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

Section 1. Basic Measure Information

1.A. Measure Name

CAPQuaM PQMP Asthma I: Rate of Emergency Department Visit Use for Children Managed for Identifiable Asthma

1.B. Measure Number

0113

1.C. Measure Description

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

This measure estimates the rate of emergency department (ED) visits for children ages 2-21 years who are being managed for identifiable asthma, using specified definitions. The measure is reported in visits per 100 child-years.

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 PQMP 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 PQMP 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.**

   Not applicable.

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

The numerator estimates the number of ED visits for asthma among children being managed for asthma. Since most hospitalizations for asthma are from the ED, and many ED visits that result in hospitalization are not captured in encounter data, a numerator event may be identified either as an ED visit or as a hospitalization.

Numerator Elements

Numerator elements include the date and count of all emergency visits or hospitalizations with a primary or secondary diagnosis of asthma in a child who was eligible in the month being assessed. ED visits and hospitalizations should be identified as a visit that is associated with codes for identifiable asthma.

An ED visit that results in hospitalization must be counted as a single numerator event. In other words, for each individual in the denominator for the specified month, consider evidence of hospitalization that is on the same day or 1 day after an ED visit to represent one discrete event. Consecutive days of hospitalization are considered to represent one hospitalization.

An ED visit should be identified as a visit that is associated with:

1. At least one of the following CPT codes: 99281, 99282, 99283, 99284, 99285

AND/OR

2. At least one of the following revenue codes:
   0450 Emergency Room
   0451 Emergency Room: EM/EMTALA

0452 Emergency Room: ER/ Beyond EMTALA
0456 Emergency Room: Urgent care
0459 Emergency Room: Other emergency room
450 Emergency Room
451 Emergency Room: EM/EMTALA
452 Emergency Room: ER/ Beyond EMTALA
456 Emergency Room: Urgent care
459 Emergency Room: Other emergency room
0981 Professional fees (096x) Emergency room
981 Professional fees emergency room

A hospitalization should be identified as a visit that is associated with:

1. At least one of the following CPT Codes: 99238, 99239, 99221, 99222, 99223, 99356, 99357. 99231, 99232, 99233, 99234, 99235, 99236, 99218, 99219, 99220

OR

2. At least one of the following Revenue Codes: 0110, 0111, 0112, 0113, 0114, 0117, 0119, 0120, 0121, 0122, 0123, 0124, 0127, 0129, 0130, 0131, 0132, 0133, 0134, 0137, 0139, 0150, 0151, 0152, 0153, 0154, 0157, 0159, 0200, 0201, 0202, 0203, 0204, 0206

1.H. Numerator Exclusions

Events involving patients who meet numerator but not denominator criteria.

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, except for those with concurrent or pre-existing diagnosis of cystic fibrosis (ICD-9 CM codes of 277.0, 277.01. 277.02, 277.03, 277.09), chronic obstructive pulmonary disease (COPD) (three-digit ICD-9 code 496), or emphysema (three-digit ICD-9 code of 492). For entities that prefer to use AHRQ's Clinical Classifications Software, the asthma definition before exclusions is CCS class 128.

1.I. Denominator Statement

The denominator represents the person time experience among eligible children with identifiable asthma. Assessment of eligibility is determined for each child monthly. The total number of child months experienced is summed and divided by 1200 to achieve the units of 100 child years for the denominator.

Assessing eligibility for the denominator requires 2 years of data, the reporting year and the 12-month period before the reporting year.

The denominator is the sum total of the number of months that children meet all eligibility criteria divided by 1200. This calculation yields the denominator in terms of '100 child years,' which is the equivalent of 100 children with identifiable asthma in the plan for 1 year each.

We consider children to be managed for identifiable asthma to meet two criteria simultaneously: (1) they have been enrolled for 3 consecutive months including the month being assessed, and (2) they have evidence of claims sufficient to meet the eligibility criteria for identifiable asthma.

The analysis should be conducted on a month by month basis as described herein: Within the group of children who meet the criteria for identifiable asthma, identify and maintain a unique patient identifier, age, and all stratification variables. We call the timeframe during which eligibility is established to be the Assessment Period.

For each month of the Reporting Year, determine eligibility for each patient, as of the last day of the month prior to the reporting month. This illustration assumes that the Reporting Year is 2011. When assessing January 2011, consider all of Calendar Year 2010 as the Assessment Period for assessing the presence or absences of identifiable asthma. For February, 2011, the Assessment Period includes all of calendar year 2010 AND January 2011. Repeat this progression monthly so that for December, 2011, identifiable asthma one would identify children with identifiable asthma using an Assessment Period from January 2010 through November 2011. For each month, assess whether the continuous enrollment criterion is met prior to including the month in the denominator. For example, for January 2011, the child must have been enrolled in November and December, 2010 (plus January 2011). Another example, for December 2011, to be eligible the child must have been enrolled in October 2011 and November 2011, as well as December.

Please see Figure 1 and Table 1 (see Supporting Documents); these are considered INTEGRAL to these specifications and are not optional.

Identifiable asthma is present when there is evidence as specified for any of the following:

a. Prior hospitalization with asthma as primary or secondary diagnosis
b. Other qualifying events after the fifth birthday (age is age at occurrence):
    i. One or more ambulatory visits with asthma as the primary diagnosis in the look-back period AND an ED visit in the Reporting Month prior to the index visit, OR
    ii. Two or more ambulatory visits with asthma as a diagnosis, OR
    iii. One ambulatory visit with asthma as a diagnosis AND at least one asthma-related prescription, OR
    iv. Two or more ambulatory visits with a diagnosis of bronchitis.
c. Other qualifying events, any age:
    i. Three or more ambulatory visits with diagnosis of asthma and/or bronchitis, OR
    ii. Two or more ambulatory visits with a diagnosis of asthma and/or bronchitis AND one or more asthma- related prescriptions.

As noted, asthma-related medicine means long-acting beta-agonist (alone or in combination) or inhaled corticosteroid (alone or in combination), anti-asthmatic combinations, methylxanthines (alone or in combination), and/or mast cell stabilizers.

Please note that in order to promote better harmonization, we start with the current HEDIS asthma medication list. From that list, in accordance with our expert panel recommendations, we eliminate medications in the following two categories: leukotriene modifiers and short-acting inhaled beta-agonists.

We further exclude indacaterol, a recently approved long-acting beta agonist that is indicated in the United States only for the treatment of chronic obstructive pulmonary disease (COPD). As indicated elsewhere, COPD is an exclusion criterion for this measure. These specifications anticipate that the National Committee for Quality Assurance (NCQA) will update the medication list from time to time, and with the stated exclusions, updated lists may be substituted for the list linked herein. The table used for testing is labeled Table AMR-A: Asthma Controller and Reliever Medications (available at http://www.ncqa.org/HEDISQualityMeasurement/HEDISMeasures/HEDIS2015/HEDIS2015NDCLicense/HEDIS2015FinalNDCLists.aspx.

If pharmacy data are not available, the measure should be reported with notation that pharmacy data were not used for the assessment of eligibility. This avoids eliminating from the measure those facilities with no link to pharmacies. Our testing reveals that only a small proportion of patients are excluded by not including pharmacy data to establish eligibility.

The presence of identifiable asthma (see Table 1 in the Supporting Documents) is established each month from administrative data using the specified algorithm (see Figure 1 in the Supporting Documents).

All events in the administrative data should be associated with a date of service.

1.J. Denominator Exclusions

Children with concurrent or pre-existing: chronic obstructive pulmonary disease (COPD) diagnosis, cystic fibrosis diagnosis, emphysema diagnosis.

Children who have not been consecutively enrolled in the reporting plan for at least 2 months prior to the index reporting month and for the reporting month (a total of 3 consecutive months ending in the reporting month).

For entities that use AHRQ's Clinical Classifications Software, please note that it is important to apply the exclusion after identifying visits that satisfy CCS class 128.

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.

General data elements include:

- Age.
- Race and ethnicity.
- Insurance type (Medicaid, private, uninsured).
- Benefit type among insured (HMO, PPO, FFS, Medicaid primary care case management plan [PCCM], other).

Administrative data with billing and diagnosis codes, used to identify:

- Asthma-related visits to an ED, outpatient office, or hospitalization.
- Asthma medication prescriptions.
- Insurance benefit type.
- Medicaid or CHIP benefit category or benefit plan (if applicable).
- Zip code or State and country of residence (please record FIPS where available).
- Race and ethnicity (from hospital administrative data or charts if not in administrative data from plan).

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 Supporting Documents for technical 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, 2012; Bahadori, Doyle-Waters, Marra, et al., 2009; Cerdan, Alpert, Moonie, et al., 2012; Coventry, Weston, Collins, 1996; Fiese, Winter, Anbar, et a., 2008; Fuhrman, Dubus, Marguet, et al., 2011; Manice, 2013; Okelo, Wu, Krishnan, 2004; Sawicki, Vilk, Schatz, et al., 2010; Weiss, Gergen, Hodgson, 1992; World Health Organization [WHO], 2013). 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. They are relatively evenly split between teaching and non-teaching hospitals, and nearly 86 percent of visits occur 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 in smaller metropolitan areas, and almost 15 percent 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; Manice, 2013; Okelo, et a., 2004).

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 inhaled corticosteroids for 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 preventive 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 a., 2012; Fiese, et al., 2008; Manice, 2013; Okelo, et al., 2004). 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; Healthy People, 2010; Lara, Ramos-Valencia, Gonzalez-Gavillan, et al., 2013; Oraka, Iqbal, Flanders, et al., 2013; Self, Chrisman, Mason, et al., 2005; Smith, Wakefield, Cloutier, 2007; Talreja, Soubani, Sherbani, et al., 2012).

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 of 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 and holds the promise of both financial savings and improved health-related quality of life. Interest in this topic is sufficiently high that the Subcommittee on Quality Measures for Children's Medicaid and CHIP (SNAC) that reviewed the initial Medicaid core measures adopted a measure on this topic proposed by the Alabama Medicaid program. This measure has certain definitional concerns, and the Collaboration for Advancing Pediatric Quality Measures (CAPQuaM) was

assigned the enhancement of this measure by the Agency for Healthcare Research and Quality (AHRQ) in consultation with the Centers for Medicare & Medicaid Services (CMS). We have attempted to build on this important foundation to enhance asthma measurement. The May 2013 CAPQuaM Asthma ED visit measure submissions represent the first stage of our enhancements, improving upon the conceptualization and measurement of the existing counting measure.

Opportunity for Improvement

The literature points to two general characteristics of asthma care delivery systems that are correlated with ED utilization. One includes 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, and the judicious use of controller medications in advance of an exacerbation (Auger, et al., 2013; Ducharme, et al., 2011; Farber, 2010; Smith, et a., 2007; Talreja, et al., 2012). The other 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 underutilized primary care services (Smith, et al., 2007), and it also has been demonstrated that interventions that attempt to provide comprehensive, multidisciplinary care are able to decrease ED utilization for asthma care (Centers for Disease Control and Prevention, 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. Additional CAPQuaM Measures describe the connection of the child to primary care before and after the ED visit, as well, as the appropriateness of the ED as a site of care for an index visit.

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 done extensive analysis of various approaches to specify this measure using New York State Medicaid data. Depending on specifics of definitional issues, we have found substantial numbers of children with identifiable asthma, with more than 196,000 found to have identifiable asthma in 2011 and nearly 60,000 ED visits for asthma coming from the eligible children. This is

a substantial issue for New York State Medicaid and beyond. Our partners in the New York State Medicaid program have been instrumental in the development of this measure set.

Demographics

The potential for racial and ethnic disparities in ED use for asthma care is high, and this is an important priority for Medicaid (Oraka et al, 2013). The survey of Children with Special Health Care Needs (CSHCN), conducted by the CDC (available at www.childhealthdata.org) showed that black children in particular and also Hispanic children are overrepresented among children with asthma. Also, 38 percent of children with asthma have public insurance. One quarter (26 percent) live in households under the Federal poverty line, 28 percent under 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 about one-third have a sibling who also has a special health care need, using the Health Resources and Services Administration's (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 shows approximately a 2.5-fold increase in the rate of using the ED of non-Hispanic blacks compared to non-Hispanic whites (non-Hispanic black > all Hispanic > non-Hispanic white > Asian).

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 old 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. 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 making comparisons across plans, but also when comparing performance in subpopulations, including identifying disparities.

Our new measure 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 person-years (alternately child-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.

A second measure in the Measure Set will use an alternative framing that will combine with this measure to produce a more complete understanding of ED use by children with identifiable asthma. This second measure reports the number of children who contribute numerator events (ED visits) and the number who contribute at least one person-month to the denominator. 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. 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 for 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:** No.
e. **Service – care for acute conditions:** Yes.
f. **Service – care for children with acute 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; 2-5 years.
r. **Population – school-aged children (6 years through 10 years) (specify age range):** Yes; 6-10 years.
s. **Population – adolescents (11 years through 20 years) (specify age range):** Yes; 11-21 years.
t. **Population – other (specify age range):** No; 21.
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 is an intermediate outcomes measure of intrinsic value. It represents 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; American Lung Association, 2017; 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., 2007; Talreja, et al., 2012; Weiss, et al., 1992). A more comprehensive literature review is available as an appendix (see Supporting Documents).

This measure and its specifications result from a formal development process that included stakeholder input: 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 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. 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 and 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 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 Pediatric Quality Measures Program (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 communities. These latter venues include:

· 2012 Pediatric Academic Societies State of the Science Plenary (Boston). This presentation is included as an Appendix (see Supporting Documents).
· 2012 Oxford-Mount Sinai Bioethics Consortium (Amsterdam)
· 2012 Child Health Services Research Interest Group at Academy Health (Orlando)

Feedback from these presentations has been 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.

In the case of this proposed measure, we can present both a systematically developed measure and evidence to support its use. Please see Section 6.B Validity for more data and information.

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 care are a common, costly, and potentially preventable use of health services 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 detailed literature review in the Supporting Documents, Appendix.) Also, the current core measure on this topic has calculation/validity concerns in the State Medicaid programs. This suggests why CAPQuaM was assigned to develop 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 and described in the next section, 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 communities. These latter venues include:

· 2012 Pediatric Academic Societies State of the Science Plenary (Boston). This presentation is included as an Appendix (see Supporting Documents).
· 2012 Oxford-Mount Sinai Bioethics Consortium (Amsterdam).
· 2012 Child Health Services Research Interest Group at Academy Health (Orlando).

Feedback from these presentations has been 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 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). Although 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 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. The validity of many 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), the Agency for Healthcare Research and Quality (AHRQ), the Centers for Medicare & Medicaid Services (CMS), and the Department of Veterans Affairs (VA). CMS has made 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 similar measures are typically

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, Roos, Anthonisen, 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:

- Identifying children with identifiable asthma.
- Identifying ED use.

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 information, 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 which demonstrate 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 CHIPRA legislation (2009), which has funded the development of this measure, directs for measures to be capable of identifying disparities, and we have specified it to be so, despite concerns about potential reliability in the collection and assessment of race and ethnicity by institutions and practices providing health care. We encourage the development of data systems that record parent-reported race and ethnicity and inclusion of these data in administrative data sets (which, although done currently, is not universal).

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 also 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, DeCristofaro, Setodji, et al., 2007). Practitioners have been identified as a resource for researchers in developing and revising measures, since they are on the frontline 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 CAPQuaM's 360 degree method is highly engaged with collaborators, partners, and the literature. It targets 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; 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 an 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, the name for this measure is "Rate of Emergency Department Use for Children Being Managed for Identifiable Asthma." This embodies several important constructs: one episode of asthma or asthma-like symptoms will not necessarily qualify a child as having identifiable asthma; identifiable asthma must precede the asthma visit; the child must have received some treatment for services that suggest identifiable asthma, thus making the fact that the child has asthma available to the health care system; and we

are considering a rate and not a risk. As a rate, one child can contribute to the numerator many times. It also is self-adjusting for children who enter or leave the eligible population, since children contribute to the denominator independently for each month that they are eligible. It also assures that ages can be calculated to the month rather than to the year. 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 well-documented by researchers (Fairbrother, Jain, Park, et al., 2004). This balance was achieved in close collaboration with our colleagues at NY State Medicaid.

We pre-tested our 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 is the look back year. We further divide the reporting year into 12 reporting months. ED events in that 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 the 200,769 children who contributed to the 185,606 person-years denominator. The number of children who contribute to the denominator represent those children who have identifiable asthma and were seen in a New York State Medicaid health plan for at least 3 consecutive months during 2011. Identifiable asthma was defined according to the results of an expert panel that was intending to specify 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 are 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 fee-for-service [FFS]) children who met the 12 month continuous enrollment criteria. Our proposed measure identifies 200,769 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. 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.

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

This measure has been tested in New York State Medicaid data and shows variation by race in expected directions, with non-Hispanic black children having higher rates than Hispanic children, who had higher rates than non-Hispanic white children. 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 UIC (urban influence code) (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.

7.B. Special Health Care Needs

The Maternal and Child Health Bureau has defined children with special health care needs (CSHCN) 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 related services of a type or amount beyond that required by children generally" (McPherson, Arango, Fox, et al., 1998). Considering this definition, children with identifiable asthma are children with special health care needs.

7.C. Socioeconomic Status

Our analyses were conducted using 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. We have identified five distinct strata based on the proportion of persons living beneath 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 (Kawachi, Berkman, 2003). 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 one through three 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 (Hall, Kaufman, Ricketts, 2006). 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 at the South Carolina Rural Research Center (Bennett, Olatosi, Probst, 2008). Their aggregation scheme brings together Codes 1 & 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 that are 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, 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 HRSA-funded project to develop new methods to analyze frontier health. We clarified that his work suggests that UIC 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 UIC 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 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 purpose.

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 on institutional medical records (e.g. hospitals), they may or may not be on an individual physician practice's chart. They are often but not always recorded in insurance databases. We have data from a feasibility study conducted at more than a dozen hospitals that confirm that both data elements are generally available in the hospital chart, frequently electronically. The CHIPRA legislation that funded this work indicates that measures are to be able to assess racial and ethnic disparities, and 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-reported 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.

The specified 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 2011and 2012, only five states reported the measure in Federal fiscal year (FFY) 2010, and this increased to 14 States in FFY 2011 (Department of Health and Human Services (DHHS), 2012). One issue cited in the 2011 report was that there were concerns about data availability (DHHS, 2011). At the time, the Core measure required the use of pharmaceutical data to establish eligibility. While conversations with the New York Medicaid program leave us to believe that pharmacy data are now generally available, we have 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. 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 1000 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 in rural ones. Eliminate any strata with less than 40 person-months in any month's denominator OR less than 1000 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 Medicaid had ~200,000children with about 2.2 million person-months in

the denominator. SSI had ~184,000, TANF ~1.36 Million, and UNAS ~625,000 person months respectively. Eliminate any strata with less than 40 person-months in any month's denominator OR less than 1000 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 Medicaid 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 in rural ones. Eliminate any strata with less than 40 person-months in any month's denominator OR less than 1000 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 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 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)**
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 Medicaid 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 in rural ones. Eliminate any strata with less than 40 person-months in any month's denominator OR less than 1000 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?**
Only recommended for IDS that own their own risk and manage inpatient and outpatient care.

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 both 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 also 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.

The feedback from our collaborators, as well as from other leaders in health policy and in our discussions at one PQMP workgroup, is that the calculation of a true epidemiological rate represents an exciting and appropriate next step to further the development of a measure on this topic.

The measure can be interpreted, for example, as the "average number of ED visits for each year for every 100 children with identifiable asthma who are in the plan." This is straightforward and intuitive and serves to advance planning, accountability, and quality improvement. 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 data sets 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 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).

Administrative data are indeed imperfect and at times may imperfectly describe clinical reality. Nevertheless, using those imperfect data enhances feasibility, and our preliminary results do indicate that the measure performs well in spite of the potential limitations. Further, the literature supports specifically both the use of administrative data and the use of more than 1 year of data, which we do. 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. So 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 criteria that restrict the measure to children identified as those being managed for identifiable asthma represent both a strength and a limitation. The criteria avoid conflation with the construct of basic access to care and make 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 is a rate and not a risk, and hence has a different interpretation. And, the inclusion of ED visits with asthma as a secondary diagnosis probably more accurately conveys the influence of asthma on ED utilization but is a departure from the previous measure. 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 the 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 decisionmaking. 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 numerator 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 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 describes the incidence rate of ED visits for children ages 2 –21 who are being managed for identifiable asthma. The numerator represents the number of visits to the ED by children who are being managed for identifiable asthma. The denominator represents the person time (calculated monthly) contributed by children ages 2 – 21 who meet the criteria for identifiable asthma for that month's assessment period and who have been continuously enrolled in the index plan for at least 2 consecutive months before the reporting month. 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 both 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 differenced 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 196,000 children had identifiable asthma (using our definition) in New York State Medicaid in 2011 (almost 11 percent), and nearly 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 60,805 asthma ED visits for 40,411 children among 196,623 children who contributed to the 181,162 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 the measure is both valid and sensitive to real differences. The measure is based on administrative data and therefore is very feasible with generally available data. It can readily be aggregated up 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.

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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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