home Health, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility, Post Acute/Long Term Care Facility : Rehabilitation

	1891: Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
Description	The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as unplanned readmissions for any cause within 30 days after the date of discharge of the index admission, for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.
Numerator	The outcome for this measure is 30-day all-cause readmission. We define all-cause readmission as an inpatient admissions for any cause, with the exception of planned readmissions, within 30 days after the date of discharge from the index admission for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD. If a patient has one or more admissions (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission. For the detailed definition of planned readmissions, please refer to the attached report, Respecifying the Hospital 30-Day Pneumonia and 30-Day Chronic Obstructive Pulmonary Disease Readmission Measures by adding a Planned Readmission Algorithm.

	1891: Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
Numerator Details	This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define the outcome. Measure includes readmissions to any acute care hospital for any cause within 30 days from the date of discharge of the index admission. Planned admissions not counted as readmissions Unplanned readmissions are acute clinical events experienced by a patient that require urgent hospitalizations. Higher than expected unplanned readmission rates suggest lower quality of hospital and post-discharge care and are the focus of hospital quality measurement as part of quality improvement efforts. In contrast, planned readmissions are generally not a signal of quality of care. Furthermore, there is concern that including planned readmissions in a readmission measure could create a disincentive to provide appropriate care to patients who are scheduled for elective or necessary procedures, unrelated to the quality of the prior admission, within 30 days of discharge. We have, therefore, developed an algorithm for using claims data to identify "planned readmissions" that will not count as outcomes in the readmission measure. In Medicare FFS data from the 2008 calendar year, 0.6% of index hospitalizations for COPD were followed by a planned readmission within 30 days of discharge. After accounting for planned readmissions, the crude 30-day measure readmission rate decreased from 21.9% to 21.3%. The detailed algorithm for identifying planned readmissions is in the attached report, Respecifying the Hospital 30-Day Pneumonia and 30-Day Chronic Obstructive Pulmonary Disease Readmission Measures by adding a Planned Readmission Algorithm.
Denominator	This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 40 years or older. We have explicitly tested the measure in both age groups. The cohort includes admissions for patients discharged from the hospital with either a principal diagnosis of COPD (see codes below) OR a principal diagnosis of respiratory failure (see codes below) WITH a secondary discharge diagnosis of acute exacerbation of COPD (see codes below) and with a complete claims history for the 12 months prior to admission.
Denominator Details	Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year). We therefore use this field to define the measure cohort. The denominator includes patients 40 and over hospitalized for COPD. COPD is rare in the less than 40 age group (1.5% of patients in our 2006 California all payer dataset), and at younger ages is likely to represent patients with asthma or other pulmonary conditions. The measure was developed in a cohort of patients 65 years and older who were enrolled in Medicare FFS and admitted to non-federal hospitals. To be included in the Medicare FFS cohort the inclusion criteria required that the patient be continuously enrolled in Medicare FFS Parts A and B for the 12 months prior to the index hospitalization. Primary COPD and respiratory failure with a secondary diagnosis of acute exacerbation of COPD are defined by the following ICD-9-CM and ICD-10-CM codes: ICD-9-CM codes used to define COPD: 491.21 Obstructive chronic bronchitis; with (acute) exacerbation; acute exacerbation of COPD, decompensated COPD, decompensated COPD with exacerbation. 491.22 Obstructive chronic bronchitis; with acute bronchitis 491.8 Other chronic bronchitis. Chronic: tracheitis, tracheobronchitis. 491.9 Unspecified chronic bronchitis

	1891: Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
	492.8 Other emphysema; emphysema (lung or pulmonary): Not otherwise specified, centriacinar, centrilobular, obstructive, panacinar, panlobular, unilateral, vesicular. MacLeod´s syndrome; Swyer-James syndrome; unilateral hyperlucent lung
	493.20 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, unspecified
	493.21 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with status asthmaticus
	493.22 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with (acute) exacerbation
	496 Chronic: nonspecific lung disease, obstructive lung disease, obstructive pulmonary disease (COPD) NOS.
	ICD-10-CM codes used to define COPD:
	J441 Chronic obstructive pulmonary disease with (acute) exacerbation
	J418 Mixed simple and mucopurulent chronic bronchitis
	J42 Unspecified chronic bronchitis
	J439 Emphysema, unspecified
	J449 Chronic obstructive pulmonary disease, unspecified
	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection
	ICD-9-CM codes used to define respiratory failure:
	518.81 Other diseases of lung; acute respiratory failure; respiratory failure NOS
	518.82 Other diseases of lung; acute respiratory failure; other pulmonary insufficiency, acute respiratory distress
	518.84 Other diseases of lung; acute respiratory failure; acute and chronic respiratory failure
	799.1 Other ill-defined and unknown causes of morbidity and mortality; respiratory arrest, cardiorespiratory failure
	ICD-9-CM codes used to define acute exacerbation of COPD:
	491.21 Obstructive chronic bronchitis; with (acute) exacerbation; acute exacerbation of COPD, decompensated COPD, decompensated COPD with exacerbation.
	491.22 Obstructive chronic bronchitis; with acute bronchitis
	493.21 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with status asthmaticus
	493.22 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with (acute) exacerbation
	ICD-10-CM codes used to define respiratory failure:
	J9600 Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia
	J9690 Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia
	J80 Acute Respiratory distress syndrome
	J9620 Acute and chronic respiratory failure, unspecified whether with hypoxia or hypercapnia
	R092 Respiratory arrest
	ICD-10-CM codes used to define acute exacerbation of COPD:
	J441 Chronic obstructive pulmonary disease with (acute) exacerbation
	J440 Chronic obstructive pulmonary disease with acute low respiratory infection

	1891: Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
Exclusions	An index admission is any eligible admission to an acute care hospital assessed in the measure for the outcome (readmitted within 30 days of the date of discharge from the initial admission).
	The measure excludes admissions for patients:
	• with an in hospital death (because they are not eligible for readmission).
	• transferred to another acute care facility (We assign the outcome for the acute episode of care to the hospital that discharges the patient to the non-acute care setting because the discharging hospital initiates the discharge and the transition to the outpatient setting. Therefore, the last admission in the acute care setting for the episode of care is eligible to be an index admission in the measure. The prior admissions in the same acute episode are excluded from the measure.)
	• who were discharged alive and against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge).
	• without at least 30 days post-discharge claims data (because the 30-day readmission outcome cannot be assessed in this group).
	Additionally, admissions that occur within 30 days of the discharge date of an earlier index admission are not themselves considered to be index admissions. Any COPD admission can only be an index admission or a readmission, but not both.
	Of note, a patient may satisfy multiple exclusion criteria.
Exclusion details	We provide denominator exclusions details for the Medicare data. The specific fields used in "all-payer" data will vary.
	In-hospital deaths are identified using the discharge disposition vital status indicator.
	Transfers to other acute care facilities are defined when a patient with an inpatient hospital admission (with at least one qualifying COPD admission) is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day.
	Discharges Against Medical Advice (AMA) are identified using the discharge disposition indicator.
	Lack of claims data for 30 days post-discharge is identified by patient enrollment status in the CMS' Enrollment Database (EDB) (for Medicare FFS patients only).
Risk Adjustment	Statistical risk model
Stratification	Results of this measure will not be stratified.
Numerator Time window	Patients who are readmitted for any cause within 30 days from the date of discharge of the index COPD admission.
Type	Outcome
Type of Score	Rate/proportion
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility

	1893: Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
Description	The measure estimates a hospital-level risk-standardized mortality rate (RSMR), defined as death from any cause within 30 days after the index admission date, for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.
Numerator	The outcome for this measure is 30-day all-cause mortality. We define mortality as death from any cause within 30 days from the date of admission for patients 40 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.
Numerator Details	This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define the outcome.
	Measure includes deaths from any cause within 30 days from admission date of the index hospitalization.
	Identifying deaths in the FFS measure
	As currently reported, we identify deaths for FFS Medicare patients 65 years and older in the Medicare Enrollment Database.
	Identifying deaths in the all-payer measure
	For the purposes of development deaths were identified using the California vital statistics data file. Nationally, post-discharge deaths can be identified using an external source of vital status, such as the Social Security Administration's Death Master File (DMF) or the Centers for Disease Control and Prevention's National Death Index (NDI).
Denominator	This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 40 years or older.
	The cohort includes admissions for patients discharged from the hospital with either a principal diagnosis of COPD (see codes below) OR a principal diagnosis of respiratory failure (see codes below) WITH a secondary diagnosis of acute exacerbation of COPD (see codes below) and with a complete claims history for the 12 months prior to admission.
	If a patient has more than one COPD admission in a year, one hospitalization is randomly selected for inclusion in the measure.
Denominator Details	Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year). We therefore use this field to define the measure cohort.
	The denominator includes patients 40 and over hospitalized for COPD. COPD is rare in the less than 40 age group (1.5% of patients in our 2006 California all payer dataset), and at younger ages is likely to represent patients with asthma or other pulmonary conditions.
	The measure was developed in a cohort of patients 65 years and older who were enrolled in Medicare FFS and admitted to non-federal hospitals. To be included in the Medicare FFS cohort the inclusion criteria required that the patient be continuously enrolled in Medicare FFS Parts A and B for the 12 months prior to the index hospitalization.
	Primary COPD and respiratory failure with a secondary diagnosis of acute exacerbation of COPD are defined by the following ICD-9-CM and ICD-10-CM codes:
	ICD-9-CM codes used to define COPD:
	491.21 Obstructive chronic bronchitis; with (acute) exacerbation; acute exacerbation of COPD,

	1893: Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
	decompensated COPD, decompensated COPD with exacerbation.
	491.22 Obstructive chronic bronchitis; with acute bronchitis
	491.8 Other chronic bronchitis. Chronic: tracheitis, tracheobronchitis.
	491.9 Unspecified chronic bronchitis.
	492.8 Other emphysema; emphysema (lung or pulmonary): not otherwise specified, centriacinar, centrilobular, obstructive, panacinar, panlobular, unilateral, vesicular. MacLeod´s syndrome; Swyer-James syndrome; unilateral hyperlucent lung
	493.20 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, unspecified
	493.21 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with status asthmaticus
	493.22 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with (acute) exacerbation
	496 Chronic: nonspecific lung disease, obstructive lung disease, obstructive pulmonary disease (COPD) NOS.
	ICD-10-CM codes used to define COPD:
	J441 Chronic obstructive pulmonary disease with (acute) exacerbation
	J418 Mixed simple and mucopurulent chronic bronchitis
	J42 Unspecified chronic bronchitis
	J439 Emphysema, unspecified
	J449 Chronic obstructive pulmonary disease, unspecified
	J440 Chronic obstructive pulmonary disease with acute low respiratory infection
	ICD-9-CM codes used to define respiratory failure:
	518.81 Other diseases of lung; acute Respiratory failure; respiratory failure NOS
	518.82 Other diseases of lung; acute Respiratory failure; other pulmonary insufficiency, acute respiratory distress
	518.84 Other diseases of lung; acute respiratory failure; acute and chronic respiratory failure.
	799.1 Other ill-defined and unknown causes of morbidity and mortality; respiratory arrest, cardiorespiratory failure
	ICD-9-CM codes used to define acute exacerbation of COPD:
	491.21 Obstructive chronic bronchitis; with (acute) exacerbation; acute exacerbation of COPD, decompensated COPD, decompensated COPD with exacerbation.
	491.22 Obstructive chronic bronchitis; with acute bronchitis
	493.21 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with status asthmaticus
	493.22 Chronic obstructive asthma; asthma with COPD, chronic asthmatic bronchitis, with (acute) exacerbation
	ICD-10-CM codes used to define respiratory failure:
	J9600 Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia
	J9690 Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia
	J80 Acute Respiratory distress syndrome
	J9620 Acute and chronic respiratory failure, unspecified whether the hypoxia or hypercapnia
	R092 Respiratory arrest
	ICD-10-CM codes used to define acute exacerbation of COPD:

	1893: Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization (Centers for Medicare and Medicaid Services)
	J441 Chronic obstructive pulmonary disease with (acute) exacerbation J440 Chronic obstructive pulmonary disease with acute low respiratory infection
Exclusions	An index admission is any eligible admission to an acute care hospital assessed in the measure for the outcome (died within 30 days after the index admission date). For all cohorts, the measure excludes admissions for patients: • transferred into the hospital from another acute care hospital (We assign the outcome for the acute episode of care to the first admitting hospital because the first hospital initiates patient management and is responsible for any decision to transfer the patient. Therefore, the first admission in an acute episode of care is eligible to be an index admission in the measure. The second or subsequent admissions in the same acute episode are excluded from the measure). • with inconsistent or unknown mortality status or other unreliable data (e.g. date of death precedes admission date). • who were discharged alive and against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge); For Medicare FFS patients, the measure additionally excludes admissions for patients: • enrolled in the Medicare Hospice program any time in the 12 months prior to the index hospitalization including the first day of the index admission (since it is likely these patients are continuing to seek comfort measures only). Although this exclusion currently applies to Medicare FFS patients, it could be expanded to include all-payer data if an acceptable method for identifying hospice patients outside of Medicare becomes available. Of note, a patient may satisfy multiple exclusion criteria.
Exclusion details	We provide denominator exclusion details for the Medicare data. The specific fields used in "all-payer" data will vary. Transfers to other acute care facilities are identified in the claims when a patient with an inpatient hospital admission (with at least one qualifying COPD admission) is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day. Inconsistent vital status or unreliable data are identified if any of the following conditions are met 1) the patient's age is greater than 115 years: 2) if the discharge date for a hospitalization is before the admission date; 3) if the patient has a sex other than 'male' or 'female'. Discharges Against Medical Advice (AMA) are identified using the discharge disposition indicator. Hospice enrollment in the 12 months prior to or on the index admission is identified using enrollment status derived from the EDB and the Inpatient SAF (this exclusion applies when the measure is used in Medicare FFS patients only).
Risk Adjustment	Statistical risk model
Stratification	Results of this measure will not be stratified.
Numerator Time window	Patients who die within 30 days of the index admission date.
Type	Outcome
Type of Score	Rate/proportion
Data Source	Administrative claims, Other
Level	Facility
Setting	Hospital/Acute Care Facility

Appendix B – COPD Competing Measures Evaluation

	0091 COPD:spirometry evaluation (AMA PCPI)	0577 Use of Spirometry Testing in Assessment and Diagnosis of COPD
Compare on ALL measure evaluation criteria, weighing the strengths and weaknesses across ALL criteria: Is one measure superior?	IMPACT: H16,M-2, L-0 GAP: H-12,M-4,L-0,1-2 EVIDENCE: YES-16,N0-0,1-2 RELIABILITY: H-9, M-8, L-1,1-0 VALIDITY: H-9, M-7, L-1,1-1 USABILITY: H-9,M-7, L-1,1-1 FEASIBILTY: H-10, M-8, L-0,1-0 SUITABILTY: YES-17, N0-1	IMPACT: H-12, M-5, L-0,1-1 GAP: H-14, M-4,L-0,1-0 EVIDENCE: YES -18,No-0,1-0 RELIABILITY: H-12, M-6,L-0, 1-0 VALIDITY: H-13, M-5,L-0,1-0 USABILITY: H-7, M-10, L-1, 1-0 FEASIBILITY: H-12, M-6, L-0, 1-0 SUITABILITY: YES -18, N0-0
All else being equal on the criteria and subcriteria, the preference is for:		
Measures specified for the broadest application (target patient population as indicated by the evidence, settings, level of analysis)	TARGET POPULATION: All patients 18 years and older with a diagnosis of COPD SETTING: Ambulatory: Clinician office LEVEL of ANALYSIS: Clinician: Individual, Group/Practice/Team;	TARGET POPULATION: Any health plan member 42 years or older who had a diagnosis of COPD SETTING: Ambulatory: Clinician office; Home health LEVEL of ANALYSIS: Clinician: Individual, Group/Practice/Team;Plan, Integrated Delivery System; Regional/National/State population
Measures that address disparities in care when appropriate	Not stratified to detect disparities.	Encourages stratification but not included in specifications.
Measures with the widest use (e.g., settings, numbers of entities reporting performance results)	PQRS program since 2007	HEDIS measure
Measures that are publicly reported	PQRS results are not publicly reported.	HEDIS measure publicly reported through State of Healthcare Quality report; Quality Compass; American's Best Health Plans
Measures based on data from electronic sources	All data elements are in a combination of electronic sources	EHR specifications
Clinical data from EHRs		EHR specifications
Measures that are freely available	Yes	Yes

Appendix C – Pulmonary and Critical Care Endorsement Maintenance Steering Committee and NQF Staff

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Kevin Weiss, MD, MPH: Co-Chair
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Appendix D – NQF Portfolio of Pulmonary and Critical Care Measures

*Measures reviewed in this Endorsement Maintenance project.

**Measures placed in reserve status.

Measure Number	Title	Description	Steward
		ASTHMA	
0047*	Asthma: Pharmacologic Therapy for Persistent Asthma	Percentage of patients aged 5 through 50 years with a diagnosis of persistent asthma who were prescribed long-term control medication. Three rates are reported for this measure: 1. Patients prescribed inhaled corticosteroids (ICS) as their long term control medication 2. Patients prescribed other alternative long term control medications (non-ICS) 3. Total patients prescribed long-term control medication	AMA-PCPI
0036*	Use of appropriate medications for people with asthma	The percentage of members 5-64 years of age during the measurement who were identified as having persistent asthma and who were appropriately prescribed medication during the measurement year.	NCQA
0728	Asthma Admission Rate (pediatric)	Admission rate for asthma in children ages 2-17, per 100,000 population (area level rate)	AHRQ
0143**	CAC-1: Relievers for Inpatient Asthma	Use of relievers in pediatric patients, age 2 years through 17 years, admitted for inpatient treatment of asthma. This measure is a part of a set of three nationally implemented measures that address children's asthma care (CAC-2: Systemic Corticosteroids for Inpatient Asthma, and CAC-03: Home Management Plan of Care (HMPC) Document Given to Patient/Caregiver) that are used in The Joint Commission's accreditation process.	Joint Commission
0144**	CAC-2 Systemic corticosteroids for Inpatient Asthma	Use of systemic corticosteroids in pediatric asthma patients (age 2 through 17 years) admitted for inpatient treatment of asthma. This measure is a part of a set of three nationally implemented measures that address children's asthma care (CAC-1: Relievers for Inpatient Asthma, CAC-3: Home Management Plan of Care (HMPC) Document Given to Parent/Caregiver) that are used in The Joint Commission's accreditation process.	Joint Commission

Measure Number	Title	Description	Steward
0548*	Suboptimal Asthma Control (SAC) and Absence of Controller Therapy (ACT)	Rate 1: The percentage of patients with persistent asthma who were dispensed more than 3 canisters of a short-acting beta2 agonist inhaler during the same 90-day period. Rate 2: The percentage of patients with persistent asthma during the measurement year who were dispensed more than three canisters of short acting beta2 agonist inhalers over a 90-day period and who did not receive controller therapy during the same 90-day period.	PQA
1381	Asthma Emergency Department Visits	Percentage of patients with asthma who have greater than or equal to one visit to the emergency room for asthma during the measurement period.	Alabama Medicaid Agency
1799	Medication Management for People with Asthma (MMA)	The percentage of members 5-64 years of age during the measurement year who were identified as having persistent asthma and were dispensed appropriate medications that they remained on during the treatment period. Two rates are reported. 1. The percentage of members who remained on an asthma controller medication for at least 50% of their treatment period. 2. The percentage of members who remained on an asthma controller medication for at least 75% of their treatment period.	NCQA
1800	Asthma Medication Ratio (AMR)	The percentage of members 5–64 years of age who were identified as having persistent asthma and had a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.	NCQA
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)			
0091*	COPD: spirometry evaluation	Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented	AMA-PCPI
0102*	COPD: inhaled bronchodilator therapy	Percentage of patients aged 18 years and older with a diagnosis of COPD and who have an FEV1/FVC < 70% and have symptoms who were prescribed an inhaled bronchodilator	AMA-PCPI
0577*	Use of Spirometry Testing in the Assessment and Diagnosis of COPD	The percentage of members 40 years of age and older with a new diagnosis of COPD or newly active COPD, who received appropriate spirometry testing to confirm the diagnosis.	NCQA

Measure Number	Title	Description	Steward
0700	Health-related Quality of Life in COPD patients before and after Pulmonary Rehabilitation	The percentage of patients with COPD enrolled in pulmonary rehabilitation (PR) who are found to increase their health-related quality of life score (HRQOL).	AACVPR
0701	Functional Capacity in COPD patients before and after Pulmonary Rehabilitation	The percentage of patients with COPD who are enrolled in pulmonary rehabilitation (PR) who are found to increase their functional capacity by at least 25 meters (82 feet), as measured by a standardized 6 minute walk test (6MWT).	AACVPR
1825*	COPD - Management of Poorly Controlled COPD	The percentage of patients age 18 years or older with poorly controlled COPD, who are taking a long acting bronchodilator.	Active Health
1891*	Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization	The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as readmission for any cause within 30 days after the date of discharge of the index admission, for patients 18 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.	CMS/Yale
1893*	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization	The measure estimates a hospital-level risk-standardized mortality rate (RSMR), defined as death from any cause within 30 days after the index admission date, for patients 18 and older discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD.	CMS/Yale
		CRITICAL CARE	
0356*	PN3a--Blood Cultures Performed Within 24 Hours Prior to or 24 Hours After Hospital Arrival for Patients Who Were Transferred or Admitted to the ICU Within 24 Hours of Hospital Arrival (CMS)	Percent of pneumonia patients, age 18 years or older, transferred or admitted to the ICU within 24 hours of hospital arrival who had blood cultures performed within 24 hours prior to or 24 hours after arrival at the hospital.	CMS
0334*	PICU Severity-adjusted Length of Stay	The number of days between PICU admission and PICU discharge for PICU patients.	NACHRI
0335*	PICU Unplanned Readmission Rate	The total number of patients requiring unscheduled readmission to the ICU within 24 hours of discharge or transfer.	NACHRI

Measure Number	Title	Description	Steward
0343*	PICU Standardized Mortality Ratio	The ratio of actual deaths over predicted deaths for PICU patients.	NACHRI
0666	Ultrasound guidance for Internal Jugular central venous catheter placement	Percent of adult patients aged 18 years and older with an Internal Jugular central venous catheter placed in the emergency department (ED) under ultrasound guidance.	ACEP
0702	Intensive Care Unit (ICU) Length-of-Stay (LOS)	For all patients admitted to the ICU, total duration of time spent in the ICU until time of discharge; both observed and risk-adjusted LOS reported with the predicted LOS measured using the Intensive Care Outcomes Model - Length-of-Stay (ICOMLOS).	PRL Institute for Health Policy Studies
0703	Intensive Care: In-hospital mortality rate	For all adult patients admitted to the intensive care unit (ICU), the percentage of patients whose hospital outcome is death; both observed and risk-adjusted mortality rates are reported with predicted rates based on the Intensive Care Outcomes Model - Mortality (ICOMmort).	PRL Institute for Health Policy Studies
PNEUMONIA			
0096*	Empiric Antibiotic for Community-Acquired Bacterial Pneumonia	Percentage of patients aged 18 years and older with the diagnosis of community-acquired bacterial pneumonia with an appropriate empiric antibiotic prescribed.	AMA-PCPI
0147*	Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients	Percentage of pneumonia patients 18 years of age or older selected for initial receipts of antibiotics for community-acquired pneumonia (CAP)	CMS
0231*	Pneumonia Mortality Rate (IQI #20)	Percentage of patients, age 18 years and older, with an in-hospital death among discharges with an ICD-9-CM principal diagnosis code of pneumonia	AHRQ
0468*	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization	The measure estimates a hospital-level risk-standardized mortality rate (RSMR) defined as death for any cause within 30 days of the admission date for the index hospitalization for patients discharged from the hospital with a principal diagnosis of pneumonia. The target population is patients 18 and over. CMS annually reports the measure for patients who are 65 years or older and are either enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities. Since NQF-endorsement, the measure has been tested and shown to perform well in an all-payer population aged 18 and older and has been re-specified for this broader age group. The full details of the all-payer analysis and testing are attached.	CMS/Yale

Measure Number	Title	Description	Steward
0506*	Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization	The measure estimates a hospital-level risk-standardized readmission rate (RSRR) defined as readmission for any cause within 30 days of the discharge date for the index hospitalization for patients discharged from the hospital with a principal diagnosis of pneumonia. The target population is patients 18 and over. CMS annually reports the measure for patients who are 65 years or older and are either enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities. Since NQF-endorsement, the measure has been tested and shown to perform well in an all-payer population aged 18 and older and has been re-specified for this broader age group. The full details of the all-payer analysis and testing are attached.	CMS/Yale
0708	Proportion of Patients Hospitalized with Pneumonia that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)	Percent of adult population aged 18 – 65 years who were admitted to a hospital with Pneumonia, were followed for one-month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period	Bridges to Excellence
		IMAGING	
0513*	Thorax CT: Use of Contrast Material	This measure calculates the percentage of thorax studies that are performed with and without contrast out of all thorax studies performed (those with contrast, those without contrast, and those with both). The measure is calculated based on a one year window of Medicare claims data. The measure has been publicly reported annually by the measure steward, the Centers for Medicare & Medicaid Services since summer 2010 as a component of its Hospital Outpatient Quality Reporting (OQR) Program.	CMS
0667	Inappropriate Pulmonary CT Imaging for Patients at Low Risk for Pulmonary Embolism	Percent of patients undergoing CT pulmonary angiogram for the evaluation of possible PE who are at low-risk for PE consistent with guidelines prior to CT imaging.	Partners