NATIONAL QUALITY FORUM

MEASURE WORKSHEET

This document summarizes the evaluation of the measure as it progresses through NQF's Consensus Development Process (CDP). The information submitted by measure developers/stewards is included after the Brief Measure Information, Preliminary Analysis, and Pre-meeting Public and Member Comments sections.

To navigate the links in the worksheet: Ctrl + click link to go to the link; ALT + LEFT ARROW to return

Brief Measure Information

NQF #: 1800

Corresponding Measures:

De.2. Measure Title: Asthma Medication Ratio

Co.1.1. Measure Steward: National Committee for Quality Assurance

De.3. Brief Description of Measure: The percentage of patients 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.

1b.1. Developer Rationale: This measure assesses patients with persistent asthma whose asthma is being controlled through the use of long-term asthma controller medications. The improvement in quality envisioned by the use of this measure is for plans to identify patients who are frequently using short-term asthma reliever medications to treat asthma exacerbations or acute symptoms and to increase their adherence to long-term controller medications or adjust medications in order to improve outcomes. Increasing use of reliever medication or use more than two days a week for symptom control indicates the need to step up controller therapy (National Heart, Lung, and Blood Institute [NHLBI]/National Asthma and Education Prevention Program [NAEPP] 2007). According to the Asthma Regional Council of New England, two-thirds of adults and children who display asthma symptoms are considered "not well controlled" or "very poorly controlled" as defined by clinical practice guidelines (Stillman 2010). Increasing use and adherence to asthma controller medications can prevent and control asthma symptoms, improve quality of life, reduce the frequency and severity of asthma exacerbations, and potentially prevent a significant proportion of asthma-related costs (hospitalizations, emergency room visits and missed work and school days) (Akinbami 2009; NHLBI/NAEPP 2007).

Akinbami, L.J., J.E. Moorman, P.L. Garbe, E.J. Sondik. 2009. Status of Childhood Asthma in the United States, 1980–2007. Pediatrics 123;S131-45. doi: 10.1542/peds.2008-2233C.

National Heart Lung and Blood Institute/National Asthma Education and Prevention Program. 2007. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Washington (DC): National Heart Lung and Blood Institute (NHLBI), NIH Publication No. 07-4051. http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

Stillman, L. 2010. Living with Asthma in New England: Results from the 2006 BRFSS and Call-back Survey. A report by the Asthma Regional Council of New England (February). http://asthmaregionalcouncil.org/wpcontent/uploads/2014/02/2010_Living-with-Asthma-in-New-England1.pdf

S.4. Numerator Statement: The number of patients with persistent asthma who have a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.

S.6. Denominator Statement: All patients 5–64 years of age as of December 31 of the measurement year who have persistent asthma by meeting at least one of the following criteria during both the measurement year and the year prior to the measurement year:

• At least one emergency department visit with asthma as the principal diagnosis

• At least one acute inpatient encounter or discharge with asthma as the principal diagnosis

• At least four outpatient visits, observation visits, telephone visits, or online assessments on different dates of service, with any diagnosis of asthma AND at least two asthma medication dispensing events for any controller or reliever medication. Visit type need not be the same for the four visits.

• At least four asthma medication dispensing events for any controller medication or reliever medication

S.8. Denominator Exclusions: 1) Exclude patients who had any of the following diagnoses any time during the patient's history through the end of the measurement year (i.e., December 31):

-COPD

-Emphysema

-Obstructive Chronic Bronchitis

-Chronic Respiratory Conditions Due To Fumes/Vapors

-Cystic Fibrosis

-Acute Respiratory Failure

2) Exclude any patients who had no asthma medications (controller or reliever) dispensed during the measurement year.

3) Exclude patients in hospice.

De.1. Measure Type: Process

S.17. Data Source: Claims

S.20. Level of Analysis: Health Plan

IF Endorsement Maintenance – Original Endorsement Date: Jul 31, 2012 **Most Recent Endorsement Date:** Aug 03, 2016

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results? N/A

Preliminary Analysis: Maintenance of Endorsement

To maintain NQF endorsement endorsed measures are evaluated periodically to ensure that the measures still meets the NQF endorsement criteria ("maintenance"). The emphasis for maintaining endorsement is focused on how effective the measure is for promoting improvements in quality. Endorsed measures should have some experience from the field to inform the evaluation. The emphasis for maintaining endorsement is noted for each criterion.

Criteria 1: Importance to Measure and Report

1a. Evidence

Maintenance measures – less emphasis on evidence unless there is new information or change in evidence since the prior evaluation.

1a. Evidence. The evidence requirements for a *structure, process or intermediate outcome* measure is that it is based on a systematic review (SR) and grading of the body of empirical evidence where the specific focus of the evidence matches what is being measured. For measures derived from patient report, evidence also should demonstrate that the target population values the measured process or structure and finds it meaningful.

The developer provides the following evidence for this measure:

- **Systematic Review of the evidence specific to this measure?** ☒ **Yes** ☐ **No**
- **Quality, Quantity and Consistency of evidence provided?** ☒ **Yes** ☐ **No**
- **Evidence graded?** ☒ **Yes** ☐ **No**

Summary of prior review in 2015

- The developer provided a summary of the links between dispensing long-term asthma controller medication to patients with persistent asthma leading to improved management of asthma symptoms and reduction in frequency and severity of asthma exacerbations.
- The developer provided the following clinical practice guideline in 2015 submission: National Heart, Lung and Blood Institute/National Asthma Education and Prevention Program. 2007. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Washington (DC): National Heart Lung and Blood Institute (NHLBI), NIH Publication No. 07-4051. http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf
    - **Recommendation:** Daily long-term control medication is recommended for patients who have persistent asthma. The long-term control medication should be ones with anti-inflammatory effects. Of the available medications, ICSs are the most effective single agents (Evidence Category A, page 216).
    - **Recommendation:** Quick-relief medication must be available to all patients who have persistent asthma. The Expert Panel recommends that SABAs are the drug of choice for treating acute asthma symptoms and exacerbations and for preventing EIB (Evidence A, page 235). SABA should be taken as needed to relieve symptoms. The intensity of treatment will depend on the severity of the exacerbation. Increasing use of SABA or use more than 2 days a week for symptom control (not for preventing exercise-induced asthma) indicates the need to step up therapy. The Expert Panel does not recommend regularly scheduled, daily, long-term use of SABA (Evidence Category A, page 236)
    - **Recommendation:** The Expert Panel recommends that long-term control medications (including ICSs, inhaled long-acting bronchodilators, leukotriene modifiers, cromolyn, theophylline, and immunomodulators) be taken daily on a long-term basis to achieve and maintain control of persistent asthma. The most effective long-term-control medications are those that attenuate the underlying inflammation that is characteristic of asthma (Evidence Category A, page 216).
    - **Evidence Category A definition**: Randomized controlled trials (RCTs), rich body of data. Evidence is from end points of well-designed RCTs that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants.
    - The developer provided a Quantity, Quality, and Consistency of guideline.

- Harms identified by developer include potential adverse effects/side effects of long-term control and quick relief medications. However they note the benefits outweigh the harm. Benefits include prevention and management of asthma symptoms; improved quality of life; fewer emergency department visits; and reduction in thre frequency and severity of asthma exacerbations.

Changes to evidence from last review

☐ **The developer attests that there have been no changes in the evidence since the measure was last evaluated.**

☒ **The developer provided updated evidence for this measure:**

Updates:

- The developer provided the following clinical practice guideline in current 2019 submission: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2019. Available from: www.ginasthma.org.
  - **Recommendation:** "SABA-only treatment (without ICS) is not recommended". Guideline recommendations provides some preferred initial treatment combinations of ICS and SABA therapy which evidence grades range from Evidence A, B, and D.
  - **Evidence Grade Definitions**
    - Evidence A – Randomized controlled trials (RCTs) and meta-analyses. Rich body of data. Evidence is from endpoints of well-designed RCTs, meta-analyses of relevant studies, or strong observational evidence that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants.
    - Evidence B – RCTs and meta-analyses. Limited body of data. Evidence is from endpoints of intervention studies that include only a limited number of patients, post hoc or subgroups analysis of RCTs, or meta-analysis of such RCTs. In general, Category B pertains when few randomized trials exist, they are small in size, they were under-taken in a population that differs from the target population of the recommendation, or the results are somewhat inconsistent.
    - Evidence D – Panel consensus judgment. This category is used only in cases where the provision of some guidance was deemed valuable but the clinical literature addressing the subject was insufficient to justify placement in one of the other categories. The Panel Consensus is based on clinical experience or knowledge that does not meet the above listed criteria.
  - The developer provided a Quantity, Quality, and Consistency of guideline.
  - This guideline noted SABA only treatment is no longer recommended and is based on strong evidence that it could lead to increased risk of severe exacerbations and asthma-related death, and that adding any ICS significantly reduces the risk.

Questions for the Committee:

- The evidence support importance of long-term asthma controller medications, however is there evidence/rationale to support the measure description/numerator ratio of 0.50 or higher for the long-term asthma controller medications?
- For structure, process, and intermediate outcome measures:
  - What is the relationship of this measure to patient outcomes?
  - How strong is the evidence for this relationship?
  - Is the evidence directly applicable to the process of care being measured?

Guidance from the Evidence Algorithm

Structure measure with systematic review (Box 3) → Summary of the QQC provided (Box 4) → Systematic review concludes moderate to high quality evidence (Box 5b) → Moderate

The highest possible rating is "High" for Evidence.

Preliminary rating for evidence: ☐ High ☒ Moderate ☐ Low ☐ Insufficient

1b. Gap in Care/Opportunity for Improvement and 1b. Disparities

Maintenance measures – increased emphasis on gap and variation

1b. Performance Gap. The performance gap requirements include demonstrating quality problems and opportunity for improvement.

- The developer provided rate of patients with persistent asthma who had a ratio of controller medications to total asthma medications of 0.50 or greater, extracted from HEDIS data, stratified by year (2016, 2017, 2018) and at the health plan level (commercial and Medicaid).
    - In 2018 there was a 12 percentage point difference between commercial plans in the 10th percentile and commercial plans in the 90th percentile and 20 percentage point difference for Medicaid plans (totals).
    - Commercial (2016, 2017, 2018): mean (78.2-80.1%); SD (5.1-6.5%); Interquartile Range (6.2-6.5%)
    - Medicaid (2016, 2017, 2018): mean (61.1-63%); SD (8.4-10.3%); Interquartile Range (9.7-11.8%)
- These gaps in performance indicate there is variation and there is still an opportunity for improvement.

Disparities

- The developer is unable to collect performance data at the health plan level stratified by race, ethnicity, or language.
- The developer also cited the following literature noting disparities:
    - In a recent 3-year observational study comparing asthma-related outcomes in black and white children with severe or difficult-to-treat asthma, Black children were found to be more likely to have very poorly controlled asthma, as well as use long-term systemic corticosteroids (Guilbert et al, 2019).
    - In a separate population-based study of adults who have frequent asthma-related ED visits in California and Florida, black race, Hispanic ethnicity, and low socioeconomic status were all found to be significant predictors of multiple ED visits (Hasegawa et al, 2014).

Questions for the Committee:

- Specific questions on information provided for gap in care.
- Is there a gap in care that warrants a national performance measure?
- If no disparities information is provided, are you aware of evidence that disparities exist in this area of healthcare?

Preliminary rating for opportunity for improvement: ☐ High ☒ Moderate ☐ Low ☐ Insufficient

Committee Pre-evaluation Comments:
Criteria 1: Importance to Measure and Report (including 1a, 1b, 1c)

1a. Evidence

Comments:

**Just received updates from the Global initiatives on Asthma today will know more by February meeting.

**I am not aware of new evidence that was not cited. The evidence presented clearly demonstrates that the use of long-term controller medications reduces frequency and severity of asthma exacerbations, the cost of care, and improves the quality of life. The developers process measure: the percentage of patients with a ratio of controller medication to total asthma medication of 0.5 seems arbitrary. It would be helpful to see difference in the outcome measures that should be influenced by this process measure by the <0.50 vs. the >0.50 patients.

**Multiple studies indicate that consistent use of asthma controller medications lead to improved quality of life, reduced occurrence of exacerbations, and decrease in downstream healthcare costs. The developer has updated the measure with more recent guidelines for asthma management.

**Based on clinical practice guidelines. No specific evidence for 0.5 ratio – none but makes intuitive sense – if 2 asthma meds, 1 should be long term control.

**With patients 5-64 y/o diagnosed with persistent asthma, there is not currently access to data that would confirm asthma medications prescriptions are purchased, used, and used properly. There is in this maintenance measure application evidence from clinical practice guidelines literature reviews and analysis from 2015 and 2019 to support the recommendation that patients with persistent asthma receive long term control medication and not beta agonist agents alone. This supports the process that physicians treating persistent asthma should issue prescriptions for this condition that are at least 50% control medications.

**There are a number of studies supporting the utility of this process measure (Schatz, M., R. S. Zeiger, et al. (2006). The controller-to-total asthma medication ratio is associated with patient-centered as well as utilization outcomes. Chest 130: 43-50), as frequent use of reliever medication clearly is associated with poor asthma control and untoward asthma care outcomes. Evidence obtained via use of validated instruments (e.g., asthma control test, asthma control questionnaire, asthma therapy assessment questionnaire) clearly indicate a large proportion -- in many studies more than 1/2 -- of asthma patients are not well controlled or poorly controlled. Greater prescribing and adherence with controller medication holds the potential for improved asthma care outcomes. There is a major development in asthma management that is not addressed in this proposal. Multiple, methodologically sound randomized controlled trials have established the therapeutic utility of budesonide/formoterol for both maintenance and rescue therapy in children and adults (O'Byrne, et al. N Engl J Med 2018; 378: 1865-76; Sobieraj w, et al. JAMA; 2018; 3191485-96; Kew, et al. Cochrane Database of Systematic Reviews 2013; 12: Art No. CD009019). The strong support in the literature for what has been referred to as "dynamic dosing" or "adjustable maintenance dosing" of combination budesonide/formoterol has led to this being recommended in the recently released draft of the NIH EPR4 guidelines. The rapidity with which asthma care providers and patients adopt this approach to asthma management will likely be affected by the lack of current FDA approval of this therapy; however, as this the way asthma has been managed in other areas of the world and outcomes are clearly superior when this approach is implemented, it is likely this will be adopted in the next several years. Given that this will take time, this reviewer believes that endorsement of the asthma medication ratio is still warranted, but that in view of this sea change in asthma management, that would entail no reliever agent (i.e., short acting beta agonist) being prescribed routinely for many patients with persistent asthma, the measure will merit further scrutiny and should be re-evaluated in several years.

**Evidence supports the measure focus.

**I'm not aware of any unmentioned studies that aren't cited in the submission. The most robust updated evidence provided is the 2020 GOLD guidelines

1b. Performance Gap

Comments:

**Yes there is still gaps in care and yes there are SDOH disparities in the Asthma population.

**Data provided by the measure developer demonstrates a 12% gap between 10th and 90th percentile for commercial health plans and 20% gap for Medicaid health plans. The data provided also provide evidence that in the three years between 2016 and 2018 there has been little improvement in performance across both commercial plans (1.9 percentage point increase from 78.2% to 80.1%) and Medicaid plans (1.9 percentage point improvement (61.1% to 63.0%).

**Performance data was provided and showed evidence of a gap between the 25th and 75th percentiles.

**Difference between commercial and Medicaid plans. Difference between age groups

**HEDIS data from 2016-18 of commercial and Medicaid health plans show that the process measure was met around 60-80%.

**YES. There is a persisting performance gap.

**There is a performance gap to demonstrate a gap in care, especially in Medicaid.

**Yes, I think it does

Disparities:

Comments:

**They were unable to exact data for subgroups, However the Medicaid population data helps give insight to some disparities.

**The measure developer lacks data to identify disparities based on race, ethnicity or language and instead refers to published studies that outcomes vary based on race and ethnicity.

**Data was not provided directly for the measure; however, the developer noted that there are many studies that show disparities between Black and White children and asthmatic control.

**Stratified by plan. Some disparities information provided indicating performance difference by race / ethnicity

**HEDIS data does not strafify by race, ethnicity, or language. Two recent clinical studies are cited indicating that disparities in asthma treatment, diagnostic categories, and medical encounters by population subgroups exist.

**Disparities were not directly measured ad the developer is unable to obtain performance data at the health plan level stratified by race/ethnicity or language. However, many published studies indicate that there are persisting disparities in asthma care outcomes.

**Although literature shows disparities, measure does not address these issues.

**Developer reports significant disparities by race/ethnicity

Criteria 2: Scientific Acceptability of Measure Properties

2a. Reliability: Specifications and Testing

2b. Validity: Testing; Exclusions; Risk-Adjustment; Meaningful Differences; Comparability; Missing Data

Reliability

2a1. Specifications requires the measure, as specified, to produce consistent (reliable) and credible (valid) results about the quality of care when implemented. For maintenance measures – no change in emphasis – specifications should be evaluated the same as with new measures.

2a2. Reliability testing demonstrates if the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise enough to distinguish differences in performance across providers. For maintenance measures – less emphasis if no new testing data provided.

Validity

2b2. Validity testing should demonstrate the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality. For maintenance measures – less emphasis if no new testing data provided.

2b2-2b6. Potential threats to validity should be assessed/addressed.

Complex measure evaluated by Scientific Methods Panel? ☐ **Yes** ☒ **No**

Evaluators: Primary Care and Chronic Illness project team staff
Evaluation of Reliability and Validity: Link A (Project Team staff)

Reliability:

The developer did updated reliability testing in the maintenance using HEDIS health plan performance data for 2018. The developer conducted performance measure score reliability testing by using a beta-binomial model (i.e. signal to noise).

The developer had the following results for reliability using HEDIS health plan data in 2018:

- Commerical: the mean reliability result was 0.83, however ranged 0.58-0.98 in the 10^{th}-90^{th} percentiles.
- Medicaid: the mean reliability result was 0.95, with consistently high range 0.88-0.99 in the 10^{th}-90^{th} percentiles.

For signal to noise, a minimum reliability score of 0.7 is used to indicate sufficient signal strength to discriminate performance between accountable entities. The testing suggests that all indicators within this measure have good reliability between 0.7 and 1.0.

Validity:

1) The developer did updated validity testing from the 389 Commercial health plans and 248 Medicaid health plans that submitted data on this measure to HEDIS in 2017. The developer conducted performance measure score validity testing by through what was termed construct validity analysis examining whether the age strata within this measure were correlated with one another using the Pearson correlation test. The developer hypothesized that organizations that perform well in one age stratum should perform well on all strata.

   The results of the Pearson correlation test (on HEDIS data of commercial and Medicaid health plans) confirmed the hypothesis that performance is highly correlated across broad age strata from a range of network providers (pediatricians, family practice, internal medicine, pulmonologist and allergists). Coefficients were an absolute value of greater then 0.3 which denotes per developer moderate to strong associations. The developer did not provide a rationale for how this particular test demonstrates construct validity.

2) The developer conducted additional assessment of validity based on the study of the commercial membership of the KPSC health plan, which was derived from the commercial membership of the KPSC health plan, a racially and ethnically diverse group encompassing over 4,000,000 members residing in a broad swath of southern California. The KPSC study population consisted of 18,554 subjects aged 5 to 64 years who were enrolled in the health plan between January 1, 2012, and December 31, 2014. The developer assessed validity of KPSC health plan by assessing whether the asthma medication ration measure is clinically meaningful predictor of improved asthma outcomes. The developer used poisson regression with robust error variance to estimate risk ratios for adverse outcomes.

   The KPSC study results also support that the measure is correlated with improved asthma outcomes. Compliance with the AMR measure decreased the risk for 3 of 4 asthma outcomes. The results indicated statistical significance for ED visits and rescure inhaler overuse; however there was not statistical significance in decreased hospitalization.

3) The developer previously did face validity by three expert panels in the 2015 submission of the measure. Face validity results indicate the technical expert panel showed good agreement that the measure as specified accurately identifies patients with persistent asthma and differentiates quality across providers

Questions for the Committee regarding reliability:

- Do you have any concerns that the measure can be consistently implemented (i.e., are measure specifications adequate)?
- The staff is satisfied with the reliability testing for the measure. Does the Committee think there is a need to discuss reliability?

Questions for the Committee regarding validity:

- Do you have any concerns regarding the validity of the measure (e.g., exclusions, risk-adjustment approach, etc.)?
- The staff is satisfied with the validity analyses for the measure. Does the Committee think there is a need to discuss validity?

Preliminary rating for reliability: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Preliminary rating for validity: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee Pre-evaluation Comments:
Criteria 2: Scientific Acceptability of Measure Properties (including all 2a, 2b, and 2c)

2a1. Reliability – Specifications

Comments:

**Not a concern.

**The measure specification's and reliability appear sound. The measure has been in use since 2012 and I have no concerns with definitions, codes, calculations, etc. Since this is based on standard claims, its consistent implementation is not a concern.

**All data elements are clearly defined and there are no concerns about consistent implementation.

**No updates since last review

**Reliability testing (signal to noise) was continued, adding the 2018 HEDIS numbers (P 8-9).

**I mentioned a concern -- see above, regarding a change in the definition of the numerator and denominator. The developer has presented updated reliability testing using HEDIS health plan performance data for 2018. These data indicate good reliability (between 0.7 and 1.0).

**Although reliable, the most variability was in the commerical payers.

**The measure should be able to be implemented

2a2. Reliability – Testing

Comments:

**adequate testing, no concern.

**No

**I have no concerns about the reliability of the measure.

**Updated testing with 2018 data. Results seem acceptable. Commercial reliability stats - while overall ok, low end of range 0.58.

**Why are individuals with non-acute hospital admissions including the diagnosis of asthma excluded?

**No

**No

**No concerns

2b1. Validity – Testing

Comments:

**No concerns

**The measure developer's rationale for this measure is the following: "Increasing use and adherence to asthma controller medications can prevent and control asthma symptoms, improve quality of life, reduce the frequency and severity of asthma exacerbations, and potentially prevent a significant proportion of asthma- related costs (hospitalizations, emergency room visits and missed work and school days)." The validity testing demonstrates no impact on cost (not tested), moderatly significant impact on ED visits, no significant impact on hospitalizations, and no impact on missed work/school days (not tested). These issues should be better addressed by the developer.

**I have no concerns with validity testing.

**Updated testing. Face validity not updated.

**No

**Updated validity testing data were also presented. There are no concerns this reviewer has with respect to validity.

**No

**No concerns

2b4-7. Threats to Validity

Comments:

**All bases on comparisons of commercial and Medicaid plans along with their expert panel in 2015.

**The measure developer provider evidence that randomly selected health plans at opposite ends of the interquartile range were statistical different based on a t-test, suggesting that meaningful differences in quality exists across health plans. Compatibility is no required for this measure. Missing data appears to be managed appropriately by the measure developer's audit process.

**Analyses note that there is a gap in performance between the 25th and 75th percentiles, which, if closed, would translate to an additional 250 Medicaid patients who meet the asthma medication ratio.

**Missing data addressed via HEDIS process.

**Construct validity testing on HEDIS data from 2018 was included in this maintenance measure application. Also, reliability and validity analysis is in the application from the analysis of Kaiser Permanente of Southern California's patient database 2012-14. HEDIS audit procedures for health plans and for clinical quality measurements were followed annually with no findings of materially influencial missing data.

**The only potential threat to validity is reflected in 25% of Commercial members and 18% of Medicaid members being excluded. This likely reflects the increasing prevalence of COPD & chronic bronchitis in the advanced age category (51-64 years of age) included in the measure.

**Validity issues were covered appropriately.

**Audit in 2018 didn't reveal issues with missing data

2b2-3. Other Threats to Validity

2b2. Exclusions

2b3. Risk Adjustment

Comments:

**Exclusions consistent with requirement and no risk adjustment.

**The number of members excluded (25% commercial and 18% Medicaid) seems reasonable give the rates when stratified by age groups and the clinical conditions excluded. Risk adjustment is not required for this measure.

**The exclusion of COPD from this measure is appropriate; no risk adjustment noted.

**No risk adjustment

**Exclusions are explained and reasonable. Risk adjustment was not done.

**There is no risk adjustment that was done. Social risk factors have not been included.

**None

**No risk adjustment done

Scientific Acceptability Evaluation (NQF Project Team Staff)

Scientific Acceptability: Preliminary Analysis Form

Measure Number: 1800

Measure Title: Asthma Medication Ratio

Type of measure:

☒ **Process** ☐ **Process: Appropriate Use** ☐ **Structure** ☐ **Efficiency** ☐ **Cost/Resource Use**

☐ **Outcome** ☐ **Outcome: PRO-PM** ☐ **Outcome: Intermediate Clinical Outcome** ☐ **Composite**

Data Source:

☒ **Claims** ☐ **Electronic Health Data** ☐ **Electronic Health Records** ☐ **Management Data**
☐ **Assessment Data** ☐ **Paper Medical Records** ☐ **Instrument-Based Data** ☐ **Registry Data**
☐ **Enrollment Data** ☐ **Other**

Level of Analysis:

☐ **Clinician: Group/Practice** ☐ **Clinician: Individual** ☐ **Facility** ☒ **Health Plan**
☐ **Population: Community, County or City** ☐ **Population: Regional and State**
☐ **Integrated Delivery System** ☐ **Other**

Measure is:

☐ **New** ☒ **Previously endorsed (**NOTE: Empirical validity testing is expected at time of maintenance review; if not possible, justification is required.)

RELIABILITY: SPECIFICATIONS

1. **Are submitted specifications precise, unambiguous, and complete so that they can be consistently implemented?** ☒ **Yes** ☐ **No**

   Submission document: "MIF_xxxx" document, items S.1-S.22

   ***NOTE**: NQF staff will conduct a separate, more technical, check of eCQM specifications, value sets, logic, and feasibility, so no need to consider these in your evaluation.*

2. **Briefly summarize any concerns about the measure specifications.**

   No concerns. Per developer, there are no updates to the specifications since the last measure update (2015).

RELIABILITY: TESTING

Submission document: "MIF_xxxx" document for specifications, testing attachment questions 1.1-1.4 and section 2a2

3. **Reliability testing level** ☒ **Measure score** ☐ **Data element** ☐ **Neither**
4. **Reliability testing was conducted with the data source and level of analysis indicated for this measure** ☒ **Yes** ☐ **No**
5. If score-level and/or data element reliability testing was NOT conducted or if the methods used were NOT appropriate, was **empirical VALIDITY testing** of patient-level data conducted?

   ☐ **Yes** ☐ **No** N/A -score level reliability testing was conducted.

6. **Assess the method(s) used for reliability testing**

   Submission document: Testing attachment, section 2a2.2

   The developer did updated reliability testing in the maintenance using HEDIS health plan performance data for 2018. The developer conducted performance measure score reliability testing by using a beta-binomial model (i.e. signal to noise).

7. **Assess the results of reliability testing**

   Submission document: Testing attachment, section 2a2.3

   The developer had the following results for reliability using HEDIS health plan data in 2018:

   - Commerical: the mean reliability result was 0.83, however ranged 0.58-0.98 in the 10^{th}-90^{th} percentiles.
   - Medicaid: the mean reliability result was 0.95, with consistently high range 0.88-0.99 in the 10^{th}-90^{th} percentiles.

   For signal to noise, a minimum reliability score of 0.7 is used to indicate sufficient signal strength to discriminate performance between accountable entities. The testing suggests that all indicators within this measure have good reliability between 0.7 and 1.0.

8. Was the method described and appropriate for assessing the proportion of variability due to real differences among measured entities? NOTE: If multiple methods used, at least one must be appropriate.

   Submission document: Testing attachment, section 2a2.2

   ☒ **Yes**

   ☐ **No**

   ☐ **Not applicable** (score-level testing was not performed)

9. Was the method described and appropriate for assessing the reliability of ALL critical data elements?

   Submission document: Testing attachment, section 2a2.2

   ☐ **Yes**

   ☐ **No**

   ☒ **Not applicable** (data element testing was not performed)

10. **OVERALL RATING OF RELIABILITY** (taking into account precision of specifications and all testing results):

    ☐ **High** (NOTE: Can be HIGH only if score-level testing has been conducted)

    ☒ **Moderate** (NOTE: Moderate is the highest eligible rating if score-level testing has not been conducted)

    ☐ **Low** (NOTE: Should rate LOW if you believe specifications are NOT precise, unambiguous, and complete or if testing methods/results are not adequate)

    ☐ **Insufficient** (NOTE: Should rate INSUFFICIENT if you believe you do not have the information you need to make a rating decision)

11. **Briefly explain rationale for the rating of OVERALL RATING OF RELIABILITY and any concerns you may have with the approach to demonstrating reliability.**

    Reliability methodology and results are appropriate and yielded good reliability scores.

VALIDITY: ASSESSMENT OF THREATS TO VALIDITY

12. **Please describe any concerns you have with measure exclusions.**

    Submission document: Testing attachment, section 2b2.

    The developer did an exclusion analysis during measure development in 2010. The exclusions were tested using data from 7 commercial and 7 Medicaid health plans to determine the impact each clinical condition had on the measure's performance. The developer calculated the percent of people excluded from the denominator (i.e., the percent who had at least 1 exclusion condition) and the total percent of people excluded from the denominator for each age cohort.

    A total of 25% of Commercial members and 18% of Medicaid members were excluded from the measure. A higher percentage of people ages 51-64 had at least 1 measure exclusion compared to children or adults ages 5-50. However the developer noted they expected that age bracket would have a higher prevalence of the exclusion conditions (i.e. COPD and chronic bronchitis). The developer provides rationale the exclusions are necessary to ensure denominator includes only those with persistent asthma and also the measure aligns with the clinical guidelines.

    The developer did not test for the hospice exclusion as it is automatically excluded from HEDIS measures per NCQA policy.

13. **Please describe any concerns you have regarding the ability to identify meaningful differences in performance.**

    Submission document: Testing attachment, section 2b4.

The developer indicates there is variation in performance. To determine if this difference is statistically significant, the developer calculated an independent sample t-test of the performance difference between two randomly selected plans at the 25th and 75th percentile.The results provided by the developer indicate there is a 5-12% gap in performance between the 25th and 75th percentile performing plans across the different age ranges and product lines.

14. **Please describe any concerns you have regarding comparability of results if multiple data sources or methods are specified.**
Submission document: Testing attachment, section 2b5.
N/A

15. **Please describe any concerns you have regarding missing data.**

Submission document: Testing attachment, section 2b6.

No concerns with missing data. In 2018, NCQA auditors did not find any missing data sources for any of the health plan data submissions.

The developer noted HEDIS addresses missing data in a structured way through its audit process. If a data source is found to be missing data, and the issues cannot be rectified, the auditor will assign a "materially biased" designation to the measure for that reporting plan, and the rate will not be used. Once measures are added to HEDIS, NCQA conducts a first-year analysis to assess the feasibility of the measure when widely implemented in the field. This analysis includes an assessment of how many plans report valid rates vs. rates that are materially biased (or have other issues, such as small denominators). These considerations are weighed in the deliberation process before measures are approved for public reporting.

16. **Risk Adjustment** N/A-no risk adjustment done for this process measure

16a. **Risk-adjustment method** ☒ **None** ☐ **Statistical model** ☐ **Stratification**

16b. **If not risk-adjusted, is this supported by either a conceptual rationale or empirical analyses?**

☐ Yes ☐ No ☒ Not applicable

16c. **Social risk adjustment:** N/A

16c.1 Are social risk factors included in risk model? ☐ Yes ☐ No ☒ Not applicable

16c.2 Conceptual rationale for social risk factors included? ☐ Yes ☐ No

16c.3 Is there a conceptual relationship between potential social risk factor variables and the measure focus? ☐ Yes ☐ No

16d.**Risk adjustment summary:** N/A

16d.1 All of the risk-adjustment variables present at the start of care? ☐ Yes ☐ No

16d.2 If factors not present at the start of care, do you agree with the rationale provided for inclusion? ☐ Yes ☐ No

16d.3 Is the risk adjustment approach appropriately developed and assessed? ☐ Yes ☐ No

16d.4 Do analyses indicate acceptable results (e.g., acceptable discrimination and calibration) ☐ Yes ☐ No

16d.5.Appropriate risk-adjustment strategy included in the measure? ☐ Yes ☐ No

16e**. Assess the risk-adjustment approach**

N/A

VALIDITY: TESTING

17. **Validity testing level:** ☒ **Measure score** ☐ **Data element** ☐ **Both**

18. **Method of establishing validity of the measure score:**

☒ **Face validity**

☒ **Empirical validity testing of the measure score**

☐ **N/A (score-level testing not conducted)**

19. **Assess the method(s) for establishing validity**

Submission document: Testing attachment, section 2b2.2

4) The developer did updated validity testing from the 389 Commercial health plans and 248 Medicaid health plans that submitted data on this measure to HEDIS in 2017. The developer conducted performance measure score validity testing by testing for construct validity-whether the age strata within this measure were correlated with one another using the Pearson correlation test. The developer hypothesized that organizations that perform well in one age stratum should perform well on all strata.

5) The developer conducted additional assessment of validity based on the study of the commercial membership of the KPSC health plan, which was derived from the commercial membership of the KPSC health plan, a racially and ethnically diverse group encompassing over 4,000,000 members residing in a broad swath of southern California. The KPSC study population consisted of 18,554 subjects aged 5 to 64 years who were enrolled in the health plan between January 1, 2012, and December 31, 2014. The developer assessed validity of KPSC health plan by assessing whether the asthma medication ration measure is clinically meaningful predictor of improved asthma outcomes. The developer used poisson regression with robust error variance to estimate risk ratios for adverse outcomes.

6) The developer previously did face validity by three expert panels in the 2015 submission of the measure.

20. **Assess the results(s) for establishing validity**

Submission document: Testing attachment, section 2b2.3

1) The results of the Pearson correlation test (on HEDIS data of commercial and Medicaid health plans) confirmed the hypothesis that performance is highly correlated across broad age strata from a range of network providers (pediatricians, family practice, internal medicine, pulmonologist and allergists). Coefficients were an absolute value of greater then 0.3 which denotes per developer moderate to strong associations.
2) The KPSC study results also support that the measure is correlated with improved asthma outcomes. Compliance with the AMR measure decreased the risk for 3 of 4 asthma outcomes. The results indicated statistical significance for ED visits and rescure inhaler overuse; however there was not statistical significance in decreased hospitalization.

3) 2015 face validity results indicate the technical expert panel showed good agreement that the measure as specified accurately identifies patients with persistent asthma and differentiates quality across providers.

21. **Was the method described and appropriate for assessing conceptually and theoretically sound hypothesized relationships?**

Submission document: Testing attachment, section 2b1.

☒ **Yes**

☐ **No**

☐ **Not applicable** (score-level testing was not performed)

22. **Was the method described and appropriate for assessing the accuracy of ALL critical data elements?**
NOTE that data element validation from the literature is acceptable.

Submission document: *Testing attachment, section 2b1.*

☐ **Yes**

☐ **No**

☒ **Not applicable** (data element testing was not performed)

23. **OVERALL RATING OF VALIDITY taking into account the results and scope of all testing and analysis of potential threats.**

☐ **High** (NOTE: Can be HIGH only if score-level testing has been conducted)

☒ **Moderate** (NOTE: Moderate is the highest eligible rating if score-level testing has NOT been conducted)

☐ **Low** (NOTE: Should rate LOW if you believe that there are threats to validity and/or relevant threats to validity were not assessed OR if testing methods/results are not adequate)

☐ **Insufficient** (NOTE: For instrument-based measures and some composite measures, testing at both the score level and the data element level is required; if not conducted, should rate as INSUFFICIENT.)

24. **Briefly explain rationale for rating of OVERALL RATING OF VALIDITY and any concerns you may have with the developers' approach to demonstrating validity.**
Validity methodology and results are appropriate and yielded good validity scores.

ADDITIONAL RECOMMENDATIONS

25. **If you have listed any concerns in this form, do you believe these concerns warrant further discussion by the multi-stakeholder Standing Committee? If so, please list those concerns below.**

Criterion 3. Feasibility

Maintenance measures – no change in emphasis – implementation issues may be more prominent

3. Feasibility is the extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

Data Specifications and Elements

- All data elements are in defined fields in electronic claims.
- This is not an eMeasure

Data Collection Strategy

- NCQA conducts an independent audit of all HEDIS collection and reporting processes, as well as an audit of the data which are manipulated by those processes, in order to verify that HEDIS specifications are met.
- The developer also has a Policy Clarification Support System for any inquiries on the measure.
- The measure for broad public use is encouraged by developer. Written consent would be required for any "commercial use".

Questions for the Committee:

- Are the required data elements routinely generated and used during care delivery?
- Are the required data elements available in electronic form, e.g., EHR or other electronic sources?
- Is the data collection strategy ready to be put into operational use?

Preliminary rating for feasibility: ☒ **High** ☐ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee Pre-evaluation Comments:
Criteria 3: Feasibility

3. Feasibility

Comments:

**Data elements are all in define fields routinely generated and in electronic form and has already been used commercially as it is aligned with HEDIS>

**All data is collected through electronic claims submission by providers and pharmacies to health plans.

**All of the data fields are clearly defined and in electronic claims; I have no concerns about the implementation of the data collection strategy.

**Information available In electronic claims. Generated in delivery of care process.

**The collection and analysis of data has been stable since the initial implementation. The NCQA audits HEDIS data gathering and recording as well as of the data itself.

**Data elements for the measure are in defined fields in electronic claims data and are readily retrievable.

**Very feasibile to generate and collect the data.

**I don't have concerns about feasibility

Criterion 4: Usability and Use

Maintenance measures – increased emphasis – much greater focus on measure use and usefulness, including both impact/improvement and unintended consequences

4a. Use (4a1. Accountability and Transparency; 4a2. Feedback on measure)

4a. Use evaluate the extent to which audiences (e.g., consumers, purchasers, providers, policymakers) use or could use performance results for both accountability and performance improvement activities.

4a.1. Accountability and Transparency. Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

Current uses of the measure

Publicly reported? ☒ **Yes** ☐ **No**

Current use in an accountability program? ☒ **Yes** ☐ **No** ☐ **UNCLEAR**

OR

Planned use in an accountability program? ☐ **Yes** ☐ **No**

Accountability program details

- CMS MEDICAID ADULT CORE SET: This measure is used in the Adult Core Set administered by the Centers for Medicare and Medicaid Services (CMS).
- CMS MEDICAID CHILD CORE SET: This measure is used in the Child Core Set administered by the Centers for Medicare and Medicaid Services (CMS).
- NCQA HEALTH PLAN RANKINGS/REPORT CARDS: This measure is used to calculate health plan rakings which are reported on the NCQA website.

- NCQA STATE OF HEALTH CARE QUALITY: This measure is publicly reported nationally and by geographic regions in the NCQA State of Health Care annual report.
- INTEGRATED HEALTHCARE ASSOCIATION (IHA-AMP) CALIFORNIA: This measure is used in the IHA-AMP program which is the largest non-governmental physician incentive program in the United States.
- NCQA HEALTH PLAN ACCREDITATION: As of Fall 2017, a total of 451 commercial health plans were scored for accreditation using this measure among others covering 113 million lives; and 125 Medicaid health plans were scored, covering 35 million lives.
- NCQA QUALITY COMPASS: This measure is used in Quality Compass which is an indispensable tool used for selecting a health plan, conducting competitor analysis, examining quality improvement and benchmarking plan performance.

4a.2. Feedback on the measure by those being measured or others. Three criteria demonstrate feedback: 1) those being measured have been given performance results or data, as well as assistance with interpreting the measure results and data; 2) those being measured and other users have been given an opportunity to provide feedback on the measure performance or implementation; 3) this feedback has been considered when changes are incorporated into the measure

Feedback on the measure by those being measured or others

- NCQA publishes HEDIS results annually in its Quality Compass tool. The measure receives feedback through the Policy Clarification Support System. The feedback received has generally been centered around minor clarification on the specifications, such as confirmation that information in claims meets the measure intent. Questions have also asked why certain medications were or were not included in medication lists. NCQA responded to all questions to ensure consistent implementation of the specifications.
- NCQA has provided minor clarifications about the measure during the annual update process in order to address questions received through the Policy Clarification Support system. Feedback has included information/updates on new asthma medications approved by FDA.

Additional Feedback:

- The developer/steward did not provide any further feedback.

***Questions for the Committee**:*

- How have (or can) the performance results be used to further the goal of high-quality, efficient healthcare?
- How has the measure been vetted in real-world settings by those being measured or others?

Preliminary rating for Use: ☒ **Pass** ☐ **No Pass**

4b. Usability (4a1. Improvement; 4a2. Benefits of measure)

4b. Usability evaluate the extent to which audiences (e.g., consumers, purchasers, providers, policymakers) use or could use performance results for both accountability and performance improvement activities.

4b.1 Improvement. Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated.

Improvement results

- Per developer, the performance rates increased slightly, by roughly two percentage points, from 2016 to 2018, across both commercial plans and Medicaid (totals). Per developer, this increase may be correlated with a decrease in the number of plans reporting the measure over the same time period.

4b2. Benefits vs. harms. Benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

Unexpected findings (positive or negative) during implementation

- Per developer, there were no identified unexpected findings (positive or negative) during testing or since implementation of this measure.

Potential harms

- The developer did not report any unintended consequences.

Additional Feedback:

- This maintenance measure was last reviewed in 2015 by the former NQF Pulmonary and Critical Care Standing Committee. The Committee noted the biggest threat to validity is the percentage of people excluded from the measure, particularly the older age cohort. (Pulmonary and Critical Care 2015-2016 Final Report).

Questions for the Committee:

- The developer reports that the increase in performance may be correlated with a decrease in the number of plans reporting the measure. What does this imply?
- How can the performance results be used to further the goal of high-quality, efficient healthcare?
- Do the benefits of the measure outweigh any potential unintended consequences?

Preliminary rating for Usability and use: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

RATIONALE:

Committee Pre-evaluation Comments:
Criteria 4: Usability and Use

4a1. Use - Accountability and Transparency

Comments:

**Well publicly reported, uses their Quality Compass took and stakeholder input.

**The measure is publicly reported by multiple stakeholders including NCQA, CMS, and IHA. Performance data are available to outside organizations typically aggregated at the plan level. The measures developer provides opportunity for health plans to provide feedback during the development process.

**This measure is currently reported in multiple NCQA and CMS programs; the measure is regularly evaluated via consensus stakeholder review.

**Reported in multiple programs

**Measure results are distributed to the participating health plans, to the Federal Department of Health and Human Services and are made available to the public as used in health plan quality rating reports. Aggregated analysis is discussed at conferences and in NCQR reports. NCQA has a system for receiving feedback on measurements from health care plans, advisory panels, and the public.

**These data can be used for accountability and performance improvement.

**Many opportunities for public communications.

**NCQA has provided minor clarifications about the measure during the annual update process in order to address questions received through the Policy Clarification Support system. Feedback has included information/updates on new asthma medications approved by FDA

4b1. Usability – Improvement

Comments:

**The decrease in the number of plans reporting this measure may indicate a plans inability to attain or maintain a consistant population to report measure results.

**The measure does not appear to have had a significant impact on performance among health plans. The validity testing did not show a significant impact on reducing hospitalization, and the measure's impact on reducing ED visits was relatively weak (P =.05) given sample size. There is no harm or unintended consequences of this measure.

**Data from the performance results can be utilized to strengthen processes to ensure that patients receive and are adherent to asthma maintenance medications and regimens. There are no identified unintended consequences.

**Performance rates have increased by 2% from 2016 to 2018. No unintended benefits or harms have been identified during the years of this project. Control medications have adverse side effects in some persons but the systematic reviews of the literature in the two clinical practice guidelines show benefits outweighing harms.

**Benefits outweigh any negatives this reviewer can imagine.

**Used in variety of tools by NCQA,

**Per developer, there were no identified unexpected findings (positive or negative) during testing or since implementation of this measure.

Criterion 5: Related and Competing Measures

Related or competing measures

The developer identifiedthe following related measure:

- 0047 Asthma: Pharmacologic Therapy for Persistent Asthma (American Academy of Asthma Allergy and Immunology)

Harmonization

- The developer noted key differences between 1800 and 0047 including:
    - Measure focus and target/denominator population are different

Committee Pre-evaluation Comments: Criterion 5: Related and Competing Measures

5. Related and Competing

Comments:

**Does measure 0047 attract more participation/use for an attaiable Asthma measure?

**Both 0047 and 0548 are similar and hope to accomplish the same outcome improvements. Harmonization would be a reasonable expectation by the NQF.

**There is a related measure that has already been harmonized. Nothing further appears necessary.

**Few other related measures indicated. Differences in measure age inclusion. One appears outcome measure. Are age breakouts harmonized across measures?

**Two other present NQF acceptable measures for asthma are different in concept and non-competing.

**0047: 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

**Focus and target are different.

**Yes. I think they are harmonized to the extent possible

Public and Member Comments

Comments and Member Support/Non-Support Submitted as of: 1/31/2020

- **No NQF Members have submitted support/non-support choices as of this date.**

Brief Measure Information

NQF #: 1800

Corresponding Measures:

De.2. Measure Title: Asthma Medication Ratio

Co.1.1. Measure Steward: National Committee for Quality Assurance

De.3. Brief Description of Measure: The percentage of patients 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.

1b.1. Developer Rationale: This measure assesses patients with persistent asthma whose asthma is being controlled through the use of long-term asthma controller medications. The improvement in quality envisioned by the use of this measure is for plans to identify patients who are frequently using short-term asthma reliever medications to treat asthma exacerbations or acute symptoms and to increase their adherence to long-term controller medications or adjust medications in order to improve outcomes. Increasing use of reliever medication or use more than two days a week for symptom control indicates the need to step up controller therapy (National Heart, Lung, and Blood Institute [NHLBI]/National Asthma and Education Prevention Program [NAEPP] 2007). According to the Asthma Regional Council of New England, two-thirds of adults and children who display asthma symptoms are considered "not well controlled" or "very poorly controlled" as defined by clinical practice guidelines (Stillman 2010). Increasing use and adherence to asthma controller medications can prevent and control asthma symptoms, improve quality of life, reduce the frequency and severity of asthma exacerbations, and potentially prevent a significant proportion of asthma-related costs (hospitalizations, emergency room visits and missed work and school days) (Akinbami 2009; NHLBI/NAEPP 2007).

Akinbami, L.J., J.E. Moorman, P.L. Garbe, E.J. Sondik. 2009. Status of Childhood Asthma in the United States, 1980–2007. Pediatrics 123;S131-45. doi: 10.1542/peds.2008-2233C.

National Heart Lung and Blood Institute/National Asthma Education and Prevention Program. 2007. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Washington (DC): National Heart Lung and Blood Institute (NHLBI), NIH Publication No. 07-4051. http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

Stillman, L. 2010. Living with Asthma in New England: Results from the 2006 BRFSS and Call-back Survey. A report by the Asthma Regional Council of New England (February). http://asthmaregionalcouncil.org/wpcontent/uploads/2014/02/2010_Living-with-Asthma-in-New-England1.pdf

S.4. Numerator Statement: The number of patients with persistent asthma who have a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.

S.6. Denominator Statement: All patients 5–64 years of age as of December 31 of the measurement year who have persistent asthma by meeting at least one of the following criteria during both the measurement year and the year prior to the measurement year:

- At least one emergency department visit with asthma as the principal diagnosis
- At least one acute inpatient encounter or discharge with asthma as the principal diagnosis
- At least four outpatient visits, observation visits, telephone visits, or online assessments on different dates of service, with any diagnosis of asthma AND at least two asthma medication dispensing events for any controller or reliever medication. Visit type need not be the same for the four visits.

• At least four asthma medication dispensing events for any controller medication or reliever medication

S.8. Denominator Exclusions: 1) Exclude patients who had any of the following diagnoses any time during the patient's history through the end of the measurement year (i.e., December 31):

-COPD

-Emphysema

-Obstructive Chronic Bronchitis

-Chronic Respiratory Conditions Due To Fumes/Vapors

-Cystic Fibrosis

-Acute Respiratory Failure

2) Exclude any patients who had no asthma medications (controller or reliever) dispensed during the measurement year.

3) Exclude patients in hospice.

De.1. Measure Type: Process

S.17. Data Source: Claims

S.20. Level of Analysis: Health Plan

IF Endorsement Maintenance – Original Endorsement Date: Jul 31, 2012 **Most Recent Endorsement Date:** Aug 03, 2016

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results? N/A

1. Evidence and Performance Gap – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. ***Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.***

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

AMR_Evidence.docx

1a.1 <u>For Maintenance of Endorsement:</u> Is there new evidence about the measure since the last update/submission?
Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.

Yes

1a. Evidence (subcriterion 1a)

NATIONAL QUALITY FORUM—Evidence (subcriterion 1a)

Measure Number (*if previously endorsed*)**:** 1800

Measure Title: Asthma Medication Ratio

IF the measure is a component in a composite performance measure, provide the title of the Composite Measure here:

Date of Submission: 11/8/2019

Instructions

- ***Complete 1a.1 and 1a.2 for all measures. If instrument-based measure, complete 1a.3.***
- ***Complete EITHER 1a.2, 1a.3 or 1a.4 as applicable for the type of measure and evidence.***
- ***For composite performance measures:***
  - ***A separate evidence form is required for each component measure unless several components were studied together.***
  - ***If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.***
- **All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.**
- **If you are unable to check a box, please highlight or shade the box for your response.**
- **Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.**

Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus

The measure focus is evidence-based, demonstrated as follows:

- **Outcome: [3] Empirical data demonstrate a relationship between the outcome and at least one healthcare structure, process, intervention, or service. If not available, wide variation in performance can be used as evidence, assuming the data are from a robust number of providers and results are not subject to systematic bias.**
- **Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.**
- **Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.**
- **Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.**
- **Efficiency: [6] evidence not required for the resource use component.**
- **For measures derived from patient reports, evidence should demonstrate that the target population values the measured outcome, process, or structure and finds it meaningful.**
- **Process measures incorporating Appropriate Use Criteria: See NQF's guidance for evidence for measures, in general; guidance for measures specifically based on clinical practice guidelines apply as well.**

Notes

3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.

4. The preferred systems for grading the evidence are the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines and/or modified GRADE.

5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.

6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)

Outcome

☐ Outcome:

☐ Patient-reported outcome (PRO):

PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors. (*A PRO-based performance measure is not a survey instrument. Data may be collected using a survey instrument to construct a PRO measure.)*

☐ Intermediate clinical outcome (*e.g., lab value*):

☒ Process: Patients (5-64 years) with persistent asthma, with a ratio of controller medications to total asthma medications of 0.50 or greater

☐ Appropriate use measure:

☐ Structure:

☐ Composite:

1a.2 LOGIC MODEL Diagram or briefly describe the steps between the healthcare structures and processes (e.g., interventions, or services) and the patient's health outcome(s). The relationships in the diagram should be easily understood by general, non-technical audiences. Indicate the structure, process or outcome being measured.

Provider identifies patients with persistent asthma >>> Provider dispenses both long-term asthma controller medication to patients to be used on a daily basis to manage and control asthma symptoms and inhaled short-acting beta2-agonist (SABA) to be used infrequently for quick relief of symptoms

>>> Provider monitors patients for control, educates patients on the importance of asthma controller medication adherence and assesses patient adherence to medication >>> Prevention and control of asthma symptoms, improvement in quality of life, and reduction in the frequency and severity of asthma exacerbations (desired outcome).

1a.3 Value and Meaningfulness: IF this measure is derived from patient report, provide evidence that the target population values the measured ***outcome, process, or structure*** and finds it meaningful. (Describe how and from whom their input was obtained.)

Members with a ratio of 0.5 or greater experience significantly fewer asthma exacerbations defined as either emergency department (ED) or acute inpatient visits with asthma listed as the primary diagnosis. The intent of the measure is to have members utilize both controllers and relievers in their regimens, instead of relievers alone thereby minimizing the number of preventable asthma exacerbations.

This measure is a process measure that highlights how well patients are managing their condition. Patients with persistent asthma who were dispensed a ratio of asthma controller medications to total asthma medications (controller + reliever medications) of 0.50 or greater indicate that they are using reliever medications less frequently to control symptoms, and therefore their asthma control is being maintained.

****RESPOND TO ONLY ONE SECTION BELOW -EITHER 1a.2, 1a.3 or 1a.4) ****

1a.2 FOR OUTCOME MEASURES including PATIENT REPORTED OUTCOMES - Provide empirical data demonstrating the relationship between the outcome (or PRO) to at least one healthcare structure, process, intervention, or service.

1a.3. SYSTEMATIC REVIEW(SR) OF THE EVIDENCE (for INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURES, INCLUDING THOSE THAT ARE INSTRUMENT-BASED) If the evidence is not based on a systematic review go to section 1a.4) If you wish to include more than one systematic review, add additional tables.

What is the source of the systematic review of the body of evidence that supports the performance measure? A systematic review is a scientific investigation that focuses on a specific question and uses explicit, prespecified scientific methods to identify, select, assess, and summarize the findings of similar but separate studies. It may include a quantitative synthesis (meta-analysis), depending on the available data. (IOM)

☒ Clinical Practice Guideline recommendation (with evidence review)

☐ US Preventive Services Task Force Recommendation

☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*)

☐ Other

Source of Systematic Review: • **Title** • **Author** • **Date** • **Citation, including page number** • **URL**	**2015 Submission** **National Heart, Lung and Blood Institute/National Asthma Education and Prevention Program. 2007. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Washington (DC): National Heart Lung and Blood Institute (NHLBI), NIH Publication No. 07-4051.** **http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf** **2019 Submission** **Global Initiative for Asthma, 2019 (GINA)** **Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2019. Available from: www.ginasthma.org.**
Quote the guideline or recommendation verbatim about the process, structure or intermediate outcome being measured. If not a guideline, summarize the conclusions from the SR.	2015 Submission National Heart Lung and Blood Institute/National Asthma and Education Prevention Program (NHLBI/NAEPP) Guidelines for the Diagnosis and Management of Asthma, 2007. **PERSISTENT ASTHMA** The Expert Panel recommends the following therapy for persistent asthma: • Daily long-term control medication is recommended for patients who have persistent asthma. The long-term control medication should be

ones with anti-inflammatory effects. Of the available medications, ICSs are the most effective single agents (Evidence Category A, page 216).

- Quick-relief medication must be available to all patients who have persistent asthma. The Expert Panel recommends that SABAs are the drug of choice for treating acute asthma symptoms and exacerbations and for preventing EIB (Evidence A, page 235). SABA should be taken as needed to relieve symptoms. The intensity of treatment will depend on the severity of the exacerbation. Increasing use of SABA or use more than 2 days a week for symptom control (not for preventing exercise-induced asthma) indicates the need to step up therapy. The Expert Panel does not recommend regularly scheduled, daily, long-term use of SABA (Evidence Category A, page 236).

Monitoring and follow-up is essential (Evidence Category B, page 277).

- When initiating therapy, monitor at 2- to 6-week intervals to ensure that asthma control is achieved (Evidence Category D).
- Regular follow-up contacts at 1- to 6-month intervals, depending on level of control, are recommended to ensure that control is maintained and the appropriate adjustments in therapy are made: step up if necessary or step down if possible. Consider 3-month intervals if a step down in therapy is anticipated (Evidence Category D).

LONG-TERM CONTROL MEDICATIONS

The Expert Panel recommends that long-term control medications (including ICSs, inhaled long-acting bronchodilators, leukotriene modifiers, cromolyn, theophylline, and immunomodulators) be taken daily on a long-term basis to achieve and maintain control of persistent asthma. The most effective long-term-control medications are those that attenuate the underlying inflammation that is characteristic of asthma (Evidence Category A, page 216).

2019 Submission

GINA, 2019 (page 45)

"SABA-only treatment (without ICS) is not recommended"

Preferred initial treatment**:

- "As needed low dose ICS-formoterol": in patients with infrequent asthma symptoms (Evidence B); in patients with asthma symptoms or need for reliever twice a month or more (Evidence A)
- "Low dose ICS with as-needed SABA (Evidence A)"
- "Low dose ICS-LABA as maintenance and reliver therapy with ICS-formoterol (Evidence A) or as conventional maintenance treatment with as-needed SABA (Evidence A)"
- "Medium dose ICS with as-needed SABA (Evidence A)"
- "Short course of oral corticosteroid AND start regular controller treatment with high-dose ICS (Evidence A), or medium dose ICS-LABA (Evidence D)"

** Recommendations are aligned with how a patient presents; presenting symptoms are only given here when the evidence assigned to the recommendation varies according to the presentation.

Grade assigned to the **evidence** associated with the recommendation with the definition of the grade	2015 Submission NHLBI Guidelines, 2007 • Category A: Randomized controlled trials (RCTs), rich body of data. Evidence is from end points of well-designed RCTs that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants. • Category B: RCTs, limited body of data. Evidence is from end points of intervention studies that include only a limited number of patients, post hoc or subgroup analysis of RCTs, or meta-analysis of RCTs. In general, category B pertains when few randomized trials exist; they are small in size, they were undertaken in a population that differs from the target population of the recommendation, or the results are somewhat inconsistent. • Category D: Panel consensus judgment. This category is used only in cases where the provision of some guidance was deemed valuable, but the clinical literature addressing the subject was insufficient to justify placement in one of the other categories. The Panel consensus is based on clinical experience or knowledge that does not meet the criteria for categories A through C. 2019 Submission GINA, 2019 Evidence A – Randomized controlled trials (RCTs) and meta-analyses. Rich body of data. Evidence is from endpoints of well-designed RCTs, meta-analyses of relevant studies, or strong observational evidence that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants. Evidence B – RCTs and meta-analyses. Limited body of data. Evidence is from endpoints of intervention studies that include only a limited number of patients, post hoc or subgroups analysis of RCTs, or meta-analysis of such RCTs. In general, Category B pertains when few randomized trials exist, they are small in size, they were under-taken in a population that differs from the target population of the recommendation, or the results are somewhat inconsistent. Evidence D – Panel consensus judgment. This category is used only in cases where the provision of some guidance was deemed valuable but the clinical literature addressing the subject was insufficient to justify placement in one of the other categories. The Panel Consensus is based on clinical experience or knowledge that does not meet the above listed criteria.
Provide all other grades and definitions from the evidence grading system	2015 Submission NHLBI Guidelines, 2007 • When a certain clinical practice "should, or may, be considered," this indicates that the recommendation is less strong.

	• Category C: Nonrandomized trials and observational studies. Evidence is from outcomes of uncontrolled or nonrandomized trials or from observational studies. 2019 Submission GINA, 2019 Evidence C – Nonrandomized trials. Observational Studies. Evidence is from outcomes of uncontrolled or non-randomized trials or from observational studies.
Grade assigned to the **recommendation** with definition of the grade	2015 Submission NHLBI Guidelines, 2007 • Category A: Randomized controlled trials (RCTs), rich body of data. Evidence is from end points of well-designed RCTs that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants. • Category B: RCTs, limited body of data. Evidence is from end points of intervention studies that include only a limited number of patients, post hoc or subgroup analysis of RCTs, or meta-analysis of RCTs. In general, category B pertains when few randomized trials exist; they are small in size, they were undertaken in a population that differs from the target population of the recommendation, or the results are somewhat inconsistent. • Category D: Panel consensus judgment. This category is used only in cases where the provision of some guidance was deemed valuable, but the clinical literature addressing the subject was insufficient to justify placement in one of the other categories. The Panel consensus is based on clinical experience or knowledge that does not meet the criteria for categories A through C. 2019 Submission GINA, 2019 The GINA guidelines do not grade evidence and recommendations separately.
Provide all other grades and definitions from the recommendation grading system	2015 Submission NHLBI Guidelines, 2007 • When a certain clinical practice "should, or may, be considered," this indicates that the recommendation is less strong. • Category C: Nonrandomized trials and observational studies. Evidence is from outcomes of uncontrolled or nonrandomized trials or from observational studies.

	2019 Submission GINA, 2019 The GINA guidelines do not grade evidence and recommendations separately.
Body of evidence: • Quantity – how many studies? • Quality – what type of studies?	2015 Submission NHLBI Guidelines, 2007 The date range for the body of evidence is 1997-2006. The Guidelines for the Diagnosis and Management of Asthma referenced a total of 1,654 studies to update the previous set of guidelines from 2004. The guidelines referenced 529 studies related to pharmacologic therapy for asthma, which included meta-analyses, systematic reviews of randomized controlled trials (RCTs), case control and cohort studies and non-analytic studies including case reports and case series. The guideline developers did not provide a breakdown of the specific number of randomized control trials (RCTs) and given the number of studies included in the systematic review we were not able to delineate all RCTs for each recommendation. However, the evidence review table related to inhaled corticosteroid dosing, for example, included 34 RCTs or meta-analyses and systematic reviews of RCTs. This review is not comprehensive and represents only a portion of the research on this area. Overall, the quality of the evidence regarding daily long-term asthma controller medication for patients who have persistent asthma assessment is high. The 34 RCTs referenced above included thousands of patients studied over long periods of time. The evidence supporting the recommendation of daily long-term asthma controller medication for patients with persistent asthma was graded Category A, which includes randomized controlled trials (RCTs), a rich body of data, evidence from end points of well-designed RCTs that provide a consistent pattern of findings in the population for which the recommendation is made and requires substantial numbers of studies involving substantial numbers of participants. 2019 Submission GINA, 2019 The entire GINA 2019 update included consideration of 123 newly identified publications, of an initial 1137 identified. The report does not state how many of the 123 were ultimately included. Nearly all evidence considered for inclusion in

	GINA are clinical trials, meta-analyses, or observational studies. Publications are reviewed by a Science Committee for quality and relevance. GINA conducts an ongoing, twice-yearly update of the evidence base for its recommendations. Levels of evidence (see above) are assigned to management recommendations where appropriate. The stated recommendations above, regarding medication therapy (in support of this measure), are based on 11 publications (RCTs, observational studies) and panel consensus.
Estimates of benefit and consistency across studies	2015 Submission The studies included evidence-based guidelines with and without systematic reviews/ evaluations, economic evaluations of asthma medications, survey based research and retrospective studies. Research and studies consistently show that appropriate medication management could potentially prevent a significant proportion of asthma-related costs. The evidence for daily long-term asthma control medication in patients with persistent asthma shows consistent benefit and high magnitude. The guidelines referenced 12 studies showing that the clinical effects of inhaled corticosteroids include reduction in severity of symptoms; improvement in asthma control and quality of life; improvement in peak expiratory flow and spirometry; diminished airway hyperresponsiveness; prevention of exacerbations; reduction in systemic corticosteroid courses, ED care, hospitalizations, and deaths due to asthma; and possibly the attenuation of loss of lung function in adults. Patients who have mild or moderate persistent asthma and are treated with ICS, compared to other single long-term control medications, demonstrate greater improvements in prebronchodilator forced expiratory volume (but not with long-term postbronchodilator forced expiratory volume); reduced airway hyperresponsiveness, symptom scores, exacerbation rates, and symptom frequency; as well as less use of supplemental SABA, fewer courses of oral systemic corticosteroids, and lower rates of hospitalization. The guideline also cites 9 studies showing that the frequency of SABA use can be clinically useful as a barometer of disease activity because increasing use of SABA has been associated with poor outcomes such as increased risk for death or near death in patients or increased risk of an acute exacerbation that requires an ED visit or hospitalization. 2019 Submission Studies have consistently shown that controller medications are associated with improved asthma control, and that overuse of reliever medications is indicative of poor asthma control.
What harms were identified?	2015 Submission Benefits: • Prevention and management of asthma symptoms • Improved quality of life • Reduction in the frequency and severity of asthma exacerbations

	• Fewer ED visits Harms: Potential adverse effects of long-term control and quick-relief medications The majority of research on harms relates to potential side-effects of asthma medications. However, the guidelines state that "ICSs are the most effective long-term therapy available for mild, moderate, or severe persistent asthma; in general, ICSs are well tolerated and safe at the recommended dosages (Evidence A). The potential but small risk of adverse events from the use of ICS treatment is well balanced by their efficacy." 2019 Submission Short-acting beta 2 agonist (SABA)-only treatment is no longer recommended for treatment of asthma in adults and adolescents. This change in guidelines was based on strong evidence that SABA-only treatment increased the risk of severe exacerbations and asthma-related death, and that adding any ICS significantly reduces the risk.
Identify any new studies conducted since the SR. Do the new studies change the conclusions from the SR?	No new studies that change the recommendations stated above have been identified.

1a.4 OTHER SOURCE OF EVIDENCE

If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.4.1 Briefly SYNTHESIZE the evidence that supports the measure. A list of references without a summary is not acceptable.

1a.4.2 What process was used to identify the evidence?

1a.4.3. Provide the citation(s) for the evidence.

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

1b.1. Briefly explain the rationale for this measure *(e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)*

<u>If a COMPOSITE</u> (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.

This measure assesses patients with persistent asthma whose asthma is being controlled through the use of long-term asthma controller medications. The improvement in quality envisioned by the use of this measure is for plans to identify patients who are frequently using short-term asthma reliever medications to treat asthma exacerbations or acute symptoms and to increase their adherence to long-term controller medications or adjust medications in order to improve outcomes. Increasing use of reliever medication or use more than two days a week for symptom control indicates the need to step up controller therapy (National Heart, Lung, and Blood Institute [NHLBI]/National Asthma and Education Prevention Program [NAEPP] 2007). According to the Asthma Regional Council of New England, two-thirds of adults and children who display asthma symptoms are considered "not well controlled" or "very poorly controlled" as defined by clinical practice guidelines (Stillman 2010). Increasing use and adherence to asthma controller medications can prevent and control asthma symptoms, improve quality of life, reduce the frequency and severity of asthma exacerbations, and potentially prevent a significant proportion of asthma-related costs (hospitalizations, emergency room visits and missed work and school days) (Akinbami 2009; NHLBI/NAEPP 2007).

Akinbami, L.J., J.E. Moorman, P.L. Garbe, E.J. Sondik. 2009. Status of Childhood Asthma in the United States, 1980–2007. Pediatrics 123;S131-45. doi: 10.1542/peds.2008-2233C.

National Heart Lung and Blood Institute/National Asthma Education and Prevention Program. 2007. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Washington (DC): National Heart Lung and Blood Institute (NHLBI), NIH Publication No. 07-4051. http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

Stillman, L. 2010. Living with Asthma in New England: Results from the 2006 BRFSS and Call-back Survey. A report by the Asthma Regional Council of New England (February). http://asthmaregionalcouncil.org/wpcontent/uploads/2014/02/2010_Living-with-Asthma-in-New-England1.pdf

1b.2. Provide performance scores on the measure as specified (<u>current and over time</u>) at the specified level of analysis. *(<u>This is required for maintenance of endorsement</u>. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*

The following data are extracted from HEDIS data collection reflecting the most recent years of measurement for this measure. Performance data is summarized at the health plan level and summarized by mean, standard deviation, minimum health plan performance, maximum health plan performance and performance at the 10th, 25th, 50th, 75th and 90th percentile. Data is stratified by year and product line (i.e. commercial, Medicaid).

The following data demonstrate the variation in the percentage of children and adults with persistent asthma who had a ratio of controller medications to total asthma medications of 0.50 or greater across health plans. In 2018 there was a 12 percentage point difference between commercial plans in the 10th percentile and commercial plans in the 90th percentile and 20 percentage point difference for Medicaid plans (totals). These gaps in performance underscore the opportunity for improvement.

Commercial Rate Ages 5-11

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 87.5% | 7.1% | 52.4% | 77.7% | 85.2% | 88.8% | 92.0% | 94.5% | 100% | 6.8%

2017 | 87.4% | 6.4% | 47.7% | 79.5% | 85.1% | 88.6% | 91.3% | 93.8% | 98.6% | 6.2%

2018 | 88.4% | 6.4% | 52.1% | 81.8% | 85.9% | 89.6% | 92.5% | 94.4% | 100% | 6.6%

Commercial Rate Ages 12-18

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 78.7% | 6.7% | 54.6% | 69.8% | 74.9% | 79.3% | 83.3% | 86.3% | 100% | 8.4%

2017 | 78.5% | 7.1% | 57.8% | 70.1% | 74.5% | 79.0% | 82.6% | 86.5% | 100% | 8.1%

2018 | 79.9% | 5.7% | 62.2% | 72.7% | 76.9% | 80.5% | 83.8% | 86.4% | 93.8% | 6.9%

Commercial Rate Ages 19-50

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 72.8% | 7.4% | 32.3% | 63.5% | 69.1% | 73.5% | 77.8% | 80.9% | 90.3% | 8.7%

2017 | 74.3% | 6.6% | 39.2% | 66.8% | 70.9% | 74.9% | 78.4% | 81.7% | 93.8% | 7.5%

2018 | 76.0% | 6.1% | 46.5% | 68.3% | 72.9% | 76.3% | 79.6% | 82.9% | 93.9% | 6.7%

Commercial Rate Ages 51-64

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 81.6% | 6.6% | 48.2% | 75.0% | 79.2% | 82.7% | 85.7% | 88.2% | 93.6% | 6.5%

2017 | 83.0% | 5.6% | 50.0% | 76.5% | 80.6% | 83.6% | 86.4% | 88.9% | 93.0% | 5.8%

2018 | 83.5% | 4.9% | 62.0% | 76.8% | 80.6% | 83.9% | 86.8% | 89.2% | 95.9% | 6.2%

Commercial Rate Ages 5-64 (Total)

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 78.2% | 6.5% | 46.4% | 70.5% | 75.7% | 79.3% | 82.2% | 84.7% | 100% | 6.5%

2017 | 79.1% | 5.7% | 53.5% | 72.3% | 76.5% | 79.4% | 82.6% | 85.2% | 92.2% | 6.2%

2018 | 80.1% | 5.1% | 56.6% | 73.9% | 77.3% | 80.7% | 83.6% | 85.7% | 93.5% | 6.2%

Medicaid Rate Ages 5-11

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 72.5% | 10.0% | 24.3% | 59.3% | 66.9% | 74.0% | 79.9% | 83.6% | 95.1% | 13.0%

2017 | 72.4% | 10.0% | 27.3% | 59.6% | 67.8% | 73.3% | 78.7% | 82.6% | 92.2% | 10.9%

2018 | 74.0% | 8.6% | 33.8% | 63.3% | 69.9% | 75.1% | 79.6% | 83.8% | 92.7% | 9.7%

Medicaid Rate Ages 12-18

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 62.7% | 9.8% | 11.3% | 50.8% | 57.5% | 63.1% | 68.8% | 73.2% | 95.4% | 11.3%

2017 | 63.4% | 8.9% | 25.0% | 52.5% | 58.9% | 64.3% | 68.5% | 73.1% | 92.4% | 9.6%

2018 | 65.4% | 8.4% | 23.2% | 55.4% | 61.3% | 66.1% | 70.7% | 74.4% | 95.5% | 9.4%

Medicaid Rate Ages 19-50

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 51.6% | 9.5% | 25.4% | 40.2% | 46.6% | 51.1% | 56.0% | 62.9% | 83.5% | 9.4%

2017 | 52.6% | 8.6% | 24.2% | 42.6% | 47.5% | 52.3% | 57.2% | 62.5% | 84.0% | 9.7%

2018 | 53.6% | 8.6% | 12.7% | 44.4% | 48.4% | 54.1% | 58.5% | 62.1% | 85.8% | 10.1%

Medicaid Rate Ages 51-64

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 55.1% | 10.4% | 18.5% | 41.5% | 48.1% | 56.0% | 61.8% | 67.2% | 83.6% | 13.7%

2017 | 56.3% | 9.8% | 21.8% | 45.6% | 50.4% | 55.1% | 62.4% | 67.2% | 93.4% | 12.0%

2018 | 57.1% | 9.0% | 16.1% | 47.0% | 52.5% | 56.6% | 61.8% | 66.7% | 90.5% | 9.3%

Medicaid Rate Ages 5-64 (Total)

YEAR| MEAN | ST DEV | MIN | 10TH | 25TH | 50TH | 75TH | 90TH | MAX | Interquartile Range

2016 | 61.1% | 10.3% | 14.3% | 48.3% | 55.6% | 62.3% | 67.4% | 72.4% | 88.2% | 11.8%

2017 | 61.4% | 10.3% | 21.6% | 50.4% | 57.0% | 62.4% | 67.0% | 72.1% | 89.2% | 10.1%

2018 | 63.0% | 8.4% | 21.5% | 52.4% | 58.7% | 63.6% | 68.4% | 71.6% | 89.2% | 9.7%

The data references are extracted from HEDIS data collection reflecting the most recent years of measurement for this measure. In 2018, HEDIS measures covered more than 190 million people. Below is a description of the denominator for this measure. It includes the number of health plans included in HEDIS data collection and the mean eligible population for the measure across health plans.

Commercial Ages 5-11

YEAR | N Plans | Mean Denominator Size per plan

2016 | 276 | 257

2017 | 267 | 257

2018 | 266 | 253

Commercial Ages 12-18

YEAR | N Plans | Mean Denominator Size per plan

2016 | 266 | 257

2017 | 261 | 236

2018 | 259 | 241

Commercial Ages 19-50

YEAR | N Plans | Mean Denominator Size per plan

2016 | 374 | 656

2017 | 368 | 689

2018 | 362 | 733

Commercial Ages 51-64

YEAR | N Plans | Mean Denominator Size per plan

2016 | 357 | 524

2017 | 364 | 541

2018 | 355 | 589

Commercial Ages 5-64 (Total)

YEAR | N Plans | Mean Denominator Size per plan

2016 | 403 | 1,473

2017 | 389 | 1,505

2018 | 383 | 1,588

Medicaid Ages 5-11

YEAR | N Plans | Mean Denominator Size per plan

2016 | 220 | 931

2017 | 219 | 957

2018 | 199 | 1,013

Medicaid Ages 12-18

YEAR | N Plans | Mean Denominator Size per plan

2016 | 216 | 641

2017 | 218 | 675

2018 | 199 | 767

Medicaid Ages 19-50

YEAR | N Plans | Mean Denominator Size per plan

2016 | 231 | 679

2017 | 232 | 788

2018 | 212 | 892

Medicaid Ages 51-64

YEAR | N Plans | Mean Denominator Size per plan

2016 | 203 | 336

2017 | 208 | 381

2018 | 187 | 447

Medicaid Ages 5-64 (Total)

YEAR | N Plans | Mean Denominator Size per plan

2016 | 248 | 2,298

2017 | 248 | 2,500

2018 | 221 | 2,841

1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.

N/A

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. *(This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*

HEDIS data are stratified by type of insurance (e.g. commercial, Medicaid). NCQA does not currently collect performance data stratified by race, ethnicity, or language. Escarce et al. have described in detail the difficulty of collecting valid data on race, ethnicity, and language at the health plan level (Escarce, 2011). While not specified in the measure, this measure can also be stratified by demographic variables, such as race/ethnicity or socioeconomic status, in order to assess the presence of health care disparities. The HEDIS Health Plan Measure Set contains two measures that can assist with stratification to assess health care disparities. The Race/Ethnicity Diversity of Membership and the Language Diversity of Membership measures were designed to promote standardized methods for collecting these data and follow Office of Management and Budget and Institute of Medicine guidelines for collecting and categorizing race/ethnicity and language data. In addition, NCQA's Multicultural Health Care Distinction Program outlines standards for collecting, storing and using race/ethnicity and language data to assess health care disparities.

Escarce, J.J., Carreon, R., Veselovskiy, G., Lawson, E.G. Collection of Race and Ethnicity Data by Health Plans has Grown Substantially, but Opportunities Remain to Expand Efforts. Health Affairs (Millwood) 2011; 30(10):1984-91. http://www.ncbi.nlm.nih.gov/pubmed/21976343

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4

Although HEDIS measures are not stratified by race and ethnicity, researchers have explored disparities in asthma outcomes and in utilization to health care services among both children and adults with asthma. In a recent 3-year observational study comparing asthma-related outcomes in black and white children with severe or difficult-to-treat asthma, Black children were found to be more likely to have very poorly controlled asthma, as well as use long-term systemic corticosteroids (Guilbert et al, 2019). In a separate population-based study of adults who have frequent asthma-related ED visits in California and Florida, black race, Hispanic ethnicity, and low socioeconomic status were all found to be significant predictors of multiple ED visits (Hasegawa et al, 2014).

Guilbert, T., Zeiger, R. S., Haselkorn, T., Iqbal, A., Alvarez, C., Mink, D. R., … Chipps, B. E. (2019). Racial disparities in asthma-related health outcomes in children with severe/difficult -to-treat asthma. The Journal of Allergy and Clinical Immunology: In practice, 7(2), 568-577. Retrieved from https://doi.org/10.1016/j.jaip.2018.07.050

Hasegawa, K., Tsugawa, Y., Brown, D. F., & Camargo, C. A. (2014). A population-based study of adults who frequently visit the emergency department for acute asthma. California and Florida, 2009–2010. Annals of the American Thoracic Society, 11(2), 158-166. doi:10.1513/annalsats.201306-166oc

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. ***Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.***

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. Subject/Topic Area *(check all the areas that apply):*

Respiratory, Respiratory : Asthma

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

Primary Prevention

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

Populations at Risk, Populations at Risk : Individuals with multiple chronic conditions

S.1. Measure-specific Web Page *(Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)*

N/A

S.2a. If this is an eMeasure, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

This is not an eMeasure **Attachment:**

S.2b. Data Dictionary, Code Table, or Value Sets *(and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)*

Attachment **Attachment:** 1800_AMR_Value_Sets_Fall_2019.xlsx

S.2c. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

No, this is not an instrument-based measure **Attachment:**

S.2d. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Not an instrument-based measure

S.3.1. For maintenance of endorsement: Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

No

S.3.2. For maintenance of endorsement, please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

N/A

S.4. Numerator Statement *(Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.*

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

The number of patients with persistent asthma who have a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.

S.5. Numerator Details *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Follow the steps below to identify numerator compliance.

Step 1: For each patient, count the units of asthma controller medications (see ASTHMA CONTROLLER MEDICATIONS LIST) dispensed during the measurement year.

When identifying medication units for the numerator, count each individual medication, defined as an amount lasting 30 days or less, as one medication unit. One medication unit equals one inhaler canister, one injection, one infusion, or a 30-day or less supply of an oral medication. For example, two inhaler canisters of the same medication dispensed on the same day count as two medication units and only one dispensing event.

Use the package size and units columns in the medications list to determine the number of canisters or injections. Divide the dispensed amount by the package size to determine the number of canisters or injections dispensed. For example, if the package size for an inhaled medication is 10g and pharmacy data indicates the dispensed amount is 30 g, this indicates 3 inhaler canisters were dispensed.

Step 2: For each patient, count the units of asthma reliever medications (see ASTHMA RELIEVER MEDICATIONS LIST) dispensed during the measurement year.

Step 3: For each patient, sum the units calculated in step 1 and step 2 to determine units of total asthma medications.

Step 4: For each patient, calculate the ratio of controller medications to total asthma medications using the following formula:

Units of Controller Medications (Step 1)/ Units of Total Asthma Medications (Step 3)

Step 5: Sum the total number of patients who have a ratio of 0.50 or greater in step 4.

ASTHMA CONTROLLER MEDICATIONS LIST:

-Antiasthmatic combinations: dyphylline-guaifenesin

-Antibody inhibitors: omalizumab

-Anti-interleukin-5: benralizumab; mepolizumab; reslizumab

-Inhaled steroid combinations: budesonide-formoterol; fluticasone-salmeterol; fluticasone-vilanterol; formoterol-mometasone

-Inhaled corticosteroids: beclomethasone; budesonide; ciclesonide; flunisolide; fluticasone; mometasone

-Leukotriene modifiers: montelukast; zafirlukast; zileuton

-Methylxanthines: Theophylline.

ASTHMA RELIEVER MEDICATIONS LIST:

-Short-acting, inhaled beta-2 Agonists: albuterol; levalbuterol.

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

All patients 5–64 years of age as of December 31 of the measurement year who have persistent asthma by meeting at least one of the following criteria during both the measurement year and the year prior to the measurement year:

• At least one emergency department visit with asthma as the principal diagnosis

• At least one acute inpatient encounter or discharge with asthma as the principal diagnosis

• At least four outpatient visits, observation visits, telephone visits, or online assessments on different dates of service, with any diagnosis of asthma AND at least two asthma medication dispensing events for any controller or reliever medication. Visit type need not be the same for the four visits.

• At least four asthma medication dispensing events for any controller medication or reliever medication

S.7. Denominator Details *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

The eligible population for the denominator is defined by following the series of steps below:

Step 1: Identify patients 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 (ED Value Set) with asthma as the principal diagnosis (Asthma Value Set).

• At least one acute inpatient encounter (Acute Inpatient Value Set) with asthma as the principal diagnosis (Asthma Value Set) without telehealth (Telehealth Modifier Value Set; Telehealth POS Value Set).

• At least one acute inpatient discharge with a principal diagnosis of asthma (Asthma Value Set). To identify an acute inpatient discharge: 1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set). 2. Exclude nonacute inpatient stays (Nonacute Inpatient Stay Value Set). 3. Identify the discharge date for the stay.

• At least four outpatient visits (Outpatient Value Set), observation visits (Observation Value Set), telephone visits (Telephone Visits Value Set) or online assessments (Online Assessments Value Set) on different dates of service, with any diagnosis of asthma (Asthma Value Set) AND at least two asthma medication dispensing events for any controller medication (Asthma Controller Medications List) or reliever medication (Asthma Reliever Medications List). Visit type need not be the same for the four visits. Use all the medication lists in the tables below to identify asthma controller and reliever medications.

Only three of the four visits may be an outpatient telehealth visit, a telephone visit or an online assessment. Identify outpatient telehealth visits by the presence of a telehealth modifier (Telehealth Modifier Value Set) or the presence of a telehealth POS code (Telehealth POS Value Set) associated with the outpatient visit.

• At least four asthma medication dispensing events for any controller medication (Asthma Controller Medications List) or reliever medication (Asthma Reliever Medications List).

Step 2: A patient identified as having persistent asthma because of at least four asthma medication dispensing events, where leukotriene modifiers or antibody inhibitors were the sole asthma medication dispensed in that year, must also have at least one diagnosis of asthma (Asthma Value Set), in any setting, in the same year as the leukotriene modifier or antibody inhibitor (i.e., measurement year or year prior to the measurement year).

See attached value set Excel document for the following value sets and medications lists:

- ED Value Set
- Asthma Value Set
- Acute Inpatient Value Set
- Outpatient Value Set
- Observation Value Set
- Asthma Controller Medications List
- Asthma Reliever Medications List
- Telehealth Modifier Value Set
- Telehealth POS Value Set
- Inpatient Stay Value Set
- Nonacute Inpatient Stay Value Set
- Telephone Visits Value Set
- Online Assessments Value Set

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

1) Exclude patients who had any of the following diagnoses any time during the patient's history through the end of the measurement year (i.e., December 31):

-COPD

-Emphysema

-Obstructive Chronic Bronchitis

-Chronic Respiratory Conditions Due To Fumes/Vapors

-Cystic Fibrosis

-Acute Respiratory Failure

2) Exclude any patients who had no asthma medications (controller or reliever) dispensed during the measurement year.

3) Exclude patients in hospice.

S.9. Denominator Exclusion Details *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

1) Exclude patients who had any diagnosis of Emphysema (Emphysema Value Set; Other Emphysema Value Set), COPD (COPD Value Set), Obstructive Chronic Bronchitis (Obstructive Chronic Bronchitis Value Set), Chronic Respiratory Conditions Due To Fumes/Vapors (Chronic Respiratory Conditions Due to Fumes/Vapors Value Set), Cystic Fibrosis (Cystic Fibrosis Value Set) or Acute Respiratory Failure (Acute Respiratory Failure Value Set) any time during the patient's history through the end of the measurement year (i.e., December 31).

2) Exclude any patients who had no asthma medications (controller or reliever) (Asthma Controller Medications List; Asthma Reliever Medications List) dispensed during the measurement year.

3) Exclude patients who use hospice services or elect to use a hospice benefit any time during the measurement year, regardless of when the services began. These patients may be identified using various methods, which may include but are not limited to enrollment data, medical record, claims/encounter data (Hospice Encounter Value Set, Hospice Intervention Value Set), or supplemental data for this required exclusion.

See attached value set Excel document for the following value sets and medications list:

- Emphysema Value Set

– Other Emphysema Value Set

– COPD Value Set

– Obstructive Chronic Bronchitis Value Set

– Chronic Respiratory Conditions Due to Fumes/Vapors Value Set

– Cystic Fibrosis Value Set

– Acute Respiratory Failure Value Set

-Asthma Controller Medications List

-Asthma Reliever Medications List

-Hospice Encounter Value Set

-Hospice Intervention Value Set

S.10. Stratification Information *(Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)*

Four age stratifications and a total rate are reported for this measure. Age for each stratum is based on the patient's age as of the end of the Measurement Year (e.g., December 31).

1) 5–11 years

2) 12–18 years

3) 19-50 years

4) 51-64 years

5) Total (5-64 years)

The age strata 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 compared to adolescents and adults. Implementation requires further stratification of the age ranges to enable creation of comparable cohorts that align with child health populations.

S.11. Risk Adjustment Type (Select type. Provide specifications for risk stratification in measure testing attachment)

No risk adjustment or risk stratification

If other:

S.12. Type of score:

Rate/proportion

If other:

S.13. Interpretation of Score *(Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)*

Better quality = Higher score

S.14. Calculation Algorithm/Measure Logic (*Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)*

Refer to items S.5 (Numerator details), S.7 (Denominator details), S.9 (Denominator exclusions details) and S.2b (Data Dictionary).

This measure determines the percentage of patients 5 – 64 years of age with persistent asthma who had a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year. The measure calculation is detailed in the steps listed below:

Step 1: Determine the eligible population

Step 2: Remove patients who meet Denominator Exclusions to get the Denominator

Step 3: Determine the numerator. For each patient:

a) count the units of controller medications dispensed during the measurement year.

b) count the units of reliever medications dispensed during the measurement year.

c) calculate the ratio of controller medications to total asthma medications using the following formula:

Units of Controller Medications (Step 3a)/ Units of Total Asthma Medications (Step 3a + Step 3b)

Step 4: Calculate the measure rate: the number of patients who have a ratio of 0.50 or greater (Step 3c) /number of patients in the Denominator (Step 2) .

S.15. Sampling *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*

IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.

N/A

S.16. Survey/Patient-reported data *(If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)*

Specify calculation of response rates to be reported with performance measure results.

N/A

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

If other, please describe in S.18.

Claims

S.18. Data Source or Collection Instrument *(Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)*

IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.

This measure is based on administrative claims collected in the course of providing care to health plan members. NCQA collects the Healthcare Effectiveness Data and Information Set (HEDIS) data for this measure directly from Health Management Organizations and Preferred Provider Organizations via NCQA's online data submission system.

S.19. Data Source or Collection Instrument *(available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*

No data collection instrument provided

S.20. Level of Analysis *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)*

Health Plan

S.21. Care Setting *(Check ONLY the settings for which the measure is SPECIFIED AND TESTED)*

Outpatient Services

If other:

S.22. COMPOSITE Performance Measure - Additional Specifications *(Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)*

N/A

2. Validity – See attached Measure Testing Submission Form

AMR_nqf_testing_attachment_7.1.docx

2.1 For maintenance of endorsement

Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.

Yes

2.2 For maintenance of endorsement

Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.

Yes

2.3 For maintenance of endorsement

Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.

No - This measure is not risk-adjusted

NATIONAL QUALITY FORUM—Measure Testing (subcriteria 2a2, 2b1-2b6)

Measure Number (*if previously endorsed*)**:** **1800**
Measure Title: **Asthma Medication Ratio**
Date of Submission: **8/15/2019**

Type of Measure:

☐ **Outcome (*including PRO-PM*)**	☐ **Composite – *STOP – use composite testing form***
☐ Intermediate Clinical Outcome	☐ Cost/resource
☒ Process *(including Appropriate Use)*	☐ Efficiency
☐ Structure	

Instructions

- **Measures must be tested for all the data sources and levels of analyses that are specified. *If there is more than one set of data specifications or more than one level of analysis, contact NQF staff* about how to present all the testing information in one form.**
- **For all measures, sections 1, 2a2, 2b1, 2b2, and 2b4 must be completed.**
- **For outcome and resource use measures, section 2b3 also must be completed.**
- **If specified for multiple data sources/sets of specificaitons (e.g., claims and EHRs), section 2b5 also must be completed.**
- **Respond to all questions as instructed with answers immediately following the question. All information on testing to demonstrate meeting the subcriteria for reliability (2a2) and validity (2b1-2b6) must be in this form. An appendix for *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.**
- **If you are unable to check a box, please highlight or shade the box for your response.**
- **Maximum of 25 pages (*incuding questions/instructions;* minimum font size 11 pt; do not change margins). *Contact NQF staff if more pages are needed.***
- **Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.**
- **For information on the most updated guidance on how to address social risk factors variables and testing in this form refer to the release notes for version 7.1 of the Measure Testing Attachment.**

Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the testing results for this measure meet NQF's evaluation criteria for testing.

2a2. Reliability testing [10] demonstrates the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise. For instrument-based measures (including PRO-PMs) and composite performance measures, reliability should be demonstrated for the computed performance score.

2b1. Validity testing [11] demonstrates that the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality. For instrument-based measures (including PRO-PMs) and composite performance measures, validity should be demonstrated for the computed performance score.

2b2. Exclusions are supported by the clinical evidence and are of sufficient frequency to warrant inclusion in the specifications of the measure; [12]

AND

If patient preference (e.g., informed decisionmaking) is a basis for exclusion, there must be evidence that the exclusion impacts performance on the measure; in such cases, the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately). [13]

2b3. For outcome measures and other measures when indicated (e.g., resource use):

- **an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified; is based on patient factors (including clinical and social risk factors) that influence the measured outcome and are present at start of care; [14,15] and has demonstrated adequate discrimination and calibration**

OR

- **rationale/data support no risk adjustment/ stratification.**

2b4. Data analysis of computed measure scores demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful [16] differences in performance;

OR

there is evidence of overall less-than-optimal performance.

2b5. If multiple data sources/methods are specified, there is demonstration they produce comparable results.

2b6. Analyses identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias.

Notes

10. Reliability testing applies to both the data elements and computed measure score. Examples of reliability testing for data elements include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing of the measure score addresses precision of measurement (e.g., signal-to-noise).

11. Validity testing applies to both the data elements and computed measure score. Validity testing of data elements typically analyzes agreement with another authoritative source of the same information. Examples of validity testing of the measure score include, but are not limited to: testing hypotheses that the measures scores indicate quality of care, e.g., measure scores are different for groups known to have differences in quality assessed by another valid quality measure or method; correlation of measure scores with another valid indicator of quality for the specific topic; or relationship to conceptually related measures (e.g., scores on process measures to scores on outcome measures). Face validity of the measure score as a quality indicator may be adequate if accomplished through a systematic and transparent process, by identified experts, and explicitly addresses whether performance scores resulting from the measure as specified can be used to distinguish good from poor quality. The degree of consensus and any areas of disagreement must be provided/discussed.

12. Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, variability of exclusions across providers, and sensitivity analyses with and without the exclusion.

13. Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

14. Risk factors that influence outcomes should not be specified as exclusions.

15. With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74 percent v. 75 percent) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v. $5,025) is practically meaningful. Measures with overall less-than-optimal performance may not demonstrate much variability across providers.

1. DATA/SAMPLE USED FOR ALL TESTING OF THIS MEASURE

Often the same data are used for all aspects of measure testing. In an effort to eliminate duplication, the first five questions apply to all measure testing. If there are differences by aspect of testing,(e.g., reliability vs. validity) be sure to indicate the specific differences in question 1.7.

1.1. What type of data was used for testing? (*Check all the sources of data identified in the measure specifications and data used for testing the measure. Testing must be provided for all the sources of data specified and intended for measure implementation.* ***If different data sources are used for the numerator and denominator, indicate N [numerator] or D [denominator] after the checkbox.***)

Measure Specified to Use Data From: (***must be consistent with data sources entered in S.17***)	**Measure Tested with Data From:**
☐ abstracted from paper record	☐ abstracted from paper record
☒ claims	☒ claims
☐ registry	☐ registry
☐ abstracted from electronic health record	☐ abstracted from electronic health record
☐ eMeasure (HQMF) implemented in EHRs	☐ eMeasure (HQMF) implemented in EHRs
☐ other:	☐ other:

1.2. If an existing dataset was used, identify the specific dataset (*the dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry*).

2019 Update:

In addition to field testing and data from health plans that submitted HEDIS data to NCQA, we examined data from a study that used the Kaiser Permanente Southern California (KPSC) patient database, which comprises pharmacy dispensing data; inpatient, outpatient and emergency department diagnosis coding data; health plan enrollment; demographic characteristics; and socioeconomic status (Desai, 2019).

Desai, S.H. et al. The HEDIS Medication Management for People with Asthma measure is not associated with improved outcomes. J Allergy Clin Immunol Pract. 2019 Apr;7(4):1327-1329.e8. doi: 10.1016/j.jaip.2018.10.015. Epub 2018 Oct 25.

1.3. What are the dates of the data used in testing?

Initial testing: During measure development, we conducted a comprehensive field test to assess feasibility of data collection and validity of the numerator, denominator and exclusions. This field test used data from measurement year 2009, which included health plan data spanning January 1, 2008 through December 31, 2009.

Systematic evaluation of face validity: The measure was tested for face validity throughout measure development from 2010 to 2012. The technical expert panels have also reviewed the measure for relevance, scientific soundness, and feasibility at regular intervals since 2012.

Measure score reliability and construct validity testing: We assessed measure score reliability and construct validity using data from all health plans that submitted HEDIS data to NCQA for this measure in 2018, which used data for measurement year 2017. We conducted an additional assessment of construct validity, by examining results from the Kaiser Permanente Southern California's (KPSC) patient database, based on data from January 1, 2012 through December 31, 2014.

1.4. What levels of analysis were tested? (*testing must be provided for <u>all</u> the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan*)

Measure Specified to Measure Performance of: (***must be consistent with levels entered in item S.20***)	**Measure Tested at Level of:**
☐ individual clinician	☐ individual clinician
☐ group/practice	☐ group/practice
☐ hospital/facility/agency	☐ hospital/facility/agency
☒ health plan	☒ health plan
☐ other:	☐ other:

1.5. How many and which <u>measured entities</u> were included in the testing and analysis (by level of analysis and data source)? (*identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample*)

Initial testing: During measure development, we conducted a comprehensive field test to assess feasibility of data collection and validity of the numerator, denominator and exclusions. This field test used data from measurement year 2009, which included health plan data spanning January 1, 2008 through December 31, 2009.

Systematic evaluation of face validity: Throughout the entire measure development process from 2010-2012, the measure was tested for face validity using panels of experts with specific clinical, methodologic and operational expertise. The technical expert panels have also reviewed the measure for relevance, scientific soundness, and feasibility at regular intervals since 2012. See Additional Information: Ad.1. Workgroup/Expert Panel Involved in Measure Development for names and affiliation of expert panel:

1) NCQA's Respiratory Measurement Advisory Panel (RMAP) is comprised of 10 experts (8 physicians, 1 pharmacist and 1 researcher) in clinical pulmonary care, including health care providers and policy makers.

2) NCQA's Technical Measurement Advisory Panel is a 12-member panel representing health plans methodologists, clinicians and HEDIS auditors.

3) NCQA's Committee on Performance Measurement (CPM) oversees the HEDIS measurement set and includes representation by purchasers, consumers, health plans, health care providers and policy makers. This panel is made up of 17 members. The CPM is organized and managed by NCQA and reports to the NCQA Board of Directors and is responsible for advising NCQA staff on the development and maintenance of performance measures. CPM members reflect the diversity of constituencies that performance measurement serves; some bring other perspectives and additional expertise in quality management and the science of measurement.

4) [2015 Update] NCQA's HEDIS Expert Coding Panel reviewed and provided feedback on the vocabularies and definitions found in the values sets used to identify each measure component as well as the more recent mapping of ICD-9 codes to ICD-10 codes.

In 2005, the draft measure was posted for public comment, a 30-day period of review that allowed interested parties to offer feedback to NCQA about the measure. Stakeholders from various types of organizations submitted 42 comments on the measure.

2019 Update: Measure score reliability and construct validity were calculated from the 389 Commercial health plans and 248 Medicaid health plans that submitted data on this measure to HEDIS in 2018. The plans were geographically diverse and varied in size. Additional assessment of construct validity, based on the study of the commercial membership of the KPSC health plan, was derived from the commercial membership of the KPSC health plan, a racially and ethnically diverse group encompassing over 4,000,000 members residing in a broad swath of southern California.

1.6. How many and which patients were included in the testing and analysis (by level of analysis and data source)? (*identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis); if a sample was used, describe how patients were selected for inclusion in the sample*)

Patient sample for initial measure field testing: We collected data from 9 plans (7 Commercial and 7 Medicaid plans). Below is a description of the sample. It includes the number of health plans that provided data for the measurement year 2009 and the median eligible population for the measure across health plans.

Product Type	Number of Plans	Median Number of Eligible Patients per Plan
Commercial	7	3,920
Medicaid	7	2,577

2019 Update

Patient sample for measure score reliability and construct validity: Data are summarized at the health plan level and stratified by product line (i.e. commercial, Medicaid). Below is a description of the number of health plans that submitted data for this measure to HEDIS in 2018 (measurement year 2017) and the median eligible population for the measure across health plans.

Product Type	Number of Plans	Median Number of Eligible Patients per Plan
Commercial	389	1,505
Medicaid	248	2,500

The KPSC study population consisted of 18,554 subjects aged 5 to 64 years who were enrolled in the health plan between January 1, 2012, and December 31, 2014, and who qualified for entry into the HEDIS persistent asthma population by meeting at least one of the HEDIS inclusion criteria during both 2012 and 2013.

1.7. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing reported below.

During measure development, we conducted a comprehensive field test to assess feasibility of data collection, reliability and validity of the numerator, denominator and exclusions using data submitted by 9 plans (7 Commercial and 7 Medicaid plans). The field test used the measurement year 2009 that included data from January 1, 2008 through December 31, 2009.

Face validity was demonstrated through a systematic assessment of face validity during measure development and at regular intervals since then. Per NQF instructions we have described the composition of the technical expert panel which assessed face validity in the data sample questions above.

2019 Update

There were no differences in the HEDIS data submitted to NCQA used for reliability and construct validity testing. For construct validity testing, we also used data from the KPSC study cited above.

1.8 What were the social risk factors that were available and analyzed? For example, patient-reported data (e.g., income, education, language), proxy variables when social risk data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate) which do not have to be a proxy for patient-level data.

2019 and 2015 Submission:

Social risk factor data were not available in reported results. This measure is specified to be reported separately by Medicare, Medicaid and commercial plan types and by age (5-11 years; 12-18 years; 19-50 years; 51-64 years), which serves as a proxy for income and other socioeconomic factors.

2a2. RELIABILITY TESTING

***Note**: If accuracy/correctness (validity) of data elements was empirically tested, separate reliability testing of data elements is not required – in 2a2.1 check critical data elements; in 2a2.2 enter "see section 2b2 for validity testing of data elements"; and skip 2a2.3 and 2a2.4.*

2a2.1. What level of reliability testing was conducted? (*may be one or both levels*)

☐ **Critical data elements used in the measure** (*e.g., inter-abstractor reliability; data element reliability must address ALL critical data elements*)

☒ **Performance measure score** (e.g., *signal-to-noise analysis*)

2a2.2. For each level checked above, describe the method of reliability testing and what it tests (*describe the steps—do not just name a method; what type of error does it test; what statistical analysis was used*)

2019 and 2015 Submission:

We utilized the Beta-binomial model (Adams 2009) to assess how well one can confidently distinguish the performance of one accountable entity from another. Conceptually, the Beta-binomial model is the ratio of signal to noise. The signal is the proportion of the variability in measured performance that can be explained by real differences in performance. The Beta-binomial model is an appropriate model when estimating the reliability of simple pass/fail rate measures as is the case with most HEDIS measures. Reliability scores range from 0.0 to 1.0. A score of zero implies that all variation is attributed to measurement error (i.e., noise), whereas a reliability of 1.0 implies that all variation is caused by a real difference in performance (across accountable entities).

Adams, J.L. The Reliability of Provider Profiling: A Tutorial. Santa Monica, California: RAND Corporation. TR-653-NCQA, 2009

2a2.3. For each level of testing checked above, what were the statistical results from reliability testing? (e.*g., percent agreement and kappa for the critical data elements; distribution of reliability statistics from a signal-to-noise analysis*)

2019 Update:

Reliability statistics for this measure were calculated using HEDIS health plan performance data for 2018. The results are as follows:

Beta-Binomial Statistics:

Commercial			Medicaid		
Avg.	Overall	10th-90th	Avg.	Overall	10th-90th
0.83	0.95	0.58-0.98	0.95	0.99	0.88-0.99

2a2.4 What is your interpretation of the results in terms of demonstrating reliability? (i.*e., what do the results mean and what are the norms for the test conducted?*)

Interpretation of measure score reliability testing:

Reliability scores can vary from 0.0 to 1.0. A score of zero implies that all variation is attributed to measurement error (noise) whereas a reliability of 1.0 implies that all variation is caused by a real difference in performance (signal). Generally, a minimum reliability score of 0.7 is used to indicate sufficient signal strength to discriminate performance between accountable entities. The testing suggests that all indicators within this measure have good reliability between 0.7 and 1.0.

2b1. VALIDITY TESTING

2b1.1. What level of validity testing was conducted? (*may be one or both levels*)

☐ **Critical data elements** (*data element validity must address ALL critical data elements*)

☒ **Performance measure score**

☒ **Empirical validity testing**

☒ **Systematic assessment of face validity of performance measure score as an indicator** of quality or resource use (*i.e., is an accurate reflection of performance on quality or resource use and can distinguish good from poor performance*) **NOTE**: Empirical validity testing is expected at time of maintenance review; if not possible, justification is required.

2b1.2. For each level of testing checked above, describe the method of validity testing and what it tests (*describe the steps—do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used)*

METHOD OF ASSESSING FACE VALIDITY

2012 Submission Form [Testing Data]: NCQA tested the measure for face validity using a panel of stakeholders with relevant clinical expertise and research and measurement, experience. This panel included representatives from key stakeholder groups, including the CDC, pulmonologists, provider and deliver organizations and researchers (See list of members for the Respiratory Advisory Panel (RMAP) under section Ad.1). RMAP experts reviewed the results of the field test and assessed whether the results were consistent with expectations, whether the measure represented quality care, and whether we were measuring the most important aspect of care in this area.

2015 Update: NCQA has identified and refined measure management into a standardized process called the HEDIS measure life cycle.

STEP 1: NCQA staff identifies areas of interest or gaps in care. Clinical expert panels (MAPs—whose members are authorities on clinical priorities for measurement) participate in this process. Once topics are identified, a literature review is conducted to find supporting documentation on their importance, scientific soundness and feasibility. This information is gathered into a work-up format. The work-up is vetted by NCQA's Measurement Advisory Panels (MAPs), the Technical Measurement Advisory Panel (TMAP) and the Committee on Performance Measurement (CPM) as well as other panels as necessary.

The asthma medication ratio measure was developed in 2010 to assess patients with persistent asthma whose asthma is being controlled through long-term asthma controller medications. NCQA and the Respiratory Measurement Advisory Panel worked together to develop the most appropriate measure for assessing asthma medication adherence.

STEP 2: Development ensures that measures are fully defined and tested before the organization collects them. MAPs participate in this process by helping identify the best measures for assessing health care

performance in clinical areas identified in the topic selection phase. Development includes the following tasks: (1) Prepare a detailed conceptual and operational work-up that includes a testing proposal and (2) Collaborate with health plans to conduct field-tests that assess the feasibility and validity of potential measures. The CPM uses testing results and proposed final specifications to determine if the measure will move forward to Public Comment.

The asthma medication ratio measure was written and field-tested in 2010. After reviewing field test results, the CPM recommended to send the measure to public comment with a majority vote in 2011.

STEP 3: Public Comment is a 30-day period of review that allows interested parties to offer feedback to NCQA and the CPM about new measures or about changes to existing measures. NCQA MAPs and technical panels consider all comments and advise NCQA staff on appropriate recommendations brought to the CPM. The CPM reviews all comments before making a final decision about Public Comment measures. New measures and changes to existing measures approved by the CPM and NCQAs Board of Directors will be included in the next HEDIS year and reported as first-year measures.

The asthma medication ratio measure was released for Public Comment in 2011 prior to publication in HEDIS. We received and responded to 42 comments on this measure. The CPM recommended moving this measure to first year data collection by a majority vote.

STEP 4: First-year data collection requires organizations to collect, be audited on and report these measures, but results are not publicly reported in the first year and are not included in NCQA's State of Health Care Quality, Quality Compass or in accreditation scoring. The first-year distinction guarantees that a measure can be effectively collected, reported and audited before it is used for public accountability or accreditation. This is not testing—the measure was already tested as part of its development—rather, it ensures that there are no unforeseen problems when the measure is implemented in the real world. NCQA's experience is that the first year of large-scale data collection often reveals unanticipated issues. After collection, reporting and auditing on a one-year introductory basis, NCQA conducts a detailed evaluation of first-year data. The CPM uses evaluation results to decide whether the measure should become publicly reportable or whether it needs further modifications.

The asthma medication ratio measure was introduced to HEDIS in 2011. Organizations reported the measures in the first year and the results were analyzed for public reporting in the following year. Slight adjustments were made to the measure and it was again analyzed for public reporting in 2013. The CPM recommended moving this measure public reporting with a majority vote in 2013.

STEP 5: Public reporting is based on the first-year measure evaluation results. If the measure is approved, it will be publicly reported and may be used for scoring in accreditation.

The asthma medication ratio measure has been publicly reported in HEDIS since 2013.

STEP 6: Evaluation is the ongoing review of a measure's performance and recommendations for its modification or retirement. Every measure is reviewed for reevaluation at least every three years. NCQA staff continually monitors the performance of publicly reported measures. Statistical analysis, audit result review and user comments through NCQA's Policy Clarification Support portal contribute to measure refinement during re-evaluation. Information derived from analyzing the performance of existing measures is used to improve development of the next generation of measures.

Each year, NCQA prioritizes measures for re-evaluation and selected measures are researched for changes in clinical guidelines or in the health care delivery systems, and the results from previous years are analyzed. Measure work-ups are updated with new information gathered from the literature review, and the appropriate MAPs review the work-ups and the previous year's data. If necessary, the measure specification may be updated or the measure may be recommended for retirement. The CPM reviews recommendations from the evaluation process and approves or rejects the recommendation. If approved, the change is included in the next year's HEDIS Volume 2.

The clinical guideline recommendations for medication management of asthma have not changed since the measure was developed in 2010; therefore, we have not made any significant changes to the medication ratio measure since it was last endorsed on January 31, 2012.

Expert Participation

This measure was tested for face validity with input from three expert panels. Guidelines from the National Heart, Lung and Blood Institute/National Asthma Education and Prevention Program in 2007 were also a strong authoritative source in applying the evidence for the asthma medication ratio measure.

We list an overview of each panel here. Please refer to Ad.1 in the submission form for the names and affiliation of experts in each panel.

1. Respiratory Measurement Advisory Panel includes 10 members (eight physicians, one pharmacist and a researcher) with expertise in respiratory care and quality measurement.

2. The Technical Measurement Advisory Panel includes 12 members, including representation by health plans, methodologists, clinician and auditors.
3. NCQA's Committee on Performance Measurement (CPM) oversees the evolution of the measurement set and includes representation by purchasers, consumers, health plans, health care providers and policy makers. This panel is made up of 16 members. The CPM is organized and managed by NCQA and reports to the NCQA Board of Directors and is responsible for advising NCQA staff on the development and maintenance of performance measures. CPM members reflect the diversity of constituencies that performance measurement serves; some bring other perspectives and additional expertise in quality management and the science of measurement.

ICD-10 CONVERSION:

In preparation for the national implementation of ICD-10 in 2015, NCQA conducted a systematic mapping of all value sets maintained by the organization to ensure the new values used for reporting maintained the reliability, validity and intent of the original specification.

Steps in ICD-9 to ICD-10 Conversion Process

1. NCQA first identified value sets within the measure that included ICD-9 codes. We used General Equivalence Mapping (GEM)to identify ICD-10 codes that map to ICD-9 codes and reviewed GEM mapping in both directions (ICD-9 to ICD-10 and ICD-10 to ICD-9) to identify potential trending issues.
2. NCQA then searched for additional codes (not identified by GEM mapping step) that should be considered due to the expansion of concepts in ICD-10. Using ICD-10 tabular list and ICD-10 Index, searches by diagnosis or procedure name were conducted to identify appropriate codes.
3. NCQA HEDIS Expert Coding Panel review: Updated value set recommendations were presented to for expert review and feedback.
4. NCQA RMAP clinical review: Due to increased specificity in ICD-10, new codes and definitions require review to confirm the diagnosis or procedure is consistent and appropriate given the scope of the measure.
5. New value sets containing ICD-10 code recommendations were for public review and comment in 2014 and updated in 2015. Comments received were reconciled with additional feedback from HEDIS Expert Coding Panel and MAPs as needed.
6. NCQA staff finalized value sets containing ICD-10 codes for publication in 2015.

Tools Used to Identify/Map to ICD-10

All tools used for mapping/code identification from CMS ICD-10 website (http://www.cms.gov/Medicare/Coding/ICD10/2012-ICD-10-CM-and-GEMs.html).

GEM, ICD-10 Guidelines, ICD-10-CM Tabular List of Diseases and Injuries, ICD-10-PCS Tabular List.

Expert Participation

The NCQA HEDIS Expert Coding Panel reviewed and provided feedback on staff recommendations. Names and credentials of the experts who served on these panels are listed under **Additional Information, Ad. 1. Workgroup/Expert Panel Involved in Measure Development**.

2019 Update:

METHOD OF TESTING CONSTRUCT VALIDITY:

We tested for construct validity by exploring whether the age strata within this measure were correlated with one another. We hypothesized that organizations that perform well on one age stratum should perform well on all strata. To test these correlations, we used a Pearson correlation test. This test estimates the strength of the linear association between two continuous variables; the magnitude of correlation ranges from -1 and +1. A value of 1 indicates a perfect linear dependence in which increasing values on one variable is associated with increasing values of the second variable. A value of 0 indicates no linear association. A value of -1 indicates a perfect linear relationship in which increasing values of the first variable is associated with decreasing values of the second variable.

For this measure, we specifically hypothesized:
1. Performance between age strata and the total rate would be positively correlated with one another.

Results from the KPSC study demonstrated validity by assessing whether the asthma medication ratio (AMR) measure is a clinically meaningful predictor of improved asthma outcomes. Asthma outcomes included asthma-coded hospitalizations and ED visits, number of canisters of asthma rescue inhaler dispensed, and oral corticosteroid dispensing occurring within 7 days of an asthma-coded inpatient or outpatient visits. Covariate adjustments were made for age, gender, ethnicity, median household income, BMI, smoking, insurance status, Charlson comorbidity score (for adults), Rhee risk score (for children), asthma specialty visits, non-asthma ED visits, and total outpatient visits. Poisson regression with robust error variance was used to estimate risk ratios for adverse outcomes. Separate analyses were carried out for pediatric subjects (aged 5-17 years), adult subjects (aged 18-64 years), and the total study population (aged 5-64 years).

2b1.3. What were the statistical results from validity testing? (*e.g., correlation; t-test*)

RESULTS OF FACE VALIDITY ASSESSMENT:

For the initial field test in 2010, we calculated the measure performance rate stratified by age group and discussed the validity of the performance results with the expert panels (Respiratory Measurement Advisory Panel and the Committee on Performance Measurement). The expert panels agreed that the performance on the asthma ratio measure was an accurate representation of quality performance and distinguished performance among health plans.

2010 Field Test: Performance Rates on the Asthma Medication Ratio Measure*

	Age Group	Denominator	Numerator	Performance Rate
Commercial	**Ages 5-11**	5,670	3,454	**60.9%**
	Ages 12-50	19,242	11,272	**58.6%**
	Ages 51-64	10,944	7,352	**67.2%**
	Total (Ages 5-64)	35,856	22,078	**61.6%**
Medicaid	**Ages 5-11**	8,301	4,934	**59.4%**
	Ages 12-50	11,794	5,540	**47.0%**
	Ages 51-64	1,529	740	**48.4%**
	Total (Ages 5-64)	21,624	11,214	**51.9%**

**Includes data submitted by 7 Commercial plans and 7 Medicaid plans using measurement year 2009*

We assessed validity of the denominator criteria to ensure the measure is capturing people with persistent asthma. Entry into the eligible population for persistent asthma requires a combination of multiple outpatient encounters and diagnoses. Approximately 90% of commercial members and 88% of Medicaid members were included in the eligible population by having at least four asthma medication dispensing events in the measurement year and the year prior. The remaining 10-12% of members had at least one ED visit with a diagnosis of asthma, one inpatient visit with a diagnosis of asthma, or four outpatient visits with a diagnoses of asthma plus two asthma medication dispensing events in the measurement year and the year prior.

We examined whether encounters could be linked to the same event and therefore do not accurately capture a population with persistent asthma. Using the field test dataset, NCQA examined the different scenarios where encounters were less than 14 days apart (a standard HEDIS time frame for linked encounters) to determine the effect on the measure's eligible population. Section 2b3.3 details the results of this additional analysis revealing the proportion of the population that would potentially be excluded from the EP as a result of the additional criterion of <14 days between encounters. The next table details the proportion of the population that would potentially be excluded from the EP as a result of the additional criterion of <14 days between encounters. For this table, "Eligible Population" (EP) refers only to those members who satisfied the "Combination" eligibility criterion of at least four outpatient encounters and at least two prescription events.

Proportion of the Eligible Population affected by a ≥14 Day rule.

Age Group	Commercial	Medicaid

		Do Not Qualify				Do Not Qualify		
	EP	N	% of EP	% of total EP	EP	N	% of EP	% of total EP
5-11	293	77	26.3%	1.3%	78	17	21.8%	0.2%
12-50	634	137	21.6%	0.6%	88	16	18.2%	0.1%
51-64	715	104	14.5%	0.6%	14	0	0.0%	0.0%
Total 1 (5-50)	927	214	23.1%	0.7%	166	33	19.9%	0.1%
Total 2 (5-64)	1,854	428	23.1%	0.9%	180	33	18.3%	0.1%

Another concern when measuring management for plan-to-plan comparison is ensuring that the majority of index prescriptions occur at a point within the measurement year (Q1, Q2, Q3, & Q4) that objectively monitors adherence without any type of adjustment. It addresses the question: Is the prescription utilization stable for this population and, if so, is the administrative data capturing index prescription start dates (IPSDs) sufficiently early in the measurement year to adequately measure medication management. The following table outlines the percentage of index prescriptions occurring in each quarter of the measurement year by cohort. The table presents the percentage of index prescriptions dispensed to members of the entire Eligible Population after comorbidity exclusions have been applied.

Timing of Index Prescription (by Age Group and line of business)

Product	Age	Q1	Q2	Q3	Q4
Commercial	5-11	67.2%	16.1%	6.9%	5.3%
	12-50	65.1%	14.3%	6.1%	4.3%
	51-64	72.7%	12.7%	4.0%	2.5%
Medicaid	5-11	62.7%	15.0%	6.1%	4.9%
	12-50	55.5%	12.9%	5.8%	2.1%
	51-64	58.9%	6.3%	2.8%	2.1%

The expert panels agreed that the denominator as specified was valid in identifying people with persistent asthma.

2019 Update:

STATISTICAL RESULTS OF CONSTRUCT VALIDITY

Health Plan Level Pearson Correlation Coefficients Among Asthma Medication Ratio Within Measure – **Commercial** Plans, 2017*

	Ages 5-11	Ages 12-18	Ages 19-50	Ages 51-64	Total
Ages 5-11	1	0.56	0.48	0.48	0.65
Ages 12-18	0.56	1	0.54	0.51	0.70
Ages 19-50	0.48	0.54	1	0.67	0.90
Ages 51-64	0.48	0.51	0.67	1	0.85
Total	0.65	0.70	0.90	0.85	1

**Includes data submitted by 389 Commercial plans using measurement year 2017*

All scores were significant at $p<0.05$

Health Plan Level Pearson Correlation Coefficients Among Asthma Medication Ratio Within Measure – **Medicaid** Plans, 2017*

	Ages 5-11	Ages 12-18	Ages 19-50	Ages 51-64	Total

Ages 5-11	1	0.77	0.45	0.34	0.80
Ages 12-18	0.77	1	0.65	0.47	0.86
Ages 19-50	0.45	0.65	1	0.77	0.79
Ages 51-64	0.34	0.47	0.77	1	0.63
Total	0.80	0.86	0.79	0.63	1

**Includes data submitted by 248 Medicaid plans using measurement year 2017*

All scores were significant at p<0.05

KPSC Study. Adjusted and unadjusted relative risk for year 2014 asthma outcomes in relationship to compliance with year 2013 Asthma Medication Ratio measure.

	RR for AMR >= 0.5 vs <0.5	**95% confidence interval**	**P value**
Unadjusted analysis			
Hospitalization	0.86	0.56-1.33	.51
ED visit	0.83	0.69-1.00	.05
SABA >= 7 canisters	0.23	0.21-0.27	<.001
Oral steroid dispensing	1.09	1.01-1.18	.02
Adjusted analysis			
Hospitalization	0.91	0.58-1.43	.68
ED visit	0.83	0.69-1.00	.05
SABA >= 7 canisters	0.24	0.21-0.28	<.001
Oral steroid dispensing	1.03	0.96-1.12	.42

Total study population, aged 5-64 years (18,554 subjects).

2b1.4. What is your interpretation of the results in terms of demonstrating validity? (i.*e., what do the results mean and what are the norms for the test conducted?*)

SYSTEMATIC ASSESSMENT OF FACE VALIDITY

The current asthma medication ratio measure for children and adults ages 5-64 was deemed to have the desirable attributes of a HEDIS measure in 2011 (relevance, scientific soundness, and feasibility). The technical expert panels showed good agreement that the measure as specified accurately identifies patients with persistent asthma and differentiates quality across providers. Our interpretation of these results is that this measure has sufficient face validity.

2019 Update:

CONSTRUCT VALIDITY: Coefficients with absolute value of less than 0.3 are generally considered indicative of weak associations whereas absolute values of 0.3 or higher denote moderate to strong associations. The

significance of a correlation coefficient is evaluated by testing the hypothesis that an observed coefficient calculated for the sample is different from zero. The resulting p-value indicates the probability of obtaining a difference at least as large as the one observed due to chance alone. We used a threshold of 0.05 to evaluate the test results. P-values less than this threshold imply that it is unlikely that a non-zero coefficient was observed due to chance alone.

The results confirmed that the hypothesis that performance is highly correlated across broad age strata from a range of network providers (pediatricians, family practice, internal medicine, pulmonologist and allergists).

The KPSC study results confirmed the author's hypothesis that the AMR measure is correlated with improved asthma outcomes. Compliance with the AMR measure decreased the risk for 3 of 4 asthma outcomes (hospitalization, ED visits, and rescue inhaler overuse). These relationships are seen in both the adjusted and unadjusted analyses. Associations reaching statistical significance ($p<0.5$) in both the adjusted and unadjusted analyses include decreased risk for rescue inhaler overuse among AMR-compliant subjects. Associations approaching statistical significance ($p=.05$) in both the adjusted and unadjusted analyses include decreased risk for ED visits among AMR-compliant subjects. Although the results showed that compliance with the AMR measure was associated with a decreased risk of hospitalizations, the results were not statistically significant.

2b2. EXCLUSIONS ANALYSIS

NA ☐ no exclusions — *skip to section 2b3*

NCQA has a policy for excluding hospice patients from HEDIS measures.

2b2.1. Describe the method of testing exclusions and what it tests (*describe the steps—do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used*)

2012 Submission Form [Testing Data]: The measure is intended to assess patients with persistent asthma whose asthma is being controlled through long-term asthma controller medications and to align with the clinical guideline recommendations for medication management of persistent asthma. The measure is not intended to capture people with intermittent or seasonal asthma or those who have non-asthma respiratory conditions. To ensure the measure captures people with persistent asthma only, members must meet one of four criterion (including asthma medication dispensing events and/or encounters with an asthma diagnosis) in both the measurement year and the year prior. The measure also excludes people with a diagnosis for a specific clinical condition (COPD, emphysema, obstructive chronic bronchitis, cystic fibrosis and acute respiratory failure). During measure development in 2010, exclusions were tested using data from 7 commercial and 7 Medicaid health plans to determine the impact each clinical condition had on the measure's performance. We calculated the percent of people excluded from the denominator (i.e., the percent who had at least 1 exclusion condition) and the total percent of people excluded from the denominator for each age cohort.

2b2.2. What were the statistical results from testing exclusions? (*include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores*)

2012 Submission Form [Testing Data]: A total of 25% of Commercial members and 18% of Medicaid members were excluded from the measure. A higher percentage of people ages 51-64 had at least 1 measure exclusion compared to children or adults ages 5-50.

Impact of Co-morbidity Exclusions on the Eligible Population*

		EP	Percent of Eligible Population Excluded for a Co-Morbidity

	Age Range		At least 1 exclusion	COPD	Chronic Bronchitis	Emphysema	Cystic Fibrosis	Acute Respiratory Syndrome
Comm. N=7 plans	5 - 11	6,031	5.7%	3.7%	1.3%	0.3%	0.8%	1.0%
	12 - 50	22,855	16.2%	14.2%	4.1%	0.9%	0.6%	1.3%
	51 - 64	18,154	41.5%	39.6%	15.6%	6.4%	0.1%	3.5%
	Total (5-64 years)	47,040	24.6%	22.6%	8.2%	3.0%	0.4%	2.1%
Medicaid N=7 plans	5 - 11	8,614	3.8%	2.7%	0.4%	0.1%	0.4%	0.6%
	12 - 50	14,337	18.3%	16.6%	3.4%	1.3%	0.4%	2.6%
	51 - 64	4,432	45.2%	43.7%	13.8%	6.7%	0.2%	7.4%
	Total (5-64 years)	27,383	18.1%	16.6%	4.2%	1.8%	0.3%	2.7%

EP= total eligible population (number of patients) across all health plans prior to exclusions

**Includes data submitted by 7 Commercial plans and 7 Medicaid plans using measurement year 2009*

2b2.3. What is your interpretation of the results in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results? (*i.e., the value outweighs the burden of increased data collection and analysis. Note: **If patient preference is an exclusion**, the measure must be specified so that the effect on the performance score is transparent, e.g., scores with and without exclusion*)

2015 Update: The denominator criteria and the exclusions in this measure are intended to focus the measure on children and adults who have persistent asthma rather than concomitant diagnoses of asthma and COPD or chronic bronchitis. The higher percentage of adults ages 51-64 being excluded from the measure was expected, as they have a higher prevalence of conditions such as COPD or chronic bronchitis. The measure exclusions are needed in order to: 1) optimize the specificity of the denominator to only include those with persistent asthma and to keep the measure aligned with the clinical guideline recommendations; and to 2) display performance results that truly reflect appropriate care for this cohort of patients.

2b3. RISK ADJUSTMENT/STRATIFICATION FOR OUTCOME OR RESOURCE USE MEASURES

If not an intermediate or health outcome, or PRO-PM, or resource use measure, skip to section 2b4.

2b3.1. What method of controlling for differences in case mix is used?

- ☐ No risk adjustment or stratification
- ☐ Statistical risk model with _risk factors
- ☐ Stratification by _risk categories
- ☐ Other,

2b3.1.1 If using a statistical risk model, provide detailed risk model specifications, including the risk model method, risk factors, coefficients, equations, codes with descriptors, and definitions.

2b3.2. If an outcome or resource use component measure is not risk adjusted or stratified, provide rationale and analyses to demonstrate that controlling for differences in patient characteristics (case mix) is not needed to achieve fair comparisons across measured entities.

2b3.3a. Describe the conceptual/clinical and statistical methods and criteria used to select patient factors (clinical factors or social risk factors) used in the statistical risk model or for stratification by risk (*e.g., potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10; correlation of x or higher; patient factors should be present at the start of care*) **Also discuss any "ordering" of risk factor inclusion**; for example, are social risk factors added after all clinical factors?

2b3.3b. How was the conceptual model of how social risk impacts this outcome developed? Please check all that apply:

- ☐ **Published literature**
- ☐ **Internal data analysis**
- ☐ **Other (please describe)**

2b3.4a. What were the statistical results of the analyses used to select risk factors?

2b3.4b. Describe the analyses and interpretation resulting in the decision to select social risk factors *(e.g. prevalence of the factor across measured entities, empirical association with the outcome, contribution of unique variation in the outcome, assessment of between-unit effects and within-unit effects.)* **Also describe the impact of adjusting for social risk (or not) on providers at high or low extremes of risk.**

2b3.5. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model or stratification approach (*describe the steps—do not just name a method; what statistical analysis was used*)

Provide the statistical results from testing the approach to controlling for differences in patient characteristics (case mix) below.
If stratified, skip to 2b3.9

2b3.6. Statistical Risk Model Discrimination Statistics (*e.g., c-statistic, R-squared*)**:**

2b3.7. Statistical Risk Model Calibration Statistics (*e.g., Hosmer-Lemeshow statistic*):

2b3.8. Statistical Risk Model Calibration – Risk decile plots or calibration curves:

2b3.9. Results of Risk Stratification Analysis:

2b3.10. What is your interpretation of the results in terms of demonstrating adequacy of controlling for differences in patient characteristics (case mix)? (i.*e., what do the results mean and what are the norms for the test conducted*)

2b3.11. Optional Additional Testing for Risk Adjustment (*not required, but would provide additional support of adequacy of risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed*)

2b4. IDENTIFICATION OF STATISTICALLY SIGNIFICANT & MEANINGFUL DIFFERENCES IN PERFORMANCE

2b4.1. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified (*describe the steps—do not just name a method; what statistical analysis was used? Do not just repeat the information provided related to performance gap in 1b)*

2019 and 2015 Submission: To demonstrate meaningful differences in performance, NCQA calculates an inter-quartile range (IQR) for each indicator. The IQR provides a measure of the dispersion of performance. The IQR can be interpreted as the difference between the 25th and 75th percentile on a measure. To determine if this difference is statistically significant, NCQA calculates an independent sample t-test of the performance difference between two randomly selected plans at the 25th and 75th percentile. The t-test method calculates a testing statistic based on the sample size, performance rate, and standardized error of each plan. The test statistic is then compared against a normal distribution. If the p value of the test statistic is less than .05, then the two plans' performance is significantly different from each other. Using this method, we compared the performance rates of two randomly selected plans, one plan in the 25th percentile and another plan in the 75th percentile of performance. We used these two plans as examples of measured entities. However, the method can be used for comparison of any two measured entities.

2012 Submission Form [Testing Data]: Nine health plans covering a variety of geographic areas within the United States were asked to provide complete administrative data file consisting of any member in their commercial and Medicaid product lines for anyone that had a diagnosis code for asthma during the calendar years of 2009-2010. The complete member-level administrative file used for analysis included a total of more than 82,000 health plan members with persistent asthma. Specific calculations involve average performance rate, distribution (percentiles), 95% confidence interval of average rate across the respective health plans per by product line.

To demonstrate meaningful differences in performance, NCQA calculates an inter-quartile range (IQR) for each indicator. The IQR provides a measure of the dispersion of performance. The IQR can be interpreted as the difference between the 25th and 75th percentile on a measure. To determine if this difference is statistically significant, NCQA calculates an independent sample t-test of the performance difference between two randomly selected plans at the 25th and 75th percentile. The t-test method calculates a testing statistic based on the sample size, performance rate, and standardized error of each plan. The test statistic is then compared against a normal distribution. If the p value of the test statistic is less than .05, then the two plans' performance is significantly different from each other. Using this method, we compared the performance rates of two randomly selected plans, one plan in the 25th percentile and another plan in the 75th percentile of performance. We used these two plans as examples of measured entities. However, the method can be used for comparison of any two measured entities.

2b4.2. What were the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities? (e.g., *number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined*)

2019 Update:

HEDIS 2018 Variation in Performance across Health Plans, Asthma Medication Ratio*

	Ages	Avg. EP	Avg.	SD	10th	25th	50th	75th	90th	IQR	p-value
Commercial	Ages 5-11	257	87.4	6.4	79.5	85.1	88.6	91.3	93.8	6.2	0.007
	Ages 12-18	236	78.5	7.1	70.1	74.5	79.0	82.6	86.5	8.1	0.041
	Ages 19-50	689	74.3	6.6	66.8	70.9	74.9	78.4	81.7	7.5	<0.001
	Ages 51-64	541	83.0	5.6	76.5	80.6	83.6	86.4	88.9	5.8	<0.006

	Total (Ages 5-64)	1,505	79.1	5.7	72.3	76.5	79.4	82.6	85.2	6.1	<0.002
Medicaid	Ages 5-11	957	72.4	10.0	59.6	67.8	73.3	78.7	82.6	10.9	<0.001
	Ages 12-18	676	63.4	8.9	52.5	58.9	64.3	68.5	73.1	9.6	<0.001
	Ages 19-50	788	52.6	8.6	42.6	47.5	52.3	57.2	62.5	9.7	<0.002
	Ages 51-64	381	56.3	9.8	45.6	50.4	55.1	62.4	67.2	12.0	<0.002
	Total (Ages 5-64)	2,500	61.4	10.3	50.4	57.0	62.4	67.0	72.1	10.0	<0.001

EP: Eligible Population, the average denominator size across all plans submitting 2018 HEDIS data
IQR: Interquartile range
p-value: P-value of independent samples t-test comparing plans at the 25th percentile to plans at the 75th percentile.

2012 Submission Form [Testing Data]: Distribution of plan performance for the field test data set by each product line (commercial and Medicaid).

Product Line	Ave Rate	Lower 95% CI	Upper 95% CI	Standard Deviation	Min Rate	Max Rate	10th	25th	50th	75th	90th
Comm.	0.66072	0.55895	0.76249	0.11004	0.48263	0.75188	0.48263	0.58115	0.73476	0.75098	0.75188
Medicaid	0.46997	0.37192	0.56803	0.10602	0.24638	0.57154	0.24638	0.46164	0.49164	0.53391	0.57154

2b4.3. What is your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities? (i.e., *what do the results mean in terms of statistical and meaningful differences?*)

2019 Update: The results above indicate there is a 5-12% gap in performance between the 25th and 75th percentile performing plans across the different age ranges and product lines. For most product lines and age groups the difference between the 25th and 75th percentile performance rates is statistically significant. The highest variation in total performance is for Medicaid, which show a 10-percentage point gap between 25th and 75th percentile plans.

To put these meaningful differences in performance into context, we estimated that on average 250 additional members per Medicaid plan would meet the asthma medication ratio of 0.50 or higher if plans in the 25th percentile performed as well as plans in the 75th percentile. This estimate is based on the average health plan eligible population.

2b5. COMPARABILITY OF PERFORMANCE SCORES WHEN MORE THAN ONE SET OF SPECIFICATIONS

If only one set of specifications, this section can be skipped.

Note: *This item is directed to measures that are risk-adjusted (with or without social risk factors)* ***OR*** *to measures with more than one set of specifications/instructions (e.g., one set of specifications for how to identify and compute the measure from medical record abstraction and a different set of specifications for claims or eMeasures). It does not apply to measures that use more than one source of data in one set of specifications/instructions (e.g., claims data to identify the denominator and medical record abstraction for the*

numerator). ***Comparability is not required when comparing performance scores with and without social risk factors in the risk adjustment model. However, if comparability is not demonstrated for measures with more than one set of specifications/instructions, the different specifications (e.g., for medical records vs. claims) should be submitted as separate measures.***

2b5.1. Describe the method of testing conducted to compare performance scores for the same entities across the different data sources/specifications (*describe the steps—do not just name a method; what statistical analysis was used*)

2b5.2. What were the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications? (*e.g., correlation, rank order*)

2b5.3. What is your interpretation of the results in terms of the differences in performance measure scores for the same entities across the different data sources/specifications? (i.*e.*, *what do the results mean and what are the norms for the test conducted*)

2b6. MISSING DATA ANALYSIS AND MINIMIZING BIAS

2b6.1. Describe the method of testing conducted to identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias (*describe the steps—do not just name a method; what statistical analysis was used*)

HEDIS measures apply to enrolled members in a health plan, and NCQA has a rigorous audit process to ensure the eligible population and numerator events for each measure are correctly identified and reported. The audit process is designed to verify primary data sources used to populate measures and ensure specifications are correctly implemented.

The HEDIS Compliance Audit addresses the following functions:

- Information practices and control procedures
- Sampling methods and procedures
- Data integrity
- Compliance with HEDIS specifications
- Analytic file production
- Reporting and documentation

2b6.2. What is the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data? (*e.g., results of sensitivity analysis of the effect of various rules for missing data/nonresponse; if no empirical sensitivity analysis, identify the approaches for handling*

missing data that were considered and pros and cons of each)

HEDIS addresses missing data in a structured way through its audit process. HEDIS measures apply to enrolled members in a health plan, and NCQA-certified auditors use standard audit methodologies to assess whether data sources are missing data. If a data source is found to be missing data, and the issues cannot be rectified, the auditor will assign a "materially biased" designation to the measure for that reporting plan, and the rate will not be used. Once measures are added to HEDIS, NCQA conducts a first-year analysis to assess the feasibility of the measure when widely implemented in the field. This analysis includes an assessment of how many plans report valid rates vs. rates that are materially biased (or have other issues, such as small denominators). These considerations are weighed in the deliberation process before measures are approved for public reporting.

2b6.3. What is your interpretation of the results in terms of demonstrating that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias**?** (i*.e., what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis, provide rationale for the selected approach for missing data*)

All of the commercial and Medicaid health plans that reported 2018 HEDIS data for this measure reported valid rates as determined by NCQA-certified auditors through the process described above. This means that auditors did not find any missing data sources for any of the health plan data submissions and determined that none of the rates were materially biased.

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. Data Elements Generated as Byproduct of Care Processes.

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score), Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims)

If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. To what extent are the specified data elements available electronically in defined fields (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*) Update this field for **maintenance of endorsement**.

ALL data elements are in defined fields in electronic claims

3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources. For **maintenance of endorsement**, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.

Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. <u>Required for maintenance of endorsement.</u> Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

<u>IF instrument-based,</u> consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

NCQA conducts an independent audit of all HEDIS collection and reporting processes, as well as an audit of the data which are manipulated by those processes, in order to verify that HEDIS specifications are met. NCQA has developed a precise, standardized methodology for verifying the integrity of HEDIS collection and calculation processes through a two-part program consisting of an overall information systems capabilities assessment followed by an evaluation of the managed care organization´s ability to comply with HEDIS specifications. NCQA-certified auditors using standard audit methodologies will help enable purchasers to make more reliable comparisons between health plans.

The HEDIS Compliance Audit addresses the following functions:

1) information practices and control procedures

2) sampling methods and procedures

3) data integrity

4) compliance with HEDIS specifications

5) analytic file production

6) reporting and documentation

In addition to the HEDIS audit, NCQA provides a system to allow “real-time” feedback from measure users. Our Policy Clarification Support System receives thousands of inquiries each year on over 100 measures. Through this system, NCQA responds immediately to questions and identifies possible errors or inconsistencies in the implementation of the measure. This system informs both annual updates to the measures as well as routine re-evaluation of measures. These processes include updating value sets and clarifying the specifications. Measures are re-evaluated on a periodic basis and when there is a significant change in evidence.

3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified *(e.g., value/code set, risk model, programming code, algorithm)*.

Broad public use and dissemination of these measures is encouraged and NCQA has agreed with NQF that noncommercial uses do not require the consent of the measure developer. Use by health care physicians in connection with their own practices is not commercial use. Commercial use of a measure requires the prior written consent of NCQA. As used herein, “commercial use” refers to any sale, license or distribution of a measure for commercial gain, or incorporation of a measure into any product or service that is sold, licensed or distributed for commercial gain, even if there is no actual charge for inclusion of the measure.

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Specific Plan for Use	Current Use (for current use provide URL)

	Public Reporting CMS Medicaid Adult Core Set https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-core-set/index.html CMS Medicaid Child Core Set https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/child-core-set/index.html#ChildCoreSet NCQA Health Plan Ratings https://www.ncqa.org/hedis/reports-and-research/ratings-2019/ NCQA Annual State of Health Care Quality https://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality-report IHA-AMP https://www.iha.org/our-work/accountability/value-based-p4p/measure-set CMS Medicaid Adult Core Set https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-core-set/index.html CMS Medicaid Child Core Set https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/child-core-set/index.html#ChildCoreSet NCQA Health Plan Ratings https://www.ncqa.org/hedis/reports-and-research/ratings-2019/ NCQA Annual State of Health Care Quality https://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality-report IHA-AMP https://www.iha.org/our-work/accountability/value-based-p4p/measure-set Payment Program IHA-AMP https://www.iha.org/our-work/accountability/value-based-p4p/measure-set Regulatory and Accreditation Programs NCQA Health Plan Accreditation https://www.ncqa.org/programs/health-plans/health-plan-accreditation-hpa/ NCQA Health Plan Accreditation https://www.ncqa.org/programs/health-plans/health-plan-accreditation-hpa/ Quality Improvement (external benchmarking to organizations) Quality Compass https://www.ncqa.org/programs/data-and-information-technology/data-purchase-and-licensing/quality-compass/

4a1.1 For each CURRENT use, checked above (update for <u>maintenance of endorsement</u>), provide:

- Name of program and sponsor

- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

CMS MEDICAID ADULT CORE SET: This measure is used in the Adult Core Set administered by the Centers for Medicare and Medicaid Services (CMS). The Adult Core Set intends to evaluate the quality of care and outcomes among adults in Medicaid. The measure set is reported by over 25 states annually and performance is available publicly at Medicaid.gov. State data on the adult quality measures is part of the Secretary's annual report on the quality of care for adults enrolled in Medicaid.
CMS MEDICAID CHILD CORE SET: This measure is used in the Child Core Set administered by the Centers for Medicare and Medicaid Services (CMS). The Child Core Set intends to evaluate the quality of care and outcomes among children in Medicaid and Children's Health Insurance Program (CHIP). The measure set is reported by over 25 states annually and performance is available publicly at Medicaid.gov.
NCQA HEALTH PLAN RATING/REPORT CARDS: This measure is used to calculate health plan ratings which are reported on the NCQA website. These ratings are based on performance on HEDIS measures among other factors In 2019, a total of 255 Medicare health plans, 515 commercial health plans and 188 Medicaid health plans across 50 states were included in the rankings.
NCQA STATE OF HEALTH CARE QUALITY: This measure is publicly reported nationally and by geographic regions in the NCQA State of Health Care annual report. This annual report published by NCQA summarizes findings on quality of care. In 2018, the report included results from calendar year 2017 for health plans covering a record 136 million people, or 43 percent of the U.S. population.
IHA-AMP: INTEGRATED HEALTHCARE ASSOCIATION (IHA) CALIFORNIA Align.Measure.Perform (AMP): This measure is used in the IHA-AMP program which is the largest non-governmental physician incentive program in the United States. Founded in 2001, the program has grown to include participation from 10 health plans and about 200 California physician organization caring for over 9 million Californians enrolled in commercial HMO and point of service products-representing 95% of commercial HMO enrollment in the state. It has four key components: a common set of measures and benchmarks that spans clinical quality, patient experience, utilization, and cost of care measures; value-based health plan incentive payments to physician organizations; public reporting of Triple Aim performance results for physician organizations; and public recognition awards.
NCQA QUALITY COMPASS: This measure is used in Quality Compass which is an indispensable tool used for selecting health plans, conducting competitor analysis, examining quality improvement and benchmarking plan performance. Provided in this tool is the ability to generate custom reports by selecting plans, measures, and benchmarks (averages and percentiles) for up to three trended years. Results in table and graph formats offer simple comparison of plans' performance against competitors or benchmarks.
NCQA HEALTH PLAN ACCREDITATION: As of Fall 2017, a total of 451 commercial health plans were scored for accreditation using this measure among others covering 113 million lives; and 125 Medicaid health plans were scored, covering 35 million lives. Health plans are scored based on performance compared to national benchmarks.

4a1.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (*e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?*)
N/A

4a1.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (*Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.*)

N/A

4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.

How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.

Health plans that report HEDIS calculate their rates and know their performance when submitting to NCQA. NCQA publicly reports rates across all plans and also creates benchmarks in order to help plans understand how they perform relative to other plans. Public reporting and benchmarking are effective quality improvement methods.

4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

NCQA publishes HEDIS results annually in our Quality Compass tool. NCQA also presents data at various conferences and webinars. For example, at the annual HEDIS Update and Best Practices Conference (now the Health Care Quality Congress), NCQA presents results from all new measures' first year of implementation or analyses from measures that have changed significantly and insight into new measure development projects. NCQA also regularly provides technical assistance on measures through its Policy Clarification Support System, as described in Section 3c.1.

4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.

Describe how feedback was obtained.

NCQA measures are evaluated regularly. During this "reevaluation" process, we seek broad input on the measure, including input on performance and implementation experience. We use several methods to obtain input, including vetting of the measure with several multi-stakeholder advisory panels, 30 day public comment posting, and review of questions submitted to the Policy Clarification Support System. This information enables NCQA to comprehensively assess a measure's adherence to the HEDIS Desirable Attributes of Relevance, Scientific Soundness and Feasibility.

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

In general, health plans have not reported significant barriers to implementing this measure, as it uses the administrative data collection method. Questions have generally centered around minor clarification of the specifications, such as confirmation that information in claims meets the measure intent. Questions have also asked why certain medications were or were not included in medication lists. NCQA responded to all questions to ensure consistent implementation of the specifications.

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

This measure has been deemed a priority measure by NCQA and other entities, as illustrated by its use in programs, such as the Medicaid Core Set for both adults and children, as well as California's IHA-AMP program.

4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.

Feedback has included information on new asthma medications approved by FDA.

Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)

If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

Performance rates increased slightly, by roughly two percentage points, from 2016 to 2018, across both commercial plans and Medicaid (totals). This increase may be correlated with a decrease in the number of plans reporting the measure over the same time period.

4b2. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.

There were no identified unintended consequences for this measure during testing or since implementation.

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

There were no identified unexpected benefits for this measure during testing or since implementation.

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

5.1a. List of related or competing measures (selected from NQF-endorsed measures)

0047 : Asthma: Pharmacologic Therapy for Persistent Asthma

0548 : Suboptimal Asthma Control (SAC) and Absence of Controller Therapy (ACT)

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

Optimal Asthma Care (MN Community Measurement)

5a. Harmonization of Related Measures

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications harmonized to the extent possible?

Yes

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

0047 assesses whether a patient 5 years or older with persistent asthma was prescribed an ICS or non-ICS long term control medication at least once during the measurement year, while 1800 assesses the ratio of controller medications to total asthma medications (controller plus reliever medications). There is no impact

on interpretability or added burden of data collection because the focus of each measure is different. Also, both measures use value sets to identify asthma controller medications that do not conflict. 0548 assesses patients aged 5-50 with persistent asthma who were dispensed more than 3 canisters of a SABA during the same 90-day period, as well as patients who meet the above criteria AND did not receive controller therapy during the same 90-day period. 1800 has a slightly different denominator, in that it includes adults through 64 years. Also, 1800 calculates a ratio of control medication to total asthma medication, rather than absolute units dispensed, or whether any medication was dispensed at all. There is no impact on interpretability or added burden of data collection because the focus of each measure is different. MNCM Optimal Asthma Control measures the percentage of pediatric (5-17 years) and adult (18-50 year) patients who had a diagnosis of asthma and whose asthma was optimally controlled during the measurement period as defined by achieving "asthma well-controlled" by the most recent asthma control tool AND having less than two ED visits and/or hospitalizations due to asthma in the last 12 months. 1800 has a slightly different denominator, in that it includes adults through 64 years. It also measures the ratio of control medications to total asthma medications, rather than results of an asthma control tool, ED visits, or hospitalizations. There is no impact on interpretability or added burden of data collection because the focus of each measure is different.

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);
OR
Multiple measures are justified.

5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):

Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

No appendix Attachment:

Contact Information

Co.1 Measure Steward (Intellectual Property Owner): National Committee for Quality Assurance

Co.2 Point of Contact: Bob, Rehm, nqf@ncqa.org, 202-955-1728-

Co.3 Measure Developer if different from Measure Steward: National Committee for Quality Assurance

Co.4 Point of Contact: Bob, Rehm, nqf@ncqa.org, 202-955-1728-

Additional Information

Ad.1 Workgroup/Expert Panel involved in measure development

Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

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Laurie Spoll, Director, Aetna

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released: 2011

Ad.3 Month and Year of most recent revision: 07, 2019

Ad.4 What is your frequency for review/update of this measure? Measures are re-evaluated on a periodic basis and when there is a significant change in evidence.

Ad.5 When is the next scheduled review/update for this measure? 12, 2020

Calculated measure results, based on unadjusted HEDIS specifications, may not be termed "Health Plan HEDIS rates" until they are audited and designated reportable by an NCQA-Certified Auditor. Such unaudited results should be referred to as "Unaudited Health Plan HEDIS Rates." Accordingly, "Heath Plan HEDIS rate" refers to and assumes a result from an unadjusted HEDIS specification that has been audited by an NCQA-Certified HEDIS Auditor.

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