MEASURE 1

A. Description

This measure characterizes care that precedes Emergency Department (ED) visits with asthma for children ages 2-21 who can be identified as having asthma using specified definitions. We sought to identify children with ongoing asthma who can be identified by their health care providers and/or health care plans as having asthma. We are operationalizing an identifiable asthmatic as a child who has utilized health care services that suggest the health care system has enough information to conclude that the child has an asthma diagnosis that requires ongoing care. Specifically, this measure identifies the use of primary care services and medications prior to ED visits and/or hospitalizations for children with asthma.

B. Eligible Population

Children age 2-21 who have an ED visit and/or hospitalization for asthma (primary or secondary diagnosis) who can be identified as having asthma in a 2 year look back period before the reporting year and who are enrolled in the health plan six consecutive months prior to the index 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 children with identifiable asthma are as follows. Specifications follow the descriptive definitions:

1. Any prior hospitalization with asthma as primary or secondary diagnosis
2. 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 and/or hospitalization 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
3. 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

Note: 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.
Use the definitions/specifications in Table 1 for assessing the presence or absence of identifiable asthma:

<table>
<thead>
<tr>
<th>Criteria for assessing “identifiable 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)</th>
<th>Codes</th>
</tr>
</thead>
</table>
| Hospitalization | CPT Codes:  
CPT 99218  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 Codes:  
CPT 99201  CPT 99211  
CPT 99202  CPT 99212  
CPT 99203  CPT 99213  
CPT 99204  CPT 99214  
CPT 99205  CPT 99215 |
<table>
<thead>
<tr>
<th>Patient Encounter Type</th>
<th>Codes</th>
</tr>
</thead>
</table>
| 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  
|                         | 450 Emergency Room  
|                         | 451 Emergency Room: EM/EMTALA  
|                         | 452 Emergency Room: ER/Beyond EMTALA  
|                         | 456 Emergency Room: Urgent Care  
|                         | 459 Emergency Room: Other  
|                         | 0981 Professional Fees (096x)  
|                         | 981 Professional Fees  
|                         | emergency room  
| Diagnoses of asthma    | ICD-9 Codes:  
|                         | All codes beginning with 493  
|                         | 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 six months prior to the index reporting month.

Table 2 codes used to identify primary care visits for the numerators:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPT</th>
<th>HCPCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient or other outpatient services</td>
<td>99201-99205, 99211-99215, 99241-99245</td>
<td></td>
</tr>
<tr>
<td>Preventive medicine</td>
<td>99381-99385, 99391-99395, 99401-99404, 99411-99412, 99420, 99429</td>
<td>G0438, G0439</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>CPT</th>
<th>HCPCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office or other outpatient services</td>
<td>99201-99205, 99211-99215, 99241-99245</td>
<td></td>
</tr>
<tr>
<td>Preventive medicine</td>
<td>99385-99387, 99395-99397, 99401-99404, 99411, 99412, 99420, 99429</td>
<td></td>
</tr>
</tbody>
</table>
Table 3 NCQA 2013 NDC list used to identify medication use (short acting beta agonists and controller medications) for the numerators:

<table>
<thead>
<tr>
<th>Description</th>
<th>Prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short acting, inhaled beta-2 agonists</td>
<td>Albuterol, Levalbuterol, Metaproterenol, Pirbuterol</td>
</tr>
<tr>
<td>Asthma Controller Medications</td>
<td></td>
</tr>
<tr>
<td>Antiasthmatic combinations</td>
<td>Dyphylline-guaifenesin, Guaifenesin-theophylline</td>
</tr>
<tr>
<td>Antibody inhibitor</td>
<td>Omalizumab</td>
</tr>
<tr>
<td>Inhaled steroid combinations</td>
<td>Budesonide-formoterol, Fluticasone-salmeterol, Mometasone-formoterol</td>
</tr>
<tr>
<td>Inhaled corticosteroids</td>
<td>Beclomethasone, Flunisolide, Budesonide, Fluticasone CFC free, Ciclesonide, Mometasone, Triamcinolone</td>
</tr>
<tr>
<td>Leukotriene modifiers</td>
<td>Montelukast, Zafirlukast, Zileuton</td>
</tr>
<tr>
<td>Mast cell stabilizers</td>
<td>Cromolyn</td>
</tr>
<tr>
<td>Methylxanthines</td>
<td>Aminophylline, Dyphylline, Theophylline</td>
</tr>
</tbody>
</table>

The complete list can be found at:
Table 4. Specification of primary care clinicians.*

<table>
<thead>
<tr>
<th>TABLE 4: Primary Care Clinicians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescent family medicine</td>
</tr>
<tr>
<td>Family practice</td>
</tr>
<tr>
<td>Pediatric adolescent medicine</td>
</tr>
<tr>
<td>Pediatric internal medicine</td>
</tr>
<tr>
<td>Internal medicine</td>
</tr>
<tr>
<td>Pediatrics (unspecified)</td>
</tr>
<tr>
<td>General practice</td>
</tr>
<tr>
<td>Pediatric general medicine</td>
</tr>
</tbody>
</table>

* These classes are those used by NY State. Other states may use their own generally used codes to specify clinical specialties that typically provide primary care to children and/or adolescents, including general pediatricians, adolescent medicine physicians, family physicians, general practitioners, and general internists.

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, primary care provider or hospitalization
   ii. Asthma medication prescription fills
   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)
   vii. Specialty of the physician
D. CALCULATION

Step 1: Look for qualifying events (eligible events) using the criteria for hospitalization and/or ED visits in Table 2.

Step 2: Find children with identifiable asthma among those with eligible events.

A. Identify the assessment period. We classify children as having identifiable asthma by evaluating services used during what we call the assessment period. The assessment period consists of the 2 year look back period plus all prior months in the Reporting Year. In other words if calendar year 2012 is the Reporting Year, the look back period would include calendar years 2010 and 2011. When looking for events in January 2011, the assessment period would include only CY 2010 and CY 2011. For February 2011, the assessment period would include CY 2010, CY 2011 and January 2012, and so on until for December the look back period would include CY 2010, CY 2011 and January-November, 2012.

B. Analyze the data month by month in chronological order.
1. Exclude those children who have not been enrolled for all six months prior to the current month;
2. Exclude those children who have previously had an event (include only the first hospitalization or ED visit in the Reporting Year)
3. Evaluate for the presence of identifiable asthma if any of the criteria described in a, b, or c below are satisfied, (along with an ED visit or hospitalization with the primary or secondary diagnosis of asthma):
   a. Any prior hospitalization with asthma as primary or secondary diagnosis.
   b. Qualifying events after the fifth birthday at time of event:
      1) One or more prior ambulatory visits with asthma as the primary diagnosis OR
      2) Two or more ambulatory visits with asthma as a diagnosis, OR
      3) One ambulatory visit with asthma as a diagnosis AND at least One asthma related prescription, OR
      4) Two or more ambulatory visits with a diagnosis of bronchitis
   c. Qualifying events, any age:
      1) Three or more ambulatory visits with diagnosis of asthma or bronchitis, OR
      2) Two or more ambulatory visits with a diagnosis of asthma and/or
      3) Bronchitis AND one or more asthma related prescription
NOTE: 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. Leukotriene inhibitors are excluded for this purpose.

**Step 3:** The denominator is the number of children with identifiable asthma who had qualifying events and who were continuously enrolled for at least 6 continuous months before the month in which the qualifying event occurred. Use the first such event for each child when assessing each numerator.

**Step 4:** Identify Numerator A. Numerator A is the number of eligible children with an ED visit and/or hospitalization who had a visit with primary care doctor (See Table 2 for PCP visit codes and see Table 4 for definition of Primary Care Clinicians) with primary or secondary diagnosis of asthma within 6 months prior to the ED visit and/or hospitalization (and not including the day of the ED visit/admission).

**Step 5:** Identify Numerator B. Numerator B is the number of eligible children with an ED visit and/or hospitalization who filled a prescription for a short acting beta agonist within the prior 12 months before the ED visit and/or hospitalization (not including the day of the ED visit/admission). See Table 3.

**Step 6:** Identify Numerator C. Numerator C is the number of eligible children with an ED visit and/or hospitalization who filled a prescription for a controller medication prescription within the prior 6 months before the ED visit and/or hospitalization (not including the day of the ED visit/admission). See Table 3.

**Step 7:** Identify Numerator D. Numerator D is a composite of Numerator B and Numerator C.
   i. Criteria are satisfied for both B and C.
   ii. Criteria are satisfied for neither B nor C.

**Step 8:** Identify Numerator E. Numerator E is a composite of Numerator A and Numerator D.
   i. Criteria are satisfied for both A and D1.
   ii. Criteria are satisfied for neither A nor D1.

** For Steps 4-8, report as 100 x (numerator/denominator) to 1 decimal place.

**Step 9:** 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 50 children.

See the Step 10 for specification of stratifying variables.

**Step 10:** 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.


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 \( \leq 12.5\% \)
   ii. Second Quartile of Poverty if percent in poverty is \( >12.5\% \) and \( \leq 16.5\% \)
   iii. Third Quartile of poverty if percent in poverty is \( >16.5\% \) and \( \leq 20.7\% \)
   iv. First upper quartile (75\(^{th}\) - 90\(^{th}\)) if percent in poverty is \( >20.7\% \) and \( \leq 25.7\% \)
   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 5-11, 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