Distribution of Emergency Department Visit Use for Children Managed for Identifiable Asthma

Section 1. Basic Measure Information

1.A. Measure Name

Distribution of Emergency Department Visit Use for Children Managed for Identifiable Asthma

1.B. Measure Number

0124

1.C. Measure Description

Please provide a non-technical description of the measure that conveys what it measures to a broad audience.

This measure describes four aspects of the population of children who have identifiable asthma: the number who have emergency department (ED) visits, the distribution of ED visits, the number of children with identifiable asthma, and the amount of time each child with identifiable asthma contributes to the person-time denominator of the incidence rate measure in the same set.

1.D. Measure Owner

Collaboration for Advancing Pediatric Quality Measures (CAPQuaM).

1.E. National Quality Forum (NQF) ID (if applicable)

Not applicable.

1.F. Measure Hierarchy

Please note here if the measure is part of a measure hierarchy or is part of a measure group or composite measure. The following definitions are used by AHRQ:

1. **Please identify the name of the collection of measures to which the measure belongs (if applicable). A collection is the highest possible level of the measure hierarchy. A collection may contain one or more sets, subsets, composites, and/or individual measures.**

   This measure belongs to the Measures of Emergency Department Use for Children with Asthma; Process 1 Collection.

2. **Please identify the name of the measure set to which the measure belongs (if applicable). A set is the second level of the hierarchy. A set may include one or more subsets, composites, and/or individual measures.**

   This measure belongs to the Measures of Emergency Department Use for Children with Asthma; Frequency Set.

3. **Please identify the name of the subset to which the measure belongs (if applicable). A subset is the third level of the hierarchy. A subset may include one or more composites, and/or individual measures.**

   This measure comprises the Counting Subset.

4. **Please identify the name of the composite measure to which the measure belongs (if applicable). A composite is a measure with a score that is an aggregate of scores from other measures. A composite may include one or more other composites and/or individual measures. Composites may comprise component measures that can or cannot be used on their own.**

   Not applicable.

1.G. Numerator Statement

This is not a ratio measure. It comprises two count measures and two distribution measures.

The counts are the number of unique children ages 2-21 years who meet the criteria for identifiable asthma and the number who have at least one visit to the ED.

The first distribution is the number of visits to the ED experienced by each of these children during the reporting year and is described by the 1st, 10th, 25th, 50th, 75th, 90th, and 99th percentiles of that distribution. The interquartile range should also be reported.

The second distribution is the number of person-months that all children with identifiable asthma are eligible for this measure during the reporting year. This should be reported as the 1st, 10th, 25th, 50th, 75th, 90th, and 99th percentiles and the interquartile range.

Identifiable asthma is defined in Table 1 (see Supporting Documents); the assessment period is defined below.

Person-Time Elements

1. Age.
2. Recent evidence of being managed for identifiable asthma in the assessment period, including:
   - Any prior hospitalization with asthma as primary or secondary diagnosis.
   - Other qualifying events after the 5^{th} birthday (at time of event):
     - One or more prior ambulatory visits with asthma as the primary diagnosis, or:
     - Two or more ambulatory visits with asthma as any diagnosis, or:
     - One ambulatory visit with asthma as a diagnosis and at least one asthma-related prescription, or:
     - Two or more ambulatory visits with a diagnosis of bronchitis.

- Other qualifying events, any age:
  - Three or more ambulatory visits with a diagnosis of asthma or bronchitis, or:
  - Two or more ambulatory visits with a diagnosis of asthma and/or bronchitis and one or more asthma-related prescriptions.

Notes

The assessment period includes the full year before the reporting year and each full calendar month before the month being assessed. If pharmacy data are not available, the measure should be reported with notation that pharmacy data were not used for the assessment of eligibility. For eligibility purposes, asthma-related medicine refers to a long-acting beta agonist (alone or in combination) or inhaled corticosteroid (ICS), alone or in combination; anti-asthmatic combinations; methylxanthines, alone or in combination; or mast cell stabilizers.

1.H. Numerator Exclusions

Events occurring in patients who do not meet the criteria for person-time for the month in which the event occurred.

Events occurring in patients who not have been enrolled in the reporting plan for at least 2 consecutive months before the index reporting month.

Events for which asthma is not listed as the primary or secondary diagnosis.

For the purposes of this measure, asthma diagnosis includes all diagnoses with a three-digit ICD-9 code of 493. For entities that prefer to use the Agency for Healthcare Research and Quality's (AHRQ's) Clinical Classifications Software, the asthma definition (before exclusions) is CCS class 128.

Exclude for concurrent or pre-existing diagnosis of cystic fibrosis (ICD-9 CM codes of 277.0, 277.01. 277.02, 277.03, 277.09), COPD (three-digit ICD-9 code 496) or emphysema (three-digit ICD-9 code of 492).

1.I. Denominator Statement

Not applicable.

1.J. Denominator Exclusions

Not applicable.

1.K. Data Sources

Check all the data sources for which the measure is specified and tested.

Administrative data (e.g., claims data).

If other, please list all other data sources in the field below.

Race/ethnicity data or zip code data (if these data are not available in the administrative data set) should be obtained from another source, such as the medical record.

Section 2: Detailed Measure Specifications

Provide sufficient detail to describe how a measure would be calculated from the recommended data sources, uploading a separate document (+ Upload attachment) or a link to a URL. Examples of detailed measure specifications can be found in the CHIPRA Initial Core Set Technical Specifications Manual 2011 published by the Centers for Medicare & Medicaid Services. Although submission of formal programming code or algorithms that demonstrate how a measure would be calculated from a query of an appropriate electronic data source are not requested at this time, the availability of these resources may be a factor in determining whether a measure can be recommended for use.

Please see the Supporting Documents for full detailed measure specifications.

Section 3. Importance of the Measure

In the following sections, provide brief descriptions of how the measure meets one or more of the following criteria for measure importance (general importance, importance to Medicaid and/or CHIP, complements or enhances an existing measure). Include references related to specific points made in your narrative (not a free-form listing of citations).

3.A. Evidence for General Importance of the Measure

Provide evidence for all applicable aspects of general importance:

- **Addresses a known or suspected quality gap and/or disparity in quality (e.g., addresses a socioeconomic disparity, a racial/ethnic disparity, a disparity for Children with Special Health Care Needs (CSHCN), a disparity for limited English proficient (LEP) populations).**
- **Potential for quality improvement (i.e., there are effective approaches to reducing the quality gap or disparity in quality).**
- **Prevalence of condition among children under age 21 and/or among pregnant women.**
- **Severity of condition and burden of condition on children, family, and society (unrelated to cost).**
- **Fiscal burden of measure focus (e.g., clinical condition) on patients, families, public and private payers, or society more generally, currently and over the life span of the child.**

- **Association of measure topic with children's future health – for example, a measure addressing childhood obesity may have implications for the subsequent development of cardiovascular diseases.**
- **The extent to which the measure is applicable to changes across developmental stages (e.g., infancy, early childhood, middle childhood, adolescence, young adulthood).**

Importance

Asthma matters for pediatrics (Adams, Smith, Ruffin, 2000; American Lung Association, 2018; Bahadori, Doyle-Waters, Marra, et al., 2009; Cerdan, Alpert, Moonie, et al., 2012; Coventry, Weston, Collins, 1996; Fiese, Winter, Anbar, et al., 2008; Fuhrman, Dubus, Marguet, et al., 2011; Manice, 2013; Okelo, Wu, Krishnan, et al, 2004; Sawicki, Vilk, Schatz, et al., 2010; Weiss, Gergen, Hodgson, 1992; World Health Organization [WHO], 2011). It is the second most common reason (after allergy) for children to be classified as having a special health care need, accounting for nearly 38.8 percent of such children. Using national estimates from the Federal Healthcare Cost and Utilization Project (HCUP) data, children between 1 and 17 had more than 673,000 of the 1.9 million ED visits with asthma as the first diagnosis; almost 11 percent (or >71,000) of these pediatric visits resulted in hospitalization. Given that a diagnosis of asthma may motivate a visit to the ED for infection or other ailments, our work with the New York State Medicaid data suggests that a diagnosis of asthma may underlie a similar number of additional visits as a second diagnosis. Considering all ages, asthma ED visits are common in all regions of the country, with a plurality in the South and fewer in the West. Such visits are relatively evenly split between teaching and non-teaching hospitals, and nearly 86 percent of these visits are for patients who live in metropolitan areas. Drilling down on that last observation, about 56 percent of visits are in large metropolitan or suburban areas, 29 percent are in smaller metropolitan areas, and almost 15 percent are in areas considered rural. Asthma exacerbations (including ED visits and subsequent hospitalizations) are consequential for the health and well-being of children and their families and may cost as much as $18 billion per year across all ages (Cerdan, et al., 2012; Fiese, et al., 2008; Okelo, et al., 2004; Manice, 2013).

Our conceptual model acknowledges that some of these visits are for non-urgent situations, while others require urgent care. We further recognize that some of those who are sick are in the ED for reasons that were preventable and others for reasons that were not. We can thus say that some of the ED use is needed because some children with well-managed asthma will break through and have an exacerbation in spite of appropriate management or because the children are so sick that they require ED care once they begin to head down a path towards respiratory deterioration.

There is other use that is appropriate because the child is sick enough to be in the ED in the moment, but the visit potentially could have been prevented with better prior management. The source for shortcomings in management may lie with the clinicians (e.g., by failure to prescribe ICS to a child for whom the standard of care would recommend them), the broader system or context (e.g., when caregivers do not have the resources to purchase potentially valuable preventative medications such as ICS), or the families (e.g., potentially through medication non-adherence or continued exposure to asthma triggers such as cigarette smoke, over which the

family has some control). There also are situations for which the ED per se may not be an appropriate level of care for the clinical circumstance and for which alternate, more appropriate levels of care were or should have been available. An overview of our thinking is illustrated in Figure 2 (see Supporting Documents).

Beyond their effects on costs and on efficient care delivery, preventing ED visits is also important for the well-being of the child and the family, whose routine is disrupted by those visits. The burden of urgent care on the quality of life of the patient and the family is substantial (Cerdan, et al., 2012; Fiese, et al., 2008; Okelo, et al., 2004; Manice, 2013). Finally, better controlled asthma is less likely to lead to death or other serious disability. While these instances are thankfully rare, the HCUP data estimate that perhaps 37 children died of asthma in 2010 without making it out of the ED. Studies have demonstrated that clinical and community efforts can reduce the need for ED visits for asthma and asthma exacerbations (Auger, Kahn, Davis, et al., 2013; Ducharme, Zemek, Chalut, et al., 2011; Farber, 2010; Lara, Ramos-Valencia, Gonzalez-Gavillan, et al., 2013; Office of Disease Prevention and Health Promotion [ODPHP], 2018; Oraka, Igbal, Flanders, et al., 2013; Self, Chrisman, Mason, et al., 2005; Smith, Wakefield, Cloutier, 2007; Talreja, Soubani, Sherwin, et al., 2012).

These CAPQuaM Asthma ED visit measures represent the first stage of our enhancements, enhancing the conceptualization and measurement of the existing counting measure. Other CAPQuaM measures address the appropriateness of the ED as a level of care for children who have ED visits for asthma.

Opportunity for Improvement

The literature points to two general characteristics of asthma care delivery systems that are correlated with ED utilization. One is the effective use of preventive and routine care measures, such as a multidisciplinary practice or a medical home model, the presence of an asthma action plan, or the judicious use of controller medications in advance of an exacerbation (Auger, et al., 2013; Ducharme, et al., 2011; Farber, 2010; Smith, et al., 2007; Talreja, et al., 2012). The other characteristic is the availability of urgent care visits as a step before ED use in the context of either a general pediatric or an asthma specialty practice (Smith, et al., 2007). Conversely, a lack of comprehensive asthma care, which includes primary and secondary prevention schemas, and a lack of available urgent care services are both commonly cited reasons for preventable ED visits (Self, et al, 2005). It has been demonstrated that children who used the ED under-utilized primary care services (Smith, et al., 2007); it also has been demonstrated that interventions that attempt to provide comprehensive, multidisciplinary care have the ability to decrease ED utilization for asthma care (Centers for Disease Control and Prevention [CDC], 2009).

Thus, it is both important and quite possible to reduce ED visits for asthma-related care, which strongly suggests that a quality measure should target this construct. Nevertheless, not every ED visit could or should be prevented. There are legitimate reasons for asthma-related ED care, and a robust quality measure system should try to distinguish, at least to some extent, the difference between potentially preventable versus potentially essential visits. The current measures provide a valid way to assess how frequently asthma visits to the ED occur in children who are being managed for identifiable asthma.

Demographics

The potential for racial and ethnic disparities in how asthma is treated is high (Oraka, et al., 2013). The National Survey of Children with Special Health Care Needs (NS-CSHCN), conducted by the CDC (available at http://childhealthdata.org) showed that black children in particular and also Hispanic children are overrepresented with asthma. It also showed that 38 percent of children with asthma have public insurance; one-quarter (26 percent) live in households under the Federal poverty line, 28 percent are in households that fall below twice the Federal poverty line, and only 24 percent have incomes more than four times the Federal poverty line. Nearly three-quarters of these children have at least one sibling and approximately one-third have a sibling who also has a special health care need, using the Health Resources and Services Administrations' (HRSA's) screening tool to identify a CSHCN. Manice's careful analysis of the 2005/2006 survey from which these data are taken also found that racial minorities, lower income, and household educational attainment were independent predictors of ED utilization among children with asthma (Manice, 2013). Our analysis of New York State Medicaid data in 2011 shows about a 2.5-fold increase in the rate of ED use by non-Hispanic blacks compared to non-Hispanic whites (non-Hispanic black > all Hispanic > non-Hispanic white > Asian).

3.B. Evidence for Importance of the Measure to Medicaid and/or CHIP

Comment on any specific features of this measure important to Medicaid and/or CHIP that are in addition to the evidence of importance described above, including the following:

- **The extent to which the measure is understood to be sensitive to changes in Medicaid or CHIP (e.g., policy changes, quality improvement strategies).**
- **Relevance to the Early and Periodic Screening, Diagnostic and Treatment benefit in Medicaid (EPSDT).**
- **Any other specific relevance to Medicaid/CHIP (please specify).**

We have conducted an extensive analysis of various approaches to specify this measure using New York State Medicaid data. Depending upon specifics of definitional issues, we have found substantial numbers of children with identifiable asthma, with more than 196,000 children found to have identifiable asthma in 2011 and nearly 60,000 ED visits for asthma among the eligible children. This is a substantial issue for New York State Medicaid and beyond. Its importance has been validated by a previous measure having been included as a core Medicaid measure (Mangione-Smith, Schiff, Dougherty, 2011). Our partners in the New York State Medicaid program have been instrumental in the development of this measure set.

As a common illness that frequently results in potentially preventable and costly services, such as ED visits, asthma has been a frequent target for measurement since the early days of the modern quality movement. Indeed, some form of counting ED visits for children with asthma has been publicly discussed in this context since at least the 1990s. Reducing the relative number of ED visits during the care for asthmatic children remains a high priority on the national agenda, both in and out of Medicaid, and holds the promise of both financial savings and improved health-related quality of life.

Interest in this topic is sufficiently high that the expert panel that reviewed the initial set of core measures (see https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/child-core-set/index.html) adopted a measure on this topic proposed by the Alabama Medicaid program. That measure has certain definitional concerns, and the Collaboration for Advancing Pediatric Quality Measures (CAPQuaM) was assigned the enhancement of this measure by AHRQ in consultation with the Centers for Medicare & Medicaid Services (CMS). When CAPQuaM made inquiries to CMS via AHRQ regarding the evolution of the measure since its first adoption, we were told that detailed information was no longer available and that the measure lacked current stewardship. We have tried to build on this important foundation to enhance asthma measurement.

3.C. Relationship to Other Measures (if any)

Describe, if known, how this measure complements or improves on an existing measure in this topic area for the child or adult population, or if it is intended to fill a specific gap in an existing measure category or topic. For example, the proposed measure may enhance an existing measure in the initial core set, it may lower the age range for an existing adult-focused measure, or it may fill a gap in measurement (e.g., for asthma care quality, inpatient care measures).

This measure is an enhancement to an existing measure in the Medicaid Core Measure Set that was developed by the Alabama Medicaid program.

The original measure includes all ED-treated asthmatic events, whether or not the patient was known to be an asthmatic before the event. Further, numerator events alone can qualify children for inclusion in the denominator. Our partners in the New York State Medicaid program have described this characteristic as highly undesirable.

The decision not to require some evidence of asthma in advance of the numerator ED visit has advantages and disadvantages. The biggest advantage is that children for whom receiving any care is challenging are incorporated into the measure, adding a fundamental aspect of access to the measure. We perceive this to be a conflation of two concepts in related but non-identical populations. The two concepts are the management of children with asthma and access to care for children with asthma. The two populations are those children being treated for asthma and those children who have and/or develop asthma. We suggest that this argues for a direct measure of access or availability for children with asthma, which CAPQuaM has developed (see Appropriateness of ED Visits for Children and Adolescents with Identifiable Asthma at www.ahrq.gov/pqmp).

The major disadvantage of the current Core Measure stems from the fact that this formulation introduces non-differential misclassification error if the “research question” is seeking to compare how well plans manage children with asthma. This type of error reduces the sensitivity of the measure to identify true differences in performance and typically represents a bias towards the null. This is true not only when comparing across plans, but also when comparing performance in subpopulations, including identifying disparities.

Measure 1 (Rate of ED Visit Use for Children Managed for Identifiable asthma) in our Measure Set modifies the existing measure by changing the formulation from a modified risk to a true epidemiological rate (incidence density). The denominator moves from children with asthma to years of exposure time contributed by children with asthma, or child- or person-years for short. This falls in the category of a "person-time" denominator. This evolution addresses key shortcomings of the previous measure and offers a highly efficient use of available data (as will be described below). It uses the previous year as a look-back year to enhance our sensitivity to identify children appropriate for the denominator, it holds plans responsible only for the management of patients who are known or should have been known to have asthma, and limits the amount of noise that may be introduced by diagnostic confusion or uncertainty. These represent meaningful enhancements and have been developed in close collaboration with our expert panel, a varied group of stakeholders, and our partners at New York State Medicaid.

This measure—the second measure in our Measure Set—uses an alternative framing to produce a more complete understanding of ED use by children with identifiable asthma. It reports the number of children who contribute numerator events to the first measure (ED visits) and the number who contribute at least one person-month to the denominator of the first measure. It further presents the distribution of the number of ED visits for those with at least one visit and of months contributed to the denominator. Should entities be interested, this measure will allow for calculation of a modified incidence density or risk (the proportion of qualified children who have an ED visit). It further allows for identification of the extent to which the issue of ED use is defined by many children coming to the ED only once during the year contrasted with fewer children having multiple ED visits. Finally, it describes the stability of the population (including the extent to which children with asthma either churn out of insurance eligibility or migrate into eligibility during the course of the year). The two measures combine to help to quantify the frequency and distribution of ED use by children with identifiable asthma.

Section 4. Measure Categories

CHIPRA legislation requires that measures in the initial and improved core set, taken together, cover all settings, services, and topics of health care relevant to children. Moreover, the legislation requires the core set to address the needs of children across all ages, including services to promote healthy birth. Regardless of the eventual use of the measure, we are interested in knowing all settings, services, measure topics, and populations that this measure addresses. These categories are not exclusive of one another, so please indicate "Yes" to all that apply.

Does the measure address this category?

a. **Care Setting – ambulatory:** Yes.
b. **Care Setting – inpatient:** No.
c. **Care Setting – other – please specify:** Yes; emergency department.
d. **Service – preventive health, including services to promote healthy birth:** Yes.
e. **Service – care for acute conditions:** Yes.
f. **Service – care for children with special health care needs/chronic conditions:** Yes.

g. **Service – other (please specify):** No.
h. **Measure Topic – duration of enrollment:** No.
i. **Measure Topic – clinical quality:** Yes.
j. **Measure Topic – patient safety:** No.
k. **Measure Topic – family experience with care:** No.
l. **Measure Topic – care in the most integrated setting:** Yes.
m. **Measure Topic other (please specify):** No.
n. **Population – pregnant women:** No.
o. **Population – neonates (28 days after birth) (specify age range):** No.
p. **Population – infants (29 days to 1 year) (specify age range):** No.
q. **Population – pre-school age children (1 year through 5 years) (specify age range):** Yes; ages 2-5 years.
r. **Population – school-aged children (6 years through 10 years) (specify age range):** Yes; ages 6-10 years.
s. **Population – adolescents (11 years through 20 years) (specify age range):** Yes; ages 11 through 20 years.
t. **Population – other (specify age range):** No.
u. **Other category (please specify):** Not applicable.

Section 5. Evidence or Other Justification for the Focus of the Measure

The evidence base for the focus of the measures will be made explicit and transparent as part of the public release of CHIPRA deliberations; thus, it is critical for submitters to specify the scientific evidence or other basis for the focus of the measure in the following sections.

5.A. Research Evidence

Research evidence should include a brief description of the evidence base for valid relationship(s) among the structure, process, and/or outcome of health care that is the focus of the measure. For example, evidence exists for the relationship between immunizing a child or adolescent (process of care) and improved outcomes for the child and the public. If sufficient evidence existed for the use of immunization registries in practice or at the State level and the provision of immunizations to children and adolescents, such evidence would support the focus of a measure on immunization registries (a structural measure).

Describe the nature of the evidence, including study design, and provide relevant citations for statements made. Evidence may include rigorous systematic reviews of research literature and high-quality research studies.

ED visits for children with asthma represent an intermediate outcomes measure of intrinsic value, as such visits involve the utilization of expensive services. There is abundant evidence that ED visits are common, may be reduced through improved primary care or community-based interventions, and demonstrate disparities (Adams, et al., 2000; ALA, 2018; Auger, et al., 2013;

Bahadori, et al., 2009; Cerdan, et al., 2012; Coventry, et al., 1996; Ducharme, et al., 2011; Farber, 2010; Fiese, et al., 2008; Fuhrman, et al., 2011; Lara, et al., 2013; Manice, 2013; Okelo, et al., 2004; Oraka, et al., 2013; Sawicki, et al., 2010; Self, et al., 2005; Smith, et al., 3007; Talreja, et al., 2012; Weiss, et al., 1992). A more comprehensive literature review is provided as an appendix (see Supporting Documents).

This measure and its specifications result from a formal development process that includes stakeholder input including: a parent focus group, The Mount Sinai Pediatrics Department's Parent Advisory Council, interviews with primary care clinicians, the CAPQuaM's multidisciplinary scientific team, a national multidisciplinary expert panel that established key clinical criteria, and a broad group of organizational stakeholders, including the New York State Medicaid Program.

Presentation of Measure 1 as an incidence density is appropriate to describe event frequency when not every individual in the denominator contributes an equal amount of time to the denominator, as is the case when asthma may develop or become evident during the course of the reporting year, as with the definition of identifiable asthma used by this measure (Rothman, 2008). This formulation also is useful for the specification of the age of the child when it comes to contributing both denominator and numerator time. This second measure independently reports the number of children who experience ED visits for asthma and the number of such visits these children experience. It further allows for characterization of the stability of the eligible population.

5.B. Clinical or Other Rationale Supporting the Focus of the Measure (optional)

Provide documentation of the clinical or other rationale for the focus of this measure, including citations as appropriate and available.

ED visits for asthma are a common, costly, and potentially preventable health service that may serve as a marker for both insufficiency of primary care and insufficiency of clinical management of asthma by the partnership of the family and the health care team (see Supporting Documents for a detailed literature review in the Appendix). Also, the current core measure on this topic has calculation/validity concerns in the State Medicaid programs. Hence, CAPQuaM was assigned this measure for the PQMP by AHRQ-CMS.

The validity of our work has benefited from our use of a formal method, a pragmatic adaptation of the CAPQuaM 360-degree method. The method, as adapted to asthma, described in the next paragraph, was specifically designed to develop valid and reliable measures in the face of pragmatic epistemological uncertainty. That is, recognizing that practice extends well beyond the research base, we designed this method to allow us to develop reliable and valid state of the science measures, in part by explicitly modeling and accounting for uncertainties in the measure development and in part by the conceptualization and implementation of a Boundary Guideline (explained below). We have shared and refined this approach in a number of venues, including within the PQMP, which comprises the various PQMP AHRQ-CMS CHIPRA Centers of Excellence; the State PQMP participants; and AHRQ and CMS participants. All presentations have invited dialogue and feedback. This work has been similarly presented at a number of Grand Rounds /weekly conferences in the New York-New Jersey area, as well as to

national/international audiences, including the bioethics and children's health services research communities. These latter venues include:

- 2012 Pediatric Academic Societies State of the Science Plenary (Boston). See the Appendix in the Supporting Documents for this presentation.
- 2012 Oxford-Mount Sinai Bioethics Consortium (Amsterdam).
- 2012 Child Health Services Research Interest Group at Academy Health (Orlando).

Feedback from these presentations was extremely positive. The Boundary Guideline construct has generated particular enthusiasm. We asked the Bioethics Consortium to extrapolate the primum non nocere (First, do no harm) principle to apply regarding this aspect of performance measurement. We received strong feedback that not only is it ethical to measure using systematically developed measures (even in the context of some uncertainty), but that it is ethically preferable to use such measures compared with the alternative of providing care that is not assessed (and perhaps not assessable) because of residual uncertainty.

Fortunately, in the case of this proposed measure, we can present both a systematically developed measure and evidence to support its use.

Section 6. Scientific Soundness of the Measure

Explain the methods used to determine the scientific soundness of the measure itself. Include results of all tests of validity and reliability, including description(s) of the study sample(s) and methods used to arrive at the results. Note how characteristics of other data systems, data sources, or eligible populations may affect reliability and validity.

6.A. Reliability

Reliability of the measure is the extent to which the measure results are reproducible when conditions remain the same. The method for establishing the reliability of a measure will depend on the type of measure, data source, and other factors.

Explain your rationale for selecting the methods you have chosen, show how you used the methods chosen, and provide information on the results (e.g., the Kappa statistic). Provide appropriate citations to justify methods.

The basis for the scientific soundness of this measure lies in the literature discussed above, in clinical expertise, and with administrative and encounter data. Though they have their limitations, these data types have been shown in multiple studies to be a reliable source of information for population-level quality measurement. They are currently used for all of the analogous measures of which we are aware, including the current Core Measure.

Quality measures that can be calculated using administrative data have been shown to have higher rates of performance than indicated by a review of the medical record alone. Claims data

are more accurate for identifying services with a high likelihood of documentation due to reimbursement, such as physician visits, ED visits, hospitalizations, and reimbursed prescription drug use (Diamond, Rask, Kohler, 2001). While data systems and their contents are imperfect (Peabody, Luck, Jain, et al., 2004), it is well recognized that there are tradeoffs that need to be made and that both feasibility and accuracy are important considerations (Chubak, Pocobelli, Weiss, 2012).

Most administrative databases contain consistent elements, are available in a timely manner, provide information about large numbers of individuals, and are relatively inexpensive to obtain and use. Validity of many of these databases has been established, and their strengths and weaknesses relative to data abstracted from medical records and obtained via survey have been documented (Virnig, McBean, 2001). Administrative data are supported, if not encouraged, by Federal agencies, such as the National Institutes of Health (NIH), AHRQ, CMS, and the Department of Veterans Affairs (VA). CMS made it clear to the participating AHRQ-CMS CHIPRA Centers of Excellence funded to develop measures in the Pediatric Quality Measures Program that it places a premium on feasibility when assessing those measures that it will most highly recommend to States to complete. The sources of data for the existing measure and other analogs thereof are based on administrative data as well, providing consensual validation for the appropriate primary data source.

The use of 2 years of data to validate the diagnosis of asthma has been found to produce substantial agreement with patient surveys and improves performance over the use of 1 year of data (Huzel, et al., 2002). Others have reported that using administrative databases to identify asthma is both sensitive and specific compared to review of the primary care physician's office chart (To, Dell, Dick, et al., 2006).

The constructs underlying these measures are (1) identifying children with identifiable asthma and (2) identifying ED use by these children.

We have been guided in our definition of identifiable asthma by the results of a formal RAND/UCLA modified Delphi process conducted with a multidisciplinary panel of national experts, which included pediatricians, asthma specialists, a family physician, and ED physicians. The definitions were specified to allow their use with data elements that ought to be available in electronic form to a responsible entity, such as a health plan or State Medicaid program. Potential exceptions to this are elements such as zip code of residence and race and ethnicity of the child. We understand race and ethnicity are generally available from clinical charts, as is zip code, and our work and the field converge on the idea that such structured abstraction of specific data is highly reliable. We have data from a feasibility study conducted at more than a dozen hospitals that demonstrates that these data elements are generally available in the chart, although the definition of race and ethnicity, as well as how it is determined, may vary by institution. Nonetheless, the 2009 CHIPRA legislation, which funded the development of this measure, directs for measures to be capable of identifying disparities; we have specified it to be so, despite concerns about potential reliability in the collection and assessment of race and ethnicity by health care institutions and practices. We encourage the development of data systems that record

parent-reported race and ethnicity and inclusion of these data in administrative data sets (which while done currently is not universal).

Identifiable asthma was defined according to the results of an expert panel that was intending to develop a subset of children that would be more inclusive than currently existing approaches, such as the HEDIS Hospitalizations for Children with Identifiable asthma measure. These specifications achieve this goal. More than 1.8 million children were in Medicaid for the full year, and prevalence estimates in the Northeast United States were at 11.4 percent and 12.5 percent among families in poverty (CDC, 2009). Even with slight modifications to make it more inclusive, the stricter HEDIS definition would have identified between 3 and 5 percent of the 600,000 (managed care) – 1.45 million (including FFS) children who met the 12-month continuous enrollment criteria. Our proposed measure identified approximately 200,000 children, which is about 87 percent of the anticipated asthmatics in New York State Medicaid. Hence it achieves its dual goals of selecting from among all children who show signs or symptoms of asthma while still being more inclusive than existing measures.

6.B. Validity

Validity of the measure is the extent to which the measure meaningfully represents the concept being evaluated. The method for establishing the validity of a measure will depend on the type of measure, data source, and other factors.

Explain your rationale for selecting the methods you have chosen, show how you used the methods chosen, and provide information on the results (e.g., R2 for concurrent validity).

The reliability section above contains information related to validity.

The use of Expert Panels has been demonstrated to be useful in measure development and health care evaluation, including for children (Mangione-Smith, DeCristofari, Setodji, et al., 2007). Practitioners have been identified as a resource for researchers in developing and revising measures, since they are on the frontlines working with the populations who often become research participants. Involving practitioners can assist researchers in the creation of measures that are appropriate and easily administered (Rubio, Berg-Weger, Tebb, et al., 2003).

The 360-degree method is highly engaged with collaborators, partners, and the literature. It seeks to target relevant information and perspective and to have measures emerge from the process. The potential measures are then tested to the extent that time and resources permit. In developing the asthma method, we incorporate:

- A high level of engagement with partnered institutions and senior advisors that bring into the process a wide diversity of stakeholders.
- A detailed literature review that is updated and supplemented as needed.
- A focus group with parents, using a guide informed by conversation with an existing Parent Advisory Council at Mount Sinai.
- Interviews with clinicians (both family physicians and pediatricians).

- The CAPQuaM scientific team (including an ED physician; an internist asthma expert; pediatricians, including primary care, pulmonologists, pediatric ED physicians, social workers, and a triple-boarded pediatrician-child psychiatrist who is an international expert in patient adherence; distinguished national and international experts in patient safety and quality measurement and improvement; and a variety of public health professionals).
- A geographically diverse, multidisciplinary expert panel whose members participated in a two-Round RAND/UCLA modified Delphi process, with enhanced follow up.
- Development of a Boundary Guideline that takes a multi-vectorial approach to incorporate simultaneously a variety of gradients, including gradients of importance, relevance, and certainty, as appropriate to the construct being represented.
- Specification and review of measures and approaches to measurement by stakeholders and experts.
- Testing and assessment of measure performance to the extent feasible, given resources and available time.

This process has led us to enhance the validity of this measure by deflating competing concepts and clearly specifying it as an interpretable epidemiological rate (incidence density). The current Core Measure was a simple risk, with asthma patients defined in the measurement year as having primary or secondary diagnosis for any service, and ED visit defined as a CPT-code identified ED visit with asthma as the primary diagnosis. The numerator for the Core Measure includes all patients with at least one ED visit for asthma as asthmatic events, whether or not the patient was known to be an asthmatic before the event. Further, numerator events alone can qualify children for inclusion in the denominator. Our partners in the New York State Medicaid program have described this characteristic as highly undesirable. Therefore, we proposed as Measure 2 in this set, "Distribution of Emergency Department Visit Use for Children Managed for Identifiable asthma."

Since we consider identifiable asthma, one episode of asthma or asthma-like systems will not necessarily qualify a child as having identifiable asthma. The identifiable asthma must precede the asthma visit. Since the child had received some treatment for services that suggest identifiable asthma, the fact that the child has asthma was available to the health care system. Further, in an attempt to enhance the meaningfulness of the measure, we have included a 2-month continuous enrollment requirement prior to the reporting month. Since the child must also be eligible for the reporting month, this becomes a 3-month continuous enrollment requirement. In doing this, we sought to strike a delicate balance between developing a meaningful accountability measure and eliminating children because of problems of churning that have been well-documented by researchers (Fairbrother, Jain, Park, et al., 2004). This balance was achieved in close collaboration with our colleagues at New York State Medicaid.

This second measure contributes to the understanding of the population of children using the ED for asthma and provides information that may be useful to support the management of this population by responsible entities, such as health plans or large private or public purchasers—for example, State Medicaid programs.

We pre-tested our Measure 1 specifications with a series of iterative analyses in New York State Medicaid data. Early on, we found that the combined definitions of identifiable asthma and the need for the diagnosis to precede the ED visit meant that the reporting period and the assessment period could not overlap completely. These tests led us to analyze 2 years of data, as shown in the diagram included with our specifications (see Supporting Documents): 1 year is the reporting year, and 1 year is the look-back year. We further divide the reporting year into 12 reporting months. ED events in each reporting month are eligible for the numerator if identifiable asthma criteria have been satisfied (combining the look-back year and all prior months in the reporting year) and the child has been continuously enrolled for the 2 months immediately prior to the reporting month.

We also found many visits in 2011 that were identified by revenue codes and not by CPT codes: using both increased our yield substantially. After consultation with a coding expert, we became convinced that these were likely to be real ED visits. Accordingly, we have incorporated revenue codes into our specifications.

Our data from New York State Medicaid represent 61,327 asthma ED visits for 40,855 children among 200,769 children who contributed to the 185,606 person-years denominator. The number of children who contributed to the denominator represents those children who had identifiable asthma and were seen in a New York State Medicaid health plan for at least 3 consecutive months ending in a month during 2011.

For Measure 1, we found that the rate varied as expected by age and by season of the year. Chart 1 (see Supporting Documents) includes data for Reporting Year 2011.

We find these data and their consistency with expected findings to be persuasive that the measure is both valid and sensitive to real differences. Specifically regarding this measure, 40,855 children experienced 61,327 eligible ED visits. The median number of visits was 1.5. Percentiles are shown in the Table 2 (see Supporting Documents); 10 percent of children had three or more eligible visits, and 5 percent had 16 or more visits.

The number of eligible months for the typical child (the median) was 12 months, and 75 percent were eligible for all 12 months; 10 percent were eligible for 8 months or fewer. Full reporting of the measure is shown in Table 2 (see Supporting Documents).

Section 7. Identification of Disparities

CHIPRA requires that quality measures be able to identify disparities by race, ethnicity, socioeconomic status, and special health care needs. Thus, we strongly encourage nominators to have tested measures in diverse populations. Such testing provides evidence for assessing measure's performance for disparities identification. In the sections below, describe the results of efforts to demonstrate the capacity of this measure to produce

results that can be stratified by the characteristics noted and retain the scientific soundness (reliability and validity) within and across the relevant subgroups.

7.A. Race/Ethnicity

These measures are specified to be assessed by race/ethnicity. Our testing in New York State confirmed the practicality of so doing. By providing actual counts of the numbers of children, we have made it possible to estimate the burden of the disease in defined racial and ethnic populations. Shorter durations of time in the person-time distribution would provide an indication that either identifiable asthma is increasing meaningfully during the year in that population, or that there was significant churning in and out of that plan for that population. Either finding would be important and demand attention.

Using New York State Medicaid data for Reporting Year 2011 and Look-Back Year 2010, we found that the measure is practical, and that it varies as expected by race/ethnicity and urbanicity. For example, the overall rate for non-Hispanic blacks is 44.6 visits per 100 child years, compared to 35.2 for Hispanics, and 17.8 for non-Hispanic whites. Those in the most urban areas (Urban Influence Code [UIC] 1) had a rate of 35.2 visits per 100 child years, compared to about 20 in more suburban and rural metro areas, and compared to 11.1 in rural areas (UICs 7-9), which are the most rural in New York State.

7.B. Special Health Care Needs

The Maternal and Child Health Bureau has defined children with special health care needs (CSHN) as children "[w]ho have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and health-related services of a type or amount beyond that required by children generally" (McPherson, Arango, Fox, 1998). Considering this definition, children with identifiable asthma are children CHSN.

7.C. Socioeconomic Status

Our analyses were conducted in Medicaid data. The measure is specified to be stratified in two ways to assess aspects related to socioeconomic status: Public versus commercial insurance and by five strata defined by the percent of the population in poverty in the county of residence.

During our feasibility assessment phase, we asked institutions whether the payment source was available in the medical record (electronic or paper) and the difficulty of abstracting this information from those records. We found that payment source is generally available in the medical chart and overall is not difficult to abstract. As we expect this measure primarily to be generated by insuring entities, these data are expected to be present and available in the administrative data. Zip codes of residence are typically available in both medical records and administrative data sets and can be linked to county of residence as described in the specifications (see Supporting Documents). We have identified five distinct strata based on the proportion of persons living below the poverty line. Such ecological data have been found to be independent predictors of health outcomes and are readily available using U.S. Department of Agriculture (USDA) data (Bennett, Olatosi, Probst, 2008). The five strata represent the three quartiles of lowest poverty each as one stratum, and the highest quartile divided into two strata,

the 75th-90th percentiles and the highest 10 percent. In New York State, only quartiles 1 through 3 are present, so we were not able to demonstrate the sensitivity of the measure specifically, but we were able to demonstrate the practicality of the method.

7.D. Rurality/Urbanicity

These measures are specified to be reported by UICs, which have been developed by the USDA based on a number of criteria to describe the levels of urbanicity and rurality. This is intended not only to report within-plan differences but also to allow for aggregation as appropriate. While each UIC has its own meaningful definition, some researchers choose to aggregate various codes. We recommend consideration of the aggregation schema of Bennett and colleagues (2008) at the South Carolina Rural Research Center. Their aggregation scheme brings together Codes 1 and 2 as Urban; 3, 5, and 8 as micropolitan rural; 4, 6, and 7 as rural adjacent to a metro area; and 9, 10, 11, and 12 as remote rural. We observe that UIC 5 might as well be aggregated with 4, 6, and 7 as an adjacent rural area. Further, this approach to rurality does not map exactly to the population density based definition of frontier (fewer than six persons per square mile) as articulated in the Affordable Care Act, use of such categories is consistent with the ACA's intent that the Secretary ask that data collected for racial and ethnic disparities also look at underserved frontier counties.

Frontier health care may be approximated by analysis of the remote rural categories Huzel, Roos, Anthonisen, et al., 2002). This judgment was confirmed after CAPQuaM consulted with Gary Hart, Director of the Center for Rural Health at the University of North Dakota School of Medicine & Health Sciences, who is heading a project funded by the Health Resources and Services Administration to develop new methods to analyze frontier health. We clarified that his work suggests that considering UICs 9-12 is the best overall approach to using county level data to study frontier health. Inclusion of UIC 8 would make the analysis more sensitive to including frontier areas but at a meaningful cost in sensitivity.

Those interested in care specific to large cities may wish to aggregate the rural area and analyze UICs 1 and 2 separately. Frontier health care may be approximated by analysis of the remote rural categories (Hart, 2012). The New York State Medicaid data were sensitive to urbanicity with higher rates of ED utilization in the most urban areas and lowest rates of ED use in the most rural areas and other areas intermediate between the two.

7.E. Limited English Proficiency (LEP) Populations

We have not tested or specified this measure for this specific population.

Section 8. Feasibility

Feasibility is the extent to which the data required for the measure are readily available, retrievable without undue burden, and can be implemented for performance measurement. Using the following sections, explain the methods used to determine the feasibility of implementing the measure.

8.A. Data Availability

1. What is the availability of data in existing data systems? How readily are the data available?

The definitions were specified to allow their use with data elements that ought to be available in electronic form as administrative data to a responsible entity, such as a health plan or State Medicaid program. While zip code is sometimes a hidden or non-public variable when such data sets are released, it generally is available to a responsible entity, such as an insurer or a Medicaid program. While race and ethnicity are typically available to Medicaid programs and are indicated on institutional medical records (e.g., hospital records), this information may or may not be on an individual physician practice's chart. Race and ethnicity are often but not always recorded in insurance databases. We have data from a feasibility study conducted at more than a dozen hospitals confirming that both data elements are generally available in the hospital chart, frequently electronically. The CHIPRA legislation that funded this work indicates that measures must be able to assess racial and ethnic disparities; hence, these data points need to be specified in this measure.

2. If data are not available in existing data systems or would be better collected from future data systems, what is the potential for modifying current data systems or creating new data systems to enhance the feasibility of the measure and facilitate implementation?

Routine incorporation of patient reported race and ethnicity (or parent report for children) into managed care and other insurance administrative databases.

8.B. Lessons from Use of the Measure

1. Describe the extent to which the measure has been used or is in use, including the types of settings in which it has been used, and purposes for which it has been used.

This measure is not currently in use.

2. If the measure has been used or is in use, what methods, if any, have already been used to collect data for this measure?

Not applicable.

3. What lessons are available from the current or prior use of the measure?

The core asthma measure has been in use for some time, although many States choose not to report. According to the CMS Annual Reports on the Quality of Care for Children in Medicaid in 2011 and 2012, only five States reported the measure in Federal fiscal year (FFY) 2010; this increased to 14 States in FFY 2011 (CMS, 2012). One issue cited in the 2011 report was that there were concerns about data availability (CMS, 2011). At the time, the Core measure required the use of pharmaceutical data to establish eligibility. Although conversations with the New York Medicaid program led us to believe that pharmacy data are now generally available, we added a note to our specifications that if such data are not available, the measure may be reported if that absence of data is noted. During our pretesting in New York State, we found that absence

of pharmacy data reduced the number of eligible children modestly and led to about a 1 percentage point difference in the proportion of children who had ED visits for asthma.

The current measure requires careful but mundane SAS programming. We can make an exemplar program available upon request (for more information, please send your request to pqmp@ahrq.hhs.gov). We again are informed by our colleagues at New York State Medicaid that it would be unusual for a State Medicaid program or submitting entity to not have available skilled analytical programming resources, whether internally or on contract, to assist with reporting requirements.

Section 9. Levels of Aggregation

CHIPRA states that data used in quality measures must be collected and reported in a standard format that permits comparison (at minimum) at State, health plan, and provider levels. Use the following table to provide information about this measure's use for reporting at the levels of aggregation in the table.

For the purpose of this section, please refer to the definitions for provider, practice site, medical group, and network in the Glossary of Terms.

If there is no information about whether the measure could be meaningfully reported at a specific level of aggregation, please write "Not available" in the text field before progressing to the next section.

Level of aggregation (Unit) for reporting on the quality of care for children covered by Medicaid/ CHIP†:

State level* Can compare States

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
Yes.

Data Sources: **Are data sources available to support reporting at this level?**
Yes.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
New York State had ~200,000 children with about 2.2 million person-months in the denominator. Eliminate any strata with less than 40 person-months in any month's denominator or less than 1,000 person-months for the year.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
None anticipated.

Other geographic level: Can compare other geographic regions (e.g., MSA, HRR)

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
Yes.

Data Sources: **Are data sources available to support reporting at this level?**
Yes.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
New York State had ~200,000 children with about 2.2 million person-months in the denominator. Slightly more than 100,000 person months were in urban areas and the rest were in rural areas. The measure uses urban influence codes. Eliminate any strata with less than 40 person-months in any month's denominator or less than 1,000 person-months for the year.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
None anticipated.

Medicaid or CHIP Payment model: Can compare payment models (e.g., managed care, primary care case management, FFS, and other models)

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
Yes.

Data Sources: **Are data sources available to support reporting at this level?**
Yes.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
New York State had ~200,000 children with about 2.2 million person-months in the denominator. For our analysis, we did not look at payment models but eligibility categories. In New York Medicaid, 184,000 person months were for SSI, 1,358,482 in TANF, and 626,280 in UNAS. Measure is specified to be reported by benefit design. Eliminate any strata with less than 40 person-months in any month's denominator or less than 1,000 person-months for the year.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
None anticipated.

Health plan*: Can compare quality of care among health plans.

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
Yes.

Data Sources: **Are data sources available to support reporting at this level?**
Yes.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
New York State had ~200,000 children with about 2.2 million person-months in the denominator. Eliminate any strata with less than 40 person-months in any month's denominator or less than 1,000 person-months for the year.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
None anticipated.

Provider Level
Individual practitioner: Can compare individual health care professionals

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
No.

Data Sources: **Are data sources available to support reporting at this level?**
No.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
Not specified for this purpose; use not recommended.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
Not applicable.

Provider Level
Hospital: Can compare hospitals

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
No.

Data Sources: **Are data sources available to support reporting at this level?**
No.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
Not specified for this purpose; use not recommended.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**

No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
Not applicable.

Provider Level
Practice, group, or facility:** Can compare: (i) practice sites; (ii) medical or other professional groups; or (iii) integrated or other delivery networks

Intended use: **Is measure intended to support meaningful comparisons at this level? (Yes/No)**
No.

Data Sources: **Are data sources available to support reporting at this level?**
No.

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
Not specified for this purpose; use not recommended.

In Use: **Have measure results been reported at this level previously?**
No.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
No.

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
Not specified for this purpose; use not recommended. We can imagine there are circumstances in which large integrated delivery systems (IDS) with risk may find this measure useful, but it was not designed with that in mind or tested for that purpose.

Section 10. Understandability

CHIPRA states that the core set should allow purchasers, families, and health care providers to understand the quality of care for children. Please describe the usefulness of this measure toward achieving this goal. Describe efforts to assess the understandability of this measure (e.g., focus group testing with stakeholders).

We have had conversations about this measure and its understandability with our expert panel, our partners at the New York State Department of Health, including leadership of the Medicaid program, and other stakeholders. Our collective conclusion is that the redefinition of the measure

to only include those children who were known to be asthmatic prior to the index ED visit and the lessening of the extent to which the ED visit can contribute to eligibility each make the measure significantly more intuitive to understand and serve to make it a far better accountability measure. Further, the testing in New York State confirmed that the measure reduced from approximately 1.4 million children with an asthma diagnosis and some continuous enrollment to 200,000 the number of children eligible for the measure. Our definition of identifiable asthma was not only intended to be a filter, but to be inclusive.

We found 196,623 children with identifiable asthma. This compares to the 45,155 identified by the much more stringent HEDIS criteria for hospitalizations for children with asthma. We conclude that we have identified a meaningful and inclusive group of children known to have asthma who are at risk for ED visits, contributing to the measure's understandability.

This measure provides a count of the number of children who have identifiable asthma, the distribution of eligible ED visits that they had, a count of the number of children who qualified as having identifiable asthma managed in the plan, and a description of the distribution of how many months those children were eligible to have their ED visits counted. These are straightforward constructs – the counts are understandable, and the distributions should be readily understood by those interested in them. They provide insight into the extent to which a few children with problematic asthma contribute to the rate and also to the dynamics and stability of the population. One of our expert panel members commented to us about both asthma-related measures, noting more specifically about this one ("the second measure"):

"These appear to be much better measures than simply counts. The second measure is one of those things you think about and then say—of course that is what we should have been doing all along. Nice work. "

We have not specifically tested the understandability of this measure with patients.

Section 11. Health Information Technology

Please respond to the following questions in terms of any health information technology (health IT) that has been or could be incorporated into the measure calculation.

11.A. Health IT Enhancement

Please describe how health IT may enhance the use of this measure.

Integrated administrative datasets that include clinical services, pharmacy, and patient demographics, including patient (parent) reported race/ethnicity and State and county of residence, will enhance use of this measure.

11.B. Health IT Testing

Has the measure been tested as part of an electronic health record (EHR) or other health IT system?

No.

If so, in what health IT system was it tested and what were the results of testing?

Not applicable.

11.C. Health IT Workflow

Please describe how the information needed to calculate the measure may be captured as part of routine clinical or administrative workflow.

Not applicable.

11.D. Health IT Standards

Are the data elements in this measure supported explicitly by the Office of the National Coordinator for Health IT Standards and Certification (ONC) criteria (see healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__standards_ifr/1195)?

No.

If yes, please describe.

Not applicable.

11.E. Health IT Calculation

Please assess the likelihood that missing or ambiguous information will lead to calculation errors.

Not applicable.

11.F. Health IT Other Functions

If the measure is implemented in an EHR or other health IT system, how might implementation of other health IT functions (e.g., computerized decision support systems in an EHR) enhance performance characteristics on the measure?

Not applicable.

Section 12. Limitations of the Measure

Describe any limitations of the measure related to the attributes included in this CPCF (i.e., availability of measure specifications, importance of the measure, evidence for the focus of the measure, scientific soundness of the measure, identification of disparities, feasibility, levels of aggregation, understandability, health information technology).

We acknowledge that some States may be unable to include prescription fills in their data. Our formative analysis suggests that less than 5 percent of included children are included specifically because of medication refills. Thus, the measure can be assessed with only limited error in such circumstances.

The use of county rather than individual data on poverty is both a strength (in that it can be reliably assessed and has substantive meaning as a contextual variable) and a limitation, in that it is an ecological variable.

The eligibility of these criteria that restrict it to children identified as those being managed for identifiable asthma is both a strength and a limitation. It avoids conflation with the construct of basic access to care and makes the measure more specific to the management of asthma. The specifications were intended to be and are less restrictive than the identifiable asthma specifications written for the HEDIS asthma hospitalization measure.

Several departures from traditional approaches will require users to develop familiarity with this measure. It provides the information to calculate a risk, but it is not specified as a risk. It complements the interpretation of the rate measure as specified in Measure 1 in this set. The inclusion of ED visits with asthma as a secondary diagnosis probably more accurately conveys the influence of asthma on ED utilization, but it is a departure from the prior methods. In the New York State Medicaid data, we found that when asthma was the secondary diagnosis, it was very rare for children to be in ED with asthma as a second diagnosis and to have a CPT code of 99281, which is the code for a simple problem with simple decision making. We infer from this that the higher codes suggest that the asthma came into play for the visit and that our panel was wise to ask us to include these as events.

Section 13. Summary Statement

Provide a summary rationale for why the measure should be selected for use, taking into account a balance among desirable attributes and limitations of the measure. Highlight specific advantages that this measure has over alternative measures on the same topic that were considered by the measure developer or specific advantages that this measure has over existing measures. If there is any information about this measure that is important for the review process but has not been addressed above, include it here.

This measure indicates the number of children being managed for identifiable asthma, the number of those children who have eligible ED visits, and the distribution of both the number of ED visits among those who have visits and of months being managed for identifiable asthma among all eligible children. It complements another measure that describes the incidence rate of ED visits for children ages 2-21 years who are being managed for identifiable asthma. It belongs to the PQMP Measures of Emergency Department Use for Children with Asthma Process 1 Collection and the PQMP Measures of Emergency Department Use for Children with Asthma Frequency Set. This measure and its specifications result from a formal development process that included stakeholder input throughout. ED visits for asthma are common, costly, and potentially preventable. They may serve as a marker for both insufficiency of primary care and insufficiency of clinical management of asthma by the partnership of the family and the health care team.

This measure is intended for reporting by purchasers, health plans, regions, or States using administrative data, supplemented if needed for demographic data by medical records.

The literature demonstrates that clinical, system, and community interventions may improve care for asthma and reduce ED visits. The potential for racial and ethnic disparities is high. We found large racial and ethnic differences in ED use for asthma in New York State Medicaid. Poverty may also be associated with increased ED use for children with asthma. More than 200,000 children had identifiable asthma (using our definition) in New York State Medicaid in 2011 (almost 11 percent) and over 60,000 ED visits for asthma came from the eligible children.

We pre-tested our specifications with a series of iterative analyses in New York State Medicaid. We found 61,327 asthma ED visits for 40,855 children among 200,769 children who contributed to the 185,606 child-years denominator. We found that the rate varied as expected by age and by season of the year and by race/ethnicity and urbanicity. For example, the overall rate for non-Hispanic blacks is 44.6, compared to 35.2 visits per 100 child years for Hispanics and 17.8 for non-Hispanic whites. Those in the most urban UIC (1) had a rate of 35.2 visits per 100 child years compared to about 20 in more suburban and rural metro areas compared to 11.1 in rural UICs (7-9), which are the most rural in New York State.

We find these data and their consistency with expected findings to be persuasive that our measurement approach is both valid and sensitive to real differences. The current measure offers insight into the burden of illness experienced by children and in subpopulations as well as the stability of children with identifiable asthma remaining in the plan.

The measure is based on administrative data and therefore is feasible with generally available data. It can readily be aggregated from the level of a single insurance plan or purchaser.

We have had conversations about this measure and its understandability with our expert panel, our partners at the New York State Department of Health, including leadership of the Medicaid program, and other stakeholders. Our collective conclusion is that the redefinition of the measure to only include those children who were known to be asthmatic prior to the index ED visit and the lessening of the extent to which the ED visit can contribute to eligibility each make the measure significantly more intuitive

The feedback from our collaborators is that this measure set advances the understanding of asthma outcomes and is both intuitive and nuanced.

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The CHIPRA Pediatric Quality Measures Program (PQMP) Candidate Measure Submission Form (CPCF) was approved by the Office of Management and Budget (OMB) in accordance with the Paperwork Reduction Act.

The OMB Control Number is 0935-0205 and the Expiration Date is December 31, 2015.

Public Disclosure Requirements

Each submission must include a written statement agreeing that, should U.S. Department of Health and Human Services accept the measure for the 2014 and/or 2015 Improved Core Measure Sets, full measure specifications for the accepted measure will be subject to public disclosure (e.g., on the Agency for Healthcare Research and Quality [AHRQ] and/or Centers for Medicare & Medicaid Services [CMS] websites), except that potential measure users will not be permitted to use the measure for commercial use. In addition, AHRQ expects that measures and full measure specifications will be made reasonably available to all interested parties. "Full measure specifications" is defined as all information that any potential measure implementer will need to use and analyze the measure, including use and analysis within an electronic health record or other health information technology. 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. This statement must be signed by an individual authorized to act for any holder of copyright on each submitted measure or instrument. The authority of the signatory to provide such authorization should be described in the letter.

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