Section I. Basic Measure Information

I.A. Measure Name

CAPQuaM PQMP Asthma IV: Primary Care Connection After Emergency Department Visits for Asthma

I.B. Measure Number

0137

I.C. Measure Description

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

This measure seeks to capture important aspects of follow up after ED visits for asthma, including prompt follow up with primary care clinicians and prescription fills for controller medications.

I.D. Measure Owner

CAPQuaM

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

N/A

I.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)'s National Quality Measures Clearinghouse and are available at http://www.qualitymeasures.ahrq.gov/about/hierarchy.aspx:

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 CAPQuaM Measures of Emergency Department Use for Children with Asthma - Process I 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 CAPQuaM Measures of Emergency Department Use for Children with Asthma - Connection Measure 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.

   N/A

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.

   N/A

I.G. Numerator Statement

Evidence of connection to the primary care medical system following ED visits that have a primary or secondary diagnosis of asthma among children, overall and stratified by whether the child had identifiable asthma at the time of the ED visit.

Numerator Elements:

1. Visit(s) to a primary care provider that occurred within 14 days following the ED visit.
2. Visit(s) to a primary care provider that occurred within 30 days following the ED visit.
3. Have at least one fill of an asthma controller medication within 2 months after the ED visit (including the day of visit).

I.H. Numerator Exclusions

Events occurring in patients who meet numerator but not denominator criteria (including 2 months of continuous enrollment following the month in which the ED visit occurred (minimum is 3 months total).

I.I. Denominator Statement

All ED visits in which asthma was a primary or secondary diagnosis, identified using the specifications provided in Section II, in children who are continuously enrolled for at least the 2 months following the ED visit.

I.J. Denominator Exclusions

Children with concurrent or pre-existing: Chronic Obstructive Pulmonary Disease (COPD) diagnosis (ICD 9 Code: 496); Cystic Fibrosis diagnosis (ICD-9 code 277.0, 277.01. 277.02, 277.03, 277.09); Emphysema diagnosis (ICD-9 code 492xx)
Children who have not been consecutively enrolled with the reporting entity for at least two months following the ED visit.
Children who do not meet the denominator criteria.

I.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.

Section II: 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 becalculated 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.

A. Description

This measure describes the percentage of eligible children ages 2 to 21 with emergency department visits had:

1. Visit with primary care physician with a primary or secondary diagnosis of asthma within 3, 4, or 6 months.
2. Medication fills of short-acting beta-agonists (SABAs) within 12 months
3. Medication fills of controller medications within 6 months.
4. Medication fills of short-acting beta-agonists (SABAs) and controller medications
5. Visit with primary care physician with a primary care visit and Mixed =1 and primary care visit (as above)

B. Eligible Population

Numerator: Number of visits to the emergency department in the reporting year with a primary or secondary diagnosis of asthma among the eligible population, which includes children who are being managed for identifiable asthma.

Denominator: Children age 2-21 who meet criteria for being managed for identifiable asthma in the assessment period. The assessment period includes the time between identifiable asthmatics and the first emergency department visit Excluded are children who have NOT been continuously enrolled in the index plan for the 2 months immediately prior to the reporting month. Change(s) in eligibility criteria and/or benefit package or plan do(es) not relieve the reporting entity of the need to determine denominator eligibility – all available sources should be linked. For health plans, this includes utilizing any existing data sharing arrangements. For State Medicaid plans, this requires that the unit of analysis for eligibility assessment is the child, not the child-insurer pair.

Descriptive definitions of identifiable asthma management are as follows. Specifications follow the descriptive definitions:

Any prior hospitalization with asthma as primary or secondary diagnosis

Other qualifying events after the fifth birthday at time of event):

One or more prior ambulatory visits with asthma as the primary diagnosis (this criterion implies an asthma ED visit in the reporting month), **OR**

Two or more ambulatory visits with asthma as a 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 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

For eligibility purposes, asthma-related medicine refers to 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.

Criteria for assessing "persistent asthma" (Evidence must include all readily available data regarding whether or not a child used a service. CPT and revenue codes are indicated as appropriate.)	**Codes**
Hospitalization	**CPT Codes:** CPT 99238 CPT 99232 CPT 99239 CPT 99233 CPT 99221 CPT 99234 CPT 99222 CPT 99235 CPT 99223 CPT 99236 CPT 99356 CPT 99218 CPT 99357 CPT 99219 CPT 99231 CPT 99220 **Or Revenue Codes:** 0110 0133 0111 0134 0112 0137 0113 0139 0114 0150 0117 0151 0119 0152 0120 0153 0121 0154 0122 0157 0123 0159 0124 0200 0127 0201 0129 0202 0130 0203 0131 0204 0132 0206
Office visits	CPT 99201 CPT 99211 CPT 99202 CPT 99212 CPT 99203 CPT 99213 CPT 99204 CPT 99214 CPT 99205 CPT 99215

Criteria for assessing "persistent asthma" (Evidence must include all readily available data regarding whether or not a child used a service. CPT and revenue codes are indicated as appropriate.)	**Codes**
Previous ED Visits	**CPT Codes:** CPT 99281 CPT 99284 CPT 99282 CPT 99285 CPT 99283 **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
Diagnoses of asthma	**ICD-9 Codes:** All codes beginning with 493
Filled prescriptions for Asthma related medications	*Use NCQA NDC list (ASM-C_DASM-C_final_2012, found by clicking through at (http://www.ncqa.org/HEDISQualityMeasurement/HEDISMeasures/HEDIS2012/HEDIS2012FinalNDCLists.aspx) Eliminate medications in the following 2 categories: leukotriene modifiers, short-acting inhaled beta-2 agonists). May use equivalent updated lists when provided by NCQA.*

Excluded from the denominator are:

Children with concurrent or pre-existing: Chronic Obstructive Pulmonary Disease (COPD) diagnosis (ICD 9 Code: 496); Cystic Fibrosis diagnosis (ICD-9 code 277.0, 277.01. 277.02, 277.03, 277.09); Emphysema diagnosis (ICD-9 code 492xx)

Children who have not been consecutively enrolled in the reporting plan for at least two months prior to the index reporting month.

C. DATA and SOURCES

A. General data elements include:
   i. Age
   ii. Race and ethnicity
   iii. Insurance type (Medicaid, Private, Uninsured)
   iv. Benefit type among insured – (HMO, PPO, FFS, Medicaid Primary Care Case Management Plan (PCCM), Other)
   v. Zip code or State and County of residence (Please record FIPS where available)

B. Administrative data with billing and diagnosis codes, utilized to identify:
   i. Asthma-related visits to an emergency department, outpatient office, or hospitalization
   ii. Asthma medication prescriptions
   iii. Insurance benefit type
   iv. Medicaid or CHIP benefit category or benefit plan (if applicable)
   v. Zip code or State and County of residence (Please record FIPS where available)
   vi. Race and ethnicity (from hospital administrative data or charts if not in administrative data from plan)

D. CALCULATION

Step 1: Measure the denominators and record by month.

For each month in the reporting year, identify all children ages 2 – 21 years who meet the criteria for identifiable asthmatics as defined in the denominator (using indicated exclusions) as of the last day of the month prior to the reporting month.

Identify and maintain all stratification variables described below.

For example, if the goal is to report for January 2011, first one would identify children with identifiable asthma using the denominator criteria, and analyzing all of calendar year 2010 when doing so. Continuous enrollment criterion requires that the child was enrolled in November and December of 2010. The total represents the number of person-months (child-months) for January.

Next, one would identify children with identifiable asthma using the denominator criteria, and analyzing all of calendar year 2010 AND January 2011 when doing so. Continuous enrollment criterion requires that the child was enrolled in December 2010 and January 2011. This is the number of person-months (child-months) for February.

Repeat this progression monthly so that for December, one would identify children with identifiable asthma, and analyze all of calendar year 2010 AND January through November 2011 when doing so. Continuous enrollment criterion requires that the child was enrolled in October 2011 and November 2011. This is the number of person-months (child-months) for December.

Sum all month denominators. This is denominator in people-months. Divide by 1200. This is denominator in 100 people-years. This is the denominator for the year.

Step 2. Month by month, identify the number of numerator events among those children who are eligible for that reporting month. Maintain stratification variables. Sum for the year.

Step 3. Calculate rate as Numerator / Denominator. While this measure is specified for the year, it has also been validated to demonstrate seasonality using monthly rates.

Step 4 Repeat by strata: age, race/ethnicity, Urban Influence Code (UIC), county poverty level, insurance type, benefit type. Report by race/ethnicity within age strata and repeat that analysis by UIC, and by county poverty level. Report by insurance type and benefit type within race/ethnicity.

Eliminate any strata with less than 40 person-months in any month's denominator OR less than 1000 person-months for the year.

Step 5. Specification of Stratification Variables:

a. Identify County equivalent of child's residence. If County and State or FIPS code are not in the administrative data, the zip codes can be linked to County indirectly, using the Missouri Census Data Center (http://mcdc.missouri.edu/). These data will link to County or County equivalents as used in various states.

b. Identify the Urban Influence Code[1] or UIC for the County of child's residence. (2013 urban influence codes available at: http://www.ers.usda.gov/data-products/urban-influence-codes.aspx#.UZUvG2cVoj8 .

c. Identify the Level of Poverty in the child's county of residence. The percent of all residents in poverty by county or county equivalent are available from the US Department of Agriculture at http://www.ers.usda.gov/data-products/county-level-data-sets/download-data.aspx . Our stratification standards are based on 2011 US population data that we have analyzed with SAS 9.3. Using child's state and county of residence (or equivalent) or FIPS code, use the variable PCTPOVALL_2011 to categorize into one of 5 Strata:
   i. Lowest Quartile of Poverty if percent in poverty is <=12.5%
   ii. Second Quartile of Poverty if percent in poverty is >12.5% and <=16.5%
   iii. Third Quartile of poverty if percent in poverty is >16.5% and <=20.7%
   iv. First upper quartile (75^{th}-90^{th}) if percent in poverty is >20.7% and <=25.7%
   v. Second upper quartile (>90^{th} percentile)

d. Categorize age by age at the last day of the prior month. Aggregate into age categories ages 2-4, ages 5 through 11, ages 12-18, ages 19-21.

e.. Categorize Race/Ethnicity as Hispanic, non-Hispanic White, Non-Hispanic Black, non-Hispanic Asian/Pacific Islander, and Non-Hispanic Other.

f . Insurance as Private (Commercial), Public, None or Other

g. Benefit Type as HMO, PPO, FFS, PCCM, Other

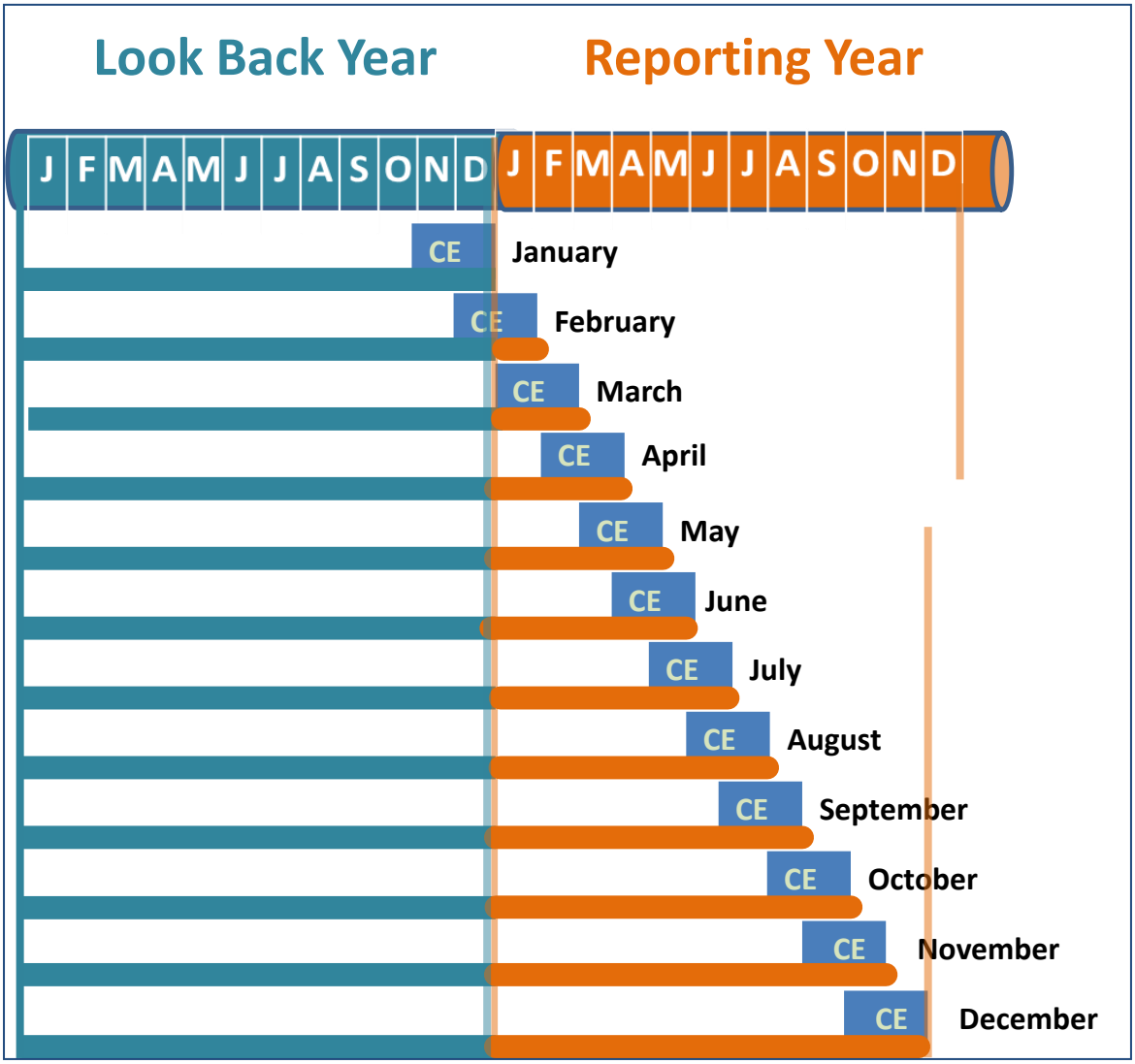

Diagram of Eligibility Requirements for Asthma Measure

Description of Diagram Components

Aqua: Look Back Year
Orange: Reporting Year
Blue: Continuous Enrollment (CE) period must be met to be eligible in a given reporting month
Black: Label of Reporting Month

Description of Eligibility Criteria Assessment

Eligibility Criteria are assessed month by month, using both the entire Look Back Year and the Reporting Year.

For any given reporting month, assess eligibility on 2 criteria. Eligible children are those that meet both of the following:

1) Has the child been continuously enrolled (CE) for the two months prior to the Reporting Month (3 months of continuous enrollment including the current Reporting Month)
2) Does the child meet the criteria for having been managed for persistent asthma in the assessment period (Aqua + Orange Lines)

Description of Calculation Based on Eligibility Criteria

Add one (1) child-month to the denominator for every child found to be eligible in each Reporting Month.
Add one numerator event to the numerator for each ED visit with asthma as a primary or secondary diagnosis in any month for which that child was eligible.

The measure is calculated as #ED visits per 12 child months for 100 children. This is an incidence rate, also called incidence density.

Section III. 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).

III.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).

Asthma matters for pediatrics.[1-13] It is one of the most common chronic conditions among children. It is also the second most common reason (after allergies) for children to be classified as having a special health care need, accounting for nearly 38.8% of such children. Using national estimates from the federal Healthcare Cost and Utilization Project (HCUP) data, children between the ages of 1 and 17 had more than 673,000 of the 1.9 million emergency department visits with asthma as the first diagnosis; almost 11% (or >71,000) of these pediatric visits resulted in hospitalization. Our analysis of NYS Medicaid data confirmed that ED visits for asthma are all too common, and that they vary by age, race, and ethnicity. ED visits are often linked to the management of a child's asthma.

AHRQ and CMS assigned us Overuse: Emergency Department Asthma as a topic for measurement. Within this topic we developed a conceptual model that articulates a series of dichotomies. Children are either sick enough that the ED is an appropriate level of care or they are not. If they are not, they may be there because of reasons that are primarily attributable to the health care system (e.g. no available primary care after hours) or to family (e.g. prefer the ED over an available primary care clinician). Among those who were sick enough to need the ED, their

asthma was well managed prior to the visit or it was not. For those whom one can assess that it was not, some will clearly have had system reasons for the lack of management, and others family reasons. For many the reasons will be multiple or unclear. While the model is developed around dichotomies, our work has demonstrated that the measurement of these constructs is more complicated. Although we are guided by the model, our measures depend upon the 360 degree method including our expert panels to identify where we can make valid distinctions. Further, the research literature suggests that not having a primary care provider (PCP) visit for asthma maintenance, especially in instances where an ED visit is the end result, is a sign of poorly managed asthma. [1]

Two literature reviews as well as focused reviews that we have done to supplement the extensive review of the literature confirms the importance of an integrated approach to managing the health care of children with asthma. Primary care coordination can be critical: better communication, use and implementation of asthma action plans, and other primary care services can reduce asthma-related ED visits and hospitalizations compared to physicians who only prescribe appropriate asthma medication (Cabana, 2005). The action plan becomes a tool that leads the management of care and around which communications occur to improve asthma outcomes. Enhanced primary care has been noted to contribute to improvements in asthma care and better health for asthmatic children).[2] Better primary care, including asthma action plans and appropriate prescribing reduced ED visits substantially.[3]

Successful primary care for asthma requires visits with primary care providers, and produces adherence to appropriate medication regimens, specifically, filling prescriptions and using them properly. [4] [5-9] Tracking of prescription and pharmaceutical records to show if the asthma medications prescribed are being filled within the recommended amount of time is an accurate way to assess asthma care.[4, 7, 8] Prescription and use of controller medications or rescue medications are signs of well-managed asthma. [4-6, 10-18] Failures of asthma care management may lie with clinicians (e.g. by failure to prescribe appropriate medications), the broader system or context (e.g. when caregivers lack resources to purchase potentially valuable preventative medications such as ICS), or the families (e.g. potentially through medication non-adherence for a variety of reasons). Although a PCP may prescribe the combination of ICS and long-acting beta-agonist drugs as one of the more effective methods of asthma control, these medications can go unfilled or not refilled. [4] When prescriptions for both controller and rescue medications are not filled, it can be interpreted as a sign of poorly managed asthma and potentially a failure of the primary care clinician to educate or motivate patients (especially in circumstances such as Medicaid, where there are not profound financial barriers to medication fulfillment). Failure in adequate asthma management can also occur when children with asthma control their condition by relying too heavily on rescue medications as a method of management in preference to controller medications. [4] This also is another aspect that may relate to the issue of communication and relationship between the primary care clinician and the family. Our other connection measure builds from these principles.

After an exacerbation, follow up with the primary care physician is central for ongoing management. [8, 16, 19-24] If the child was in the ED and did not have a

meaningful exacerbation, follow up is critical to establishing or re-establishing the centrality of primary care for the management of the asthmatic child. The literature suggests that a PCP follow-up within 30 days of the ED discharge is important.[16, 17, 25-27] Recent literature has identified the potential contribution of the medical home to enhance primary pediatric asthma care. [28-31] The involvement of a primary care provider contributes to the maintenance and control of asthma symptoms and is a characteristic of well-managed asthma.[1, 30, 32-37] Characteristics of sufficient primary care involvement may include having an identified site of regular care, an identified primary care clinician, and regular PCP visits with asthma follow up. [1, 30, 32-34] The medical home model in primary care may contribute to positive outcomes in children with asthma. [29, 31, 38] When children with asthma experience adequate management of chronic conditions and have access to coordinated care, a reduction in hospital rates is likely to occur. [29] Children who are linked to continuous care utilize less overall care, including ED care. [29]

The current measure captures connection with primary care after an ED visit. In an effective system of care, the ED will arrange for appropriate and prompt follow-up with primary care for most patients who present with asthma in the ED. This is not typical in the US or for Medicaid patients. Guided by our expert panel, this measure considers prompt follow up with a primary care provider after an ED visit, and filling a prescription for controller medication as suggestive that appropriate connections may have been made. Absence of these processes of care suggests insufficient coordination of care, especially in known asthmatics.

Finally, we note the importance of creating and implementing a new, innovative method to develop quality measures. This method allows for measure development amidst uncertainty. It engages scientists, clinicians, consumers, payers, and others in a defined process, even if not all areas of science related to a topic are firmly resolved. This is needed to foster accountability in large areas of practice for which science has not forged a consensus. By explicitly modeling evidence and uncertainty, the CAPQuaM process can open up new clinical areas for quality measurement.

III.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).

Children with asthma comprise a critically important population of high interest to Medicaid. Low income urban minority children are an important component of this population.

Our analysis of National Survey of Children's Health data (NSCH, 2011/12), estimates that 10.3 million children in the U.S. have been told that they have asthma. Of these children 7.6 million live in more urban areas that are characterized as metropolitan statistical areas (MSAs), an asthma prevalence rate of 15.4%. These data indicate that an absolute difference of 15.8% fewer parents of children with asthma report that child's health as very good or excellent compared to those with no asthma. Black or Latino children with asthma show an absolute difference of about 13% fewer with very good or excellent health compared to white children with asthma. Effective delivery of guideline-based care can reduce the gap and decrease consequences of uncontrolled asthma, such as emergency room use and hospitalizations; better asthma care is beneficial and needed across the spectrum of children and primary care settings.(1-7) About 60% of these children are low income and have public insurance.

We have done extensive analysis of various approaches to identifying asthmatic children and counting ED visits using New York State Medicaid data. Depending upon specifics of definitional issues, we have found substantial numbers of children that can be identified as having asthma, with more than 196,000 found to have identifiable asthma in 2011 and nearly 60,000 ED visits for asthma by these 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. 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 are high, and this is an important priority for Medicaid.(8) The survey of Children with Special Health Care Needs (CSHCN), conducted by the CDC and available at www.childhealthdata.org, showed that Black children in particular and also Hispanic children are overrepresented with asthma. Thirty eight percent of children with asthma have public insurance. One quarter (26%) live in households under the federal poverty line, with 28% under twice the federal poverty line, and only 24% have incomes more than four times the federal poverty line. Nearly three quarters of these children have at least one sibling and nearly one-third have a sibling who also has a special health care need, using HRSA's screening tool. 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.(9) Our analysis of New York State Medicaid data shows about 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).

III.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 part of a measure set developed by CAPQuaM and intended to represent an enhancement to an existing measure in the Medicaid Core Measure Set that was developed by the Alabama Medicaid program.

The old measure is a count of all ED visits with a diagnosis of asthmas, whether or not the patient was known to be an asthmatic before the event. 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 and may address this in future measure submissions.

We have previously submitted two outcomes measures that provide:

1) True epidemiological rate (in visits per 100 child years) for the use of the ED for asthma among children who have used sufficient services for asthma that they may be reasonably concluded to have asthma requiring ongoing treatment.

2) A count of the number of asthmatic children with ED visits for asthma, along with a distribution of how many ED visits each experiences for asthma.

The current measure provides a description of specific services that are related conceptually to primary care for asthma, considering connections after the ED visit for asthma. It is to be reported stratified by pre-existing asthma according to our specifications and indicates:

Proportion of ED visits followed by a primary care appointment within 14 and 30 days; and

· Proportion of ED visits followed by a prescription fill for a controller medication within 2 months of the ED visit (including the day of the visit).

Another measure being submitted concurrently considers connection to primary care before the ED visits and evaluates the proportion of first ED visits for asthma in the reporting year are associated with:

- Visits to primary care providers for asthma within 6 months prior to the first ED visit experienced by that child in the Reporting Year;

- Filling of a prescription for a rescue medication within a one year period before the ED visit; and
- Filling a prescription for controller medication within a six month period before the ED visit.

These measures of connection with primary care are designed as floor, rather than ceiling measures, that is they capture a basic level of service that when not met may indicate insufficient primary care management of a child with asthma.

Section IV. 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	no
d. Service – preventive health, including services to promote healthy birth	no
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	no
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	no

range)		
q. Population – pre-school age children (1 year through 5 years) (specify age range)	yes	2 - 5
r. Population – school-age children (6 years through 10 years) (specify age range)	yes	6 - 10
s. Population – adolescents (11 years through 20 years) (specify age range)	yes	11 - 20
t. Population – other (specify age range)	no	
	u. Other category (please specify)	

Section V. 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.

V.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 identifiable 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.[3-13, 15-22] ED visits for asthma with or without identifiable asthma at the time of the visit is an important driver of utilization and costs and can serve as a trigger to integrate the child into the primary care system for comprehensive management, including asthma care. A more comprehensive literature review is included as an appendix and is incorporated by reference into this section.

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.

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 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, comprised of 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.
- 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 validity for more data and information.

V.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 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 detailed literature review in 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 suite of measures for the PQMP by AHRQ-CMS. Citations and further enumeration of the evidence are provided elsewhere in the CPCF, such as in the sections on Importance.

Clinically, ongoing primary care with semi-annual or more frequent follow up may prevent ED visits, as may the judicious use of rescue medications and the appropriate use of controller medications. Once an ED visit for asthma occurs, it may be considered a trigger that should stimulate a prompt follow up with a primary care physician as well ongoing management, often including controller medications. This outlines broadly the clinical importance of these measures.

Section VI. 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.

VI.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.

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.[25] While data systems and their contents are imperfect [64], it is well recognized that there are tradeoffs that need to be made and that both feasibility and accuracy are important considerations.[65]

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. 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.[28] Administrative data are supported, if not encouraged by federal agencies, such as NIH, AHRQ, HCFA, and the VA. The Centers for Medicare & Medicaid Services 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 upon administrative data as well, providing consensual validation for the appropriate primary data source.

The use of two 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 one year of data.[66] 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.[67]

The constructs underlying these measures are:

- Identifying the subset of children who have had an ED visit for asthma and ensuring that they were enrolled for the 6 months following the month in which they had that visit.
- Specifying children whose utilization of services suggests that they have identifiable asthma, as described in the technical specifications.
- Identifying specific services that they received in specified time frames following their ED visit, including primary care visits and specified medications.

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 are typically 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 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 health care-providing 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).

As part of our validation process in the New York State Medicaid data, we assessed how stable various measures were to small changes in their specifications and have identified measures that we found to be robust to such changes and consistent with the recommendations of our Expert Panel.

VI.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., R^2 for concurrent validity).

Note: The reliability section also contains information related to validity.

CAPQuaM's 360 degree method engages collaborators and partners, and is informed by the literature. It seeks to have measures emerge from a systematic process. In developing the asthma method, we incorporate:

- A high level of engagement with partnered institutions and senior advisors that include a wide diversity of stakeholders;
- A detailed literature review, updated and supplemented as needed;
- A focus group with parents, using a guide informed by conversation with an existing Family

Advisory Council at Mount Sinai Medical Center;

- Interviews with clinicians (family physicians, pediatricians, and ED specialists);
- The CAPQuaM scientific team: ED physician; internist asthma expert; pediatricians (primary care, pulmonology, ED); social workers; pediatrician-child psychiatrist expert in patient adherence; experts in patient safety, quality measurement and improvement, and public health;
- Geographically diverse, multidisciplinary expert panel who participated in a 2-Round RAND/UCLA modified Delphi process, with enhanced follow up;
- Development of a Boundary Guideline that simultaneously accounts for a variety of gradients, including gradients of importance, relevance, and certainty, as appropriate to the construct being represented;
- Specification and review of approaches to measurement by stakeholders and experts;
- Testing and assessment of measure performance to the extent feasible given resources and available time.

From previous submissions we incorporate the definition of children with identifiable asthma. The denominator for this measure are children with an emergency room visit or hospitalization for asthma (as first or second diagnosis) who are continuously enrolled for six months following the measure. For this measure rather than identifiable asthma being intrinsic to the denominator, it is a stratifying variable. This enhances the capacity of this measure to examine follow up practices after ED visits, while preserving the capacity to focus in on the distinct population with identifiable asthma. Such an approach also supports harmony among the various CAPQuaM asthma measures.

Pretesting included iterative analyses in NY State Medicaid data that demonstrated our definition of identifiable asthma (termed persistent asthma by the expert panel) was selective but not overly restrictive and less restrictive than the HEDIS persistent asthma definition. It achieves our dual goals of selecting from among all children who show signs or symptoms of asthma and being more inclusive than existing measures.

Testing revealed the importance of using revenue codes as well as CPT codes to identify ED visits. Consultation with a coding expert confirmed our findings and we have incorporated revenue codes into our case finding.

We incorporate validated NCQA code sets into this measure for numerator determinations, unmodified for medication and slightly modified for primary care visits to restrict to outpatient visits.

We do not include hospitalizations in this measure even though Medicaid data are not sensitive for identifying ED visits that result in hospitalizations. Our rationale for excluding hospitalizations from this measure and not from other measures this far submitted in this measure set is substantive: expectations for follow up after an hospitalizations maybe different from those following an ED visit: and, we did not address such issues specifically with our Expert Panel or our Input Development phase (literature reviews and interviews). We make this decision aware that our analysis of 2009 National Emergency Department Sample (NEDS) showed that nationwide around 11% of Medicaid ED visits for asthma result in admissions.

Use of Expert Panels has been demonstrated to be useful in measure development and health care evaluation, including for children.[70] 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.[71] Our expert panel supported measures that assessed the presence of prompt follow up with primary care following ED visits for asthma. We used 14 and 30 days rather than the even shorter time frames that would have been allowed by our panel because pretesting revealed such low levels of adherence to follow up within a week that we were concerned about the capacity of the measure to be sensitive to real variations in performance, rather than artifact. The expert panel also considered timely fills of controller medications as indicative on a population level of the extent of connection between the ED and primary care.

From pretesting in NY State Medicaid data we concluded:

- Criteria were infrequently met when we used shorter time frames of 2 or 7 days, for PCP visits. While we support the desirability of measuring follow up after short time frames, it is clearly not current practice and we specify here only the 14 and 30 day time frames.
- Measurement of fills of controller medications within a time frame after the ED visit was feasible. Results varied on the basis of a history of identifiable asthma in a manner that supports the validity of our capture of the prescription fills and that supports the validity of our identifiable asthma specifications.
- The measures were feasible with Medicaid data.

In NY State Medicaid data:

- 76.7% of ED visits occurred in children who met the criteria for identifiable asthma
- Controller medications were filled within 2 months after the ED visit for 34.4% of visits for children with and 13.5% of those without identifiable asthma
    - ED visits for White children were most likely to have asscoated fills for controllers within 2 months after the visit and those for Black children least
- 5.0% of ED visits for asthma had follow up visits with primary care within 14 days after the visit.
    - 4.7% of visits for Black children
    - 5.1% of visits for Hispanic children
    - 5.5% of visits for White children

·- 7.7% of ED visits for asthma had follow up visits with primary care within 14 days after the visit

    - 7.6% of visits for Black children
    - 7.6% of visits for Hispanic children
    - 8.3% of visits for White children

- Children age 7-18 were most likely to have 14 day follow up visits (5.4%)

    - Other age groups (2-4, 4-7, 18-21) range from 4.5 - 4.9%
    - 30 day f/u shows similar pattern
- 30 day follow up was most common in children who lived in rural counties (10.4%) compared to suburban (8.2%) compared to urban (7.7%).
    - Nearly 97% of visits are in urban children

Section VII. Identification of Disparities

CHIPRA requires that quality measures be able to identify disparities by race, ethnicity, socioeconomic status, and special health care needs. Thus, westrongly 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.

VII.A. Race/Ethnicity

This measure has been tested in New York State Medicaid data. We find variations by race, for example for the 30 day follow up measure, Hispanics and Blacks are similar with 7.6 % performance and Whites at 8.3%. Using New York State Medicaid data for reporting year 2011 and look back year 2010, we found that the measure is practical, and sensitive to small racial variations.

VII.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 related services of a type or amount beyond that required by children generally."[72] Considering this definition, children with identifiable asthma typically are children with special health care needs. This measure describes the care for such children.

VII.C. Socioeconomic status

Our analyses were conducted in Medicaid data. The measure is specified to be stratified in 2 ways to assess aspects related to socioeconomic status: Public versus Commercial Insurance, and by 5 strata defined by the percent of the population in poverty in the county of residence. 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 USDA data.[73] The five strata represent the 3 quartiles of lowest poverty each as one stratum, and the highest quartile divided into 2 strata, the 75th-90th percentiles and the highest 10%. 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.

VII.D. Rurality/Urbanicity

These measures are specified to be reported by Urban Influence Codes (UIC), 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 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.[36] Their aggregation scheme brings together Codes 1 & 2 as Urban; 3,5, & 8 as micropolitan rural; 4,6, & 7 as rural adjacent to a metro area; and 9, 10, 11, & 12 as remote rural. We observe that UIC 5 might as well be aggregated with 4,6,&7 as an adjacent rural area. Further, while this approach to rurality does not map exactly to the population density based definition of frontier (< 6 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.[74] 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.[37] The New York State Medicaid data were sensitive to urbanicity with higher rates of ED utilization in the most urban areas and lowest in the most rural areas and other areas intermediate between the two.

For aggregation and as an imperfect approximation one can also group as urban (1 and 2), suburban (3-6) and rural (7-9). This is what we have used for our NY Medicaid analysis to demonstrate that variations are observed for this measure using UIC codes. For example, 30 day follow up rates ranged from 10.4% for ED visits by children who live in rural counties , 8.2% in suburban counties, and 7.7% in urban counties.

VII.E. Limited English Proficiency (LEP) Populations

We have not tested or specified this measure for this specific purpose. There are no barriers to stratifying on this variable should it be collected in charts or elsewhere.

Section VIII. 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.

VIII.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 and 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 confirms 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?

N/A

VIII.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.

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?

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

Section IX. 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)

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

~~**Sample Size**: What is the typ~~ical 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?

In Use: Have measure results been reported at this level previously?

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

Unintended consequences: What are the potential unintended consequences of reporting at this level of aggregation?

yes	no
yes	no
New York State has more than 40,000 ED visits for asthma.	Designed for reporting at this level.

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?	Not assessed. NY State has more than 40,000 ED visits.
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?	Designed for reporting at this level

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?	Not assessed. New York State ahs more than 40,000 ED visits for asthma.
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?	Designed for reporting at this level.

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?	Not assessed. NY State has more than 40,000 visits to ED for asthma per 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?	Designed for use at this level.

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 intended for use at this level
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?	Bias, imprecision.

PROVIDER LEVEL
Hospital: Can compare hospitals

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?	Not assessed.
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?	Small sample size would lead to imprecision. Intended to be used at this level.

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?	Not assessed. For IDNs.

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?	Imprecision and bias are possible.

Section X. 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 testingwith stakeholders).

We have had conversations surrounding this measure and its understandability with our broad stakeholder partnership. Our collective conclusion is that using all ED visits for asthma is most consistent with the specification of a follow up measure AND that stratification to evaluate separately only those children who were known to be asthmatic prior to the index ED visit is important for both understandability and acceptability. Our definition of identifiable asthma was not only intended to be a filter, but to be inclusive. Our analysis in NY State Medicaid suggests that we have achieved this goal, allowing us to 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 complements our measures of primary care connection before the ED visit. It provides information on straightforward constructs: how many of these children receive timely follow up with a primary care provider (defined as within 14 and 30 days) and how many fill a prescription for a controller medication within 2 months after the visit. Although our expert panel felt that follow up in the first week is important, this measure is new to the market and our pretesting suggests that performance for the follow up measures is well below 50% and much lower if it is specified in the first week, so we chose to use more relaxed rather than more stringent standards to promote acceptability and usefulness of the measure.

The panel calls for the regular and ongoing use of a controller medication for those children who are being managed for ongoing asthma. This reflects the panel's belief that the large majority of children who meet the specified criteria for identifiable asthma are likely to meet clinical criteria for persistent asthma. We did find that adherence to the controller following ED visit specification is meaningfully higher in children with identifiable asthma, then in those who do not have identifiable asthma, providing some empirical validation for our construct. This finding also drives our instructions to stratify primarily on the variable of identifiable asthma in order to provide better data for accountability and improvement purposes, and to drive further empirical work to understand who the children are who are seen in the ED and do not have identifiable asthma according to CAPQuaM criteria.

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

Section XI. 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.

XI.A. Health IT Enhancement

Please describe how health IT may enhance the use of this measure.
The capacity to add more clinical data from accessible health IT systems would enhance this measure.

XI.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?

XI.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.
Specifications indicate how to use administrative data to calculate the measure.

XI.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 http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__standards_ifr/1195)?
no

If yes, please describe.

XI.E. Health IT Calculation

Please assess the likelihood that missing or ambiguous information will lead to calculation errors.
Prescription fills and encounter data are needed for unbiased calculation.

XI.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?
N/A

Section XII. 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 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 the use of administrative data to describe asthma care, and indicates that the use of more than one year of data (as we include) enhances validity.

We acknowledge that some states may be unable to include prescription fills in their data. Our formative analysis suggests that less than 5% of children are identified with asthma are included specifically because of medication fills. The two numerators regarding follow up do not require prescription fills and in situations where the controller medication data are not available, the two follow up visit numerators should still be calculated.

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 measure requires that primary care provider visits can be identified. If they cannot, our pretesting suggests that visits to clinicians with other than the specified specialties are infrequent, so the measure can be used, but values will be somewhat inflated.

The validity of the measure is based upon a systematic process that incorporates the literature

and expert panel review. The panel attempted to integrate widely accepted and evidence-grounded guidelines as it translated that information into criteria. The CAPQuaM team in turn translated the panel's criteria into this measure, which is a proxy for an underlying construct.

Section XIII. 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 ofthe 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 includes stakeholder input throughout. ED visits/hospitalizations 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 considers practices that follow asthma-related ED visits for children 2-21 years, with and without have identifiable asthma, a construct that our expert panel used to operationalize ongoing asthma that was likely to require ongoing management. It seeks to describe independently and in combination the connection of children to primary care practices by measuring whether or not children who have ED visits and/or hospitalizations for asthma have had:

1. Visit(s) to a primary care provider that occurred within 14 days following the ED visit.
2. Visit(s) to a primary care provider that occurred within 30 days following the ED visit.
3. Have at least one fill of an asthma controller medication within 2 months after he ED visit (including the day of visit).

The literature demonstrates that both clinical, system, and community interventions may improve care for asthma and reduce ED visits/hospitalizations. ED visits are a marker for the need to manage the asthma more closely moving forward. The potential for racial and ethnic disparities is high. We found large racial and ethnic differences in New York State Medicaid. Poverty may also be associated with increased ED use for children with asthma as higher incomes were associated with better performance on this measure. More than 196,000 children had identifiable asthma (using our definition) in NY State Medicaid data in 2011 (almost 11%) and nearly 60,000 ED visits for asthma were from those children.

As a part of the CAPQuaM measure set, this measure offers a number of advantages over existing measures. The definition of identifiable asthma is more inclusive than other existing

definitions. The linkage of this process measure to the previously submitted outcomes measure and the other connection measure currently proposed offers an opportunity to provide better insight into clinical practices as articulated in our conceptual model, which acknowledges that

some proportion of ED visits/hospitalizations result from failures of processes of care before the ED visit and/or hospitalization.

Our analyses in NY State Medicaid data confirmed feasibility, usability, and responsiveness of the measures to substantive constructs including race/ethnicity, and county level measures of poverty and urbanicity.

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.

Section XIV: Identifying Information for the Measure Submitter

Complete information about the person submitting the material, including the following:

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Date Updated:	

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.

The signed written statement was submitted