Continuity of Insurance: Informed Participation

Section 1. Basic Measure Information

1.A. Measure Name

Continuity of Insurance: Informed Participation

1.B. Measure Number

0153

1.C. Measure Description

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

Improved measurement of insurance coverage continuity in the Medicaid and CHIP population is needed to help maximize insurance continuity and coverage for vulnerable children. To further this goal, the AHRQ-CMS CHIPRA PQMP Center of Excellence at the Children's Hospital of Philadelphia (CHOP) developed a suite of five metrics—Coverage Presumed Eligible, Coverage Presumed Ineligible, Informed Participation, Duration of First Observed Enrollment, and Duration of Newborn's First Observed Enrollment—designed to accurately measure coverage among children enrolled in Medicaid or CHIP and overcome the current inability in the Medicaid Analytic eXtract (MAX) dataset to determine whether a child disenrolled due to loss of eligibility (such as due to parental income increase or the acquisition of employer-sponsored insurance, a "good" reason) or failure to appropriately reenroll (a "bad" reason). These measures can help Federal and State programs develop strategies to retain children eligible for coverage and minimize gaps that can occur during the renewal process.

This report describes informed participation. Informed Participation assesses the continuity of enrollment of children in publicly financed insurance programs (Medicaid and CHIP), as defined by the ratio of enrolled months to eligible months over a random 18-month observation window. Informed Participation uses a natural experiment based on the random event of appendicitis to "inform" which of three assumptions about eligibility is best used in a given State. The three assumptions consist of Coverage Presumed Eligible (PE), Coverage Presumed Ineligible (PI), or the average of the two (although it is not a separate metric, for clarity's sake we call this average "Mixed Coverage," or Coverage PM). Whichever rate falls closest to the rate of existing enrollment among appendicitis patients is then applied to all children in a State for a given year.

1.D. Measure Owner

The Children's Hospital of Philadelphia (CHOP).

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

Not applicable.

1.F. Measure Hierarchy

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

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

   Continuity of Insurance Metric Suite.

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.**

   Not applicable.

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

   Not applicable.

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

   Not applicable.

1.G. Numerator Statement

Please note that this section describes the numerator and denominator of Informed Participation at the most basic level. Because Informed Participation uses Coverage Presumed Eligible, Coverage Presumed Ineligible, or an average of the two, there are different definitions for the denominator, as will be described in the "detailed measure specifications" section. That section will also provide the specifications and details for determining the appendicitis coverage rate used to determine Informed Participation.

Medicaid/CHIP Standalone Programs

Summation of covered months for all children over an 18-month observation window. Calculated for Medicaid and CHIP separately. Does not reflect transitions between programs. A month is considered "covered" if a child has greater than 14 enrolled days in that month.

This measure may also be calculated as a program specific measure, taking into account transitions between programs.

Jointly Administered Medicaid and CHIP

Summation of covered months for all children in either Medicaid or a CHIP program, over an 18-month observation window. Reflects transitions between Medicaid and CHIP. A month is considered "covered" if a child has greater than 14 enrolled days in that month.

1.H. Numerator Exclusions

Children older than 18 years of age at the beginning of the 18-month observation window.

1.I. Denominator Statement

Medicaid/CHIP Standalone Programs

The denominator is the summation of eligible months over an 18-month observation window. The definition of "eligible months" for Informed Participation is dependent upon whether the natural experiment estimate most closely reflects Coverage Presumed Eligible, Presumed Ineligible, or the average of the two; please see "detailed measure specifications."

This measure may also be calculated as a program-specific measure, taking into account transitions between programs.

Jointly Administered Medicaid and CHIP

The denominator is the summation of eligible months over an 18-month observation window.

1.J. Denominator Exclusions

The denominator is the summation of eligible months for all children and assumes the following:

- For children who are born within the 18-month window of observation, the total months of eligibility begins from the date of birth.
- For children who reach the age of 18 before the end of the 18-month window of observation, total months of eligibility ends with their 18th birthday.

1.K. Data Sources

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

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

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

Not applicable.

Section 2: Detailed Measure Specifications

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

Please Supporting Documents for detailed measure specifications and State-level frequency tables for informed participation. SAS code is included in the Supporting Documents for Section 1.

Section 3. Importance of the Measure

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

3.A. Evidence for General Importance of the Measure

Provide evidence for all applicable aspects of general importance:

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

- **The extent to which the measure is applicable to changes across developmental stages (e.g., infancy, early childhood, middle childhood, adolescence, young adulthood).**

Known Quality Gap or Disparity in Quality

Disparities in continuity of coverage according to ethnicity, geography, insurance type, and special health care need have been observed throughout the literature. Publicly insured children from poorer households are more likely than those from higher income households to have gaps in insurance coverage (Angier, DeVoe, Tillotson, et al., 2013; Bethell, Kogan, Strickland, et al., 2011). Minority children, especially Hispanic children, are more likely to be uninsured, have gaps in coverage, and not have a usual source of care (Berdahl, Friedman, McCormick, 2013; Federico, Steiner, Beaty, et al., 2007; Flores, Lin, 2013; Flores, Tomany-Korman, 2008; Kogan, Newacheck, Blumberg, et al., 2010). This ethnic disparity is the most pronounced for first- and second-generation Latino children (DeCamp, Bundy, 2012). Minorities in Georgia were also found to have lower access to higher quality of health care (Ogbuanu, Goodman, Kahn, et al., 2012a). Rural children are more likely to have longer uninsurance spells than children in urban settings (Coburn, McBride, Ziller, 2002).There is a larger uninsured-insured gap among children in urban settings than in rural areas, and children in urban settings are less likely to have a usual source of care regardless of insurance status (Ziller, Lenardson, Coburn, 2012). Children with special health care needs are more likely to have public insurance coverage than private insurance coverage but experience more unmet needs (Bethell, et al., 2011; Callahan, Cooper, 2007; Okumura, McPheeters, Davis, 2007). Olson, Tang and Newacheck (2005) performed a cross-sectional study using National Health Interview Surveys confirming that children with full-year public coverage report a higher prevalence of chronic conditions limiting activities relative to children with full-year private insurance coverage (12.3 percent vs. 5.1 percent, respectively). In specific patient populations, there also are disparities. Children with diabetes were found to have more frequent emergency department (ED) visits if their insurance was Medicaid rather than private (Park, Linakis, Skipper, et al., 2012). Children with public insurance had a longer interval between epilepsy seizure onset to referral and subsequent surgery compared to privately insured children (Hauptman, Dadour, Oh, 2013).

Potential for Quality Improvement

We believe there are important policy implications for the Continuity of Insurance metrics. State programs have an interest in retaining eligible children and preventing inappropriate breaks in coverage, many of which occur during the renewal process (Southern Institute, 2009). Many States have been engaged in efforts that have been shown to maximize continuous enrollment. These include streamlining and simplifying the enrollment and renewal processes for Medicaid and CHIP (Kaiser Commission on Medicaid Facts, 2012; Ku, Steinmetz, Bruen, 2013; Pati, Kavanagh, Bhatt, et al., 2012). Simplified enrollment procedures include express lane eligibility, SSA data match to verify citizenship, and electronic forms. Simplified renewal procedures include using pre-populated forms and 12-month continuous eligibility. States where Medicaid and CHIP programs coordinate with each other better facilitate transitions for children without losing coverage (Kaiser Commission on Medicaid and the Uninsured, 2012). Collection of demographic data and data pertaining to reasons for disenrollment and eligibility decisions will enable policymakers to successfully evaluate retention processes (Southern Institute, 2009).The

elimination by CHIPRA of the 5-year waiting period previously needed for immigrants to receive public insurance provided an opportunity to reduce the generational gap of Latino uninsured children (DeCamp, 2012).

Prevalence of Condition Among Children or Pregnant Women; Severity of Condition and Burden of Condition on Children, Family, and Society; Rarity of Condition

Studies have used the Medical Expenditure Panel Survey (MEPS), the National Health Interview Survey (NHIS), and the National Survey of Children's Health (NSCH) to determine the prevalence of uninsurance and unstable coverage among children in the United States. The reported numbers range from 9-11.1 million for children with gaps in coverage and 5-6 million for those with no insurance in a given survey year (Bethell, et al., 2011; Satchell, Pati, 2005).There was a decrease from 10.9 percent to 10.0 percent in uninsured children from 2007 to 2010, which is being attributed to children gaining coverage through Medicaid and CHIP as a result of CHIPRA (Kaiser, 2012b). Children who were uninsured or had gaps in insurance coverage experienced more delayed care, had unmet medical and prescription needs, and were more likely to lack a regular source of care than children with continuous coverage (Cassedy, Fairbrother, Newacheck, 2008; DeVoe, Graham, Krois, et al., 2008; Federico, et al., 2007; Olson, Tang, Newacheck, 2005; Ogbuanu, et al., 2012b).

Fiscal Burden of Condition on Patients, Families, Public and Private Payers, and Society, Currently and Over Time

For low-income families, the financial burden is lower for those with full-year public coverage compared to those with full-year private insurance (Galbraith, Wong, Kim, et al., 2005). Churning establishes additional administrative costs. Although data on the financial impact of churning are limited, Fairbrother (2005) estimated that in California alone, the cost per beneficiary of re-enrolling in Medi-Cal and a subsequent managed care plan is $180, summing to a total $120 million dollars per year to re-enroll eligible children who had dropped coverage within a 3-year time period. For the financial burden of a community, a 10 percent disenrollment would increase the costs of health care by $3,460,398 annually, or $2,121 for each disenrolled child, as ED visits and hospital stays would increase (Rimsza, Butler, Johnson, 2007). A study of Massachusetts residents that use behavioral health services found that MassHealth closes approximately 34,000 cases per month of which 11,000 are reopened within 90 days at an estimated cost per case for reopening of $200 (Capoccia, Croze, Cohen, et al., 2013).

Association of Measure with Children's Future Health

Continuity of insurance coverage has the potential to impact child and adolescent health in a number of ways. First, continuous coverage without gaps can permit children and adolescents access to a regular source of care and therefore reduce unmet needs (Aiken, Freed, Davis, 2004; Holl, Szilagyi, Rodewald, et al., 2000; Schoen, DesRoches, 2000). A regular source of care allows for treatment of chronic health conditions, provides routine preventive care, and facilitates management of acute and urgent problems (Olson, et al., 2005). The likelihood of receiving preventive care is increased when a child has both a usual source of care and is insured (DeVoe, Tillotson, Wallace, et al., 2012). Second, continuous coverage ensures that children and adolescents can receive continuity of care without gaps. Continuity of care helps maintain information exchange, increases coordination of management plans, and fosters ongoing

relationships between patients and clinicians (Haggerty, Reid, Freeman, et al., 2003). Continuity of care also permits children's health conditions to be monitored regularly so that treatments can be adjusted to maximize health and prevent exacerbations or worsening of conditions that might lead to hospitalization (Fairbrother, Jain, Park, et al., 2004; Weissman, Gatsonis, Epstein, 1992). Third, continuity of coverage may allow time for greater engagement between parents and clinicians in treatment decisions and lead to greater satisfaction with services and better health status (Holl, et al., 2000; Kenney, 2007; Shone, Dick, Klein, et al., 2005).

Developmental Change of Measure

Older children are more likely to lose coverage than younger children (Sommers, 2005; Yu, Harman, Hall, et al., 2011). Older children are also less likely to have preventive care visits in the past year and meet the criteria for the minimal health quality indicator (Bethell, et al., 2011). In addition, an age disparity was found with access to care for younger children (4-9 years old) having better access to care (Ogbuanu, 2012b). There is also a disparity in having a usual source of care based on children's age group. Using the 2003-2008 MEPS data, Burns and Leininger (2012) found that teenagers are 64 percent more likely to lack a usual source of care compared with younger children.

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

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

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

This standardized measure can be used by States as a potential indicator of quality and access. The issue of enrollment and retention is a long standing concern for publically financed insurance programs, and one that States have likely examined using less formal means. According to a recent survey conducted by the National Academy for State Health Policy, only a small proportion of CHIP programs are currently measuring duration of enrollment or retention in some way (DeLone, Hess, 2011). Some of our State collaborators also shared that there was limited activity around systematically tracking these issues, and that continuous enrollment was raised most often within the context of assessing quality metrics for which there are continuous enrollment inclusion criteria. States cited the absence of a nationally endorsed measure as the reason that they are not collecting this information. Many States would like to measure duration of enrollment to assess enrollment efforts, especially as continuous enrollment is often a prerequisite for valid measurement of quality of care (Delone, Hess, 2011).

As Medicaid/CHIP enrollees are from low-income families, this measure will benefit vulnerable children as States are held accountable for retaining eligible children on public coverage. Where data capacity permits, this measure also takes into account children switching from Medicaid to CHIP and vice versa instead of treating children as disenrolled.

The relevance of the coverage metric to Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefits in Medicaid is significant, as the receipt of EPSDT services is directly linked to program enrollment. Ongoing and continuous receipt of EPSDT services would reflect greater coverage over time. The impact of the coverage metric is far reaching given the scope of EPSDT benefits including physical, dental, auditory, and vision services.

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

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

Informed Participation is part of a suite of five Insurance Continuity metrics: Coverage Presumed Eligible, Coverage Presumed Ineligible, Informed Participation, Duration of First Observed Enrollment, and Duration of Newborn's First Observed Enrollment that are designed to accurately measure coverage among children enrolled in Medicaid or CHIP and overcome the current inability in the MAX dataset to determine whether a child disenrolled due to loss of eligibility (a "good" reason) or failure to appropriately reenroll (a "bad" reason). These measures can help Federal and State programs develop strategies to retain children eligible for coverage and minimize gaps that can occur during the renewal process.

The three Coverage metrics were developed in order to address the fact that Duration, due to its "new enrollment" criteria, eliminates the children with the longest and most stable enrollment, the "most successful" children, from inclusion in the metric (for reference, Duration is defined as the percentage of children still continuously enrolled at 6, 12, and 18 months after their first enrollment. In some States, the excluded children amount to more than 85 percent of the total number of enrollees (see Supporting Documents for table.). Thus, although measuring duration is important in its own right, the metric cannot give a complete picture of a State's overall ability to keep eligible children enrolled. Restricting duration to newborn enrollees eliminates the problem of left-hand censoring but further reduces the inclusivity. One virtue of the Coverage metrics is that they include almost all children that have been enrolled in the program.

For a detailed description of the relationship between the Coverage metrics, the Duration metrics, and two independent measures (the Continuity Ratio, developed by Ku, MacTaggart, Pervez, et al., 2009; and a metric based on the American Community Survey), including correlations, please see Section 6.B, Validity, in this report.

Section 4. Measure Categories

CHIPRA legislation requires that measures in the initial and improved core set, taken together, cover all settings, services, and topics of health care relevant to children. Moreover, the legislation requires the core set to address the needs of children across all ages, including services to promote healthy birth. Regardless of the eventual use of the

measure, we are interested in knowing all settings, services, measure topics, and populations that this measure addresses. These categories are not exclusive of one another, so please indicate "Yes" to all that apply.

Does the measure address this category?

a. **Care Setting – ambulatory:** Yes.
b. **Care Setting – inpatient:** Yes.
c. **Care Setting – other – please specify:** All care settings.
d. **Service – preventive health, including services to promote healthy birth:** Yes.
e. **Service – care for acute conditions:** Yes.
f. **Service – care for children with acute conditions:** Yes.
g. **Service – other (please specify):** All services.
h. **Measure Topic – duration of enrollment:** Yes.
i. **Measure Topic – clinical quality:** No.
j. **Measure Topic – patient safety:** No.
k. **Measure Topic – family experience with care:** No.
l. **Measure Topic – care in the most integrated setting:** Yes.
m. **Measure Topic other (please specify):** Quality of care; access and utilization.
n. **Population – pregnant women:** Yes.
o. **Population – neonates (28 days after birth) (specify age range):** Yes.
p. **Population – infants (29 days to 1 year) (specify age range):** Yes.
q. **Population – pre-school age children (1 year through 5 years) (specify age range):** Yes.
r. **Population – school-aged children (6 years through 10 years) (specify age range):** Yes.
s. **Population – adolescents (11 years through 20 years) (specify age range):** Yes.
t. **Population – other (specify age range):** All children ages 0-18.
u. **Other category (please specify):** Not applicable.

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

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

5.A. Research Evidence

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

level and the provision of immunizations to children and adolescents, such evidence would support the focus of a measure on immunization registries (a structural measure).

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

Unmet Need

A retrospective cohort analysis using three consecutive Medical Expenditure Panel Surveys (MEPS) supports the assertion that uninsured children and children with gaps in health insurance coverage are more likely to experience unmet needs compared to continuously covered children (Cassedy, et al., 2008). Findings indicated that continuously uninsured children were three times as likely to experience unmet needs as children with continuous private insurance, and that children with one or more coverage gaps were four times as likely to have unmet needs as children with continuous private coverage (Cassedy, et al., 2008). A retrospective cohort analysis using the 2002-2007 MEPS had similar findings, with the addition that the uninsured are six to seven times as likely to delay or forgo utilization of health care services because of cost as those who have insurance (Ziller, et al., 2012). In a cross- sectional analysis of the 2003-2004 National Survey of Children's Health, Halterman and colleagues established that children with any insurance coverage gaps were more likely to have an unmet medical need (did not receive all needed care, unmet medication need, no personal doctor, no preventive care in the past 12 months from personal doctor) than children with continuous private insurance (Halterman, Montes, Shone, et al., 2008). Yet another cross-sectional analysis performed by Federico, et al. (2007) supports that first-time CHIP enrollees who experienced more disruptions in insurance coverage were increasingly more likely than enrollees without coverage disruptions to have unmet medical needs and to not obtain needed prescription medicine. To determine if the uninsured-insured disparities in care had changed over the years, Sabik and Dahman (2012) used five waves of the Community Tracking Study (CTC) Household Survey and found the gap in disparities in care to be persistent over time.

Usual Source of Care

Uninsured children and children with gaps in health insurance coverage are less likely than children with continuous coverage to have a usual source of care. A cross-sectional analysis of the 2005 California Health Interview survey indicates that the odds ratios of having a usual source of care are lower for children uninsured for 1 to 4 months (0.21) and uninsured for a full year (0.08), both relative to privately insured children (Cummings, Lavarreda, Rice, et al., 2009). The retrospective MEPS cohort analysis further supports that when compared to continuously privately insured children, the odds of lacking a usual source of care were four times as high for continuously uninsured children and three times as high for children with multiple gaps in coverage (Cassedy, et al., 2008). This was further supported by the 2002-2007 MEPS data, differentiating patients based on location, finding not only that the uninsured are less likely to have a usual source of care but that this difference is worse for people in urban areas (Ziller, et al., 2012).

Children who had insurance yet lacked a usual source of care had higher rates of unmet health care needs than those who had a usual source of care (Tillotson, Wallace, Lesko, et al., 2012).

An additional study that used the 2002-2006 MEPS data found the interaction of insurance status and having a usual source of care to be indicative of receipt of disease-injury prevention counseling and education (DeVoe, et al., 2012). An analysis of data from Oregon's Food Stamp population supported previous findings—children with gaps in coverage of any length were more likely to have no usual source of care when compared to continuously insured children (DeVoe, et al., 2008). The coverage status relationship of siblings was also found to be related to having a usual source of health care. Percheski and Bzostek (2013) assessed whether the fact that siblings had different insurance statuses affected their having a usual source of care and found that mixed-coverage siblings had significantly lower odds having a usual source of care.

Utilization

Uninsured children and children with gaps in health insurance coverage are less likely to utilize preventive care and more likely to have delayed care than those with continuous coverage. An analysis of MEPS data from 1996-2005 indicated that children who disenroll from Medicaid/CHIP and are subsequently uninsured or switch to private insurance have fewer well child and physician visits compared with children continuously enrolled in Medicaid/CHIP (Yu, 2011). An investigation of MEPS data from 2000-2004 for 18-64 year olds revealed that transitions into and out of Medicaid corresponds to higher ED utilization, more office visits, and more hospitalizations (Banerjee, Ziegenfuss, Shah, 2010). Ginde and colleagues also found that any disruption in insurance status results in increased ED utilization (Ginde, Lowe, Wiler, 2012). Additionally, in a retrospective cohort study of California Medicaid participants, Bindman, Chattopadhyay, and Auerback (2008a) found that adults 18-64 years of age who experience disruptions in Medicaid coverage had higher hospitalization rates for ambulatory care-sensitive conditions when compared to those without disruptions.

Child Health Outcomes

With continuity and gaps in coverage having been far less studied than uninsurance status at a point in time, there is limited literature relating continuity with child health outcomes. A cross-sectional analysis of the NSCH 2003-2004 described children with continuous private coverage as being the least likely to report having poor or fair health and also least likely to describe their asthma severity as 'minor' when compared to children with continuous public coverage, those who experienced gaps, or the continuously uninsured (Halterman, et al., 2008). An analysis of the National Health and Nutrition Examination Survey found that being insured increased the likelihood that children with intermittent asthma would receive a diagnosis and subsequent controller medication (Coker, Kaplan, Chung, 2012). Olson et al. (2005) found that more children with public coverage (4.6 percent), part-year uninsured (2.6 percent), and full-year uninsured (2.2 percent) self-reported to have fair or poor health than children with full-year private coverage (0.9 percent). A study that looked at children in Georgia found that children who were never/intermittently insured were less likely to view their care as higher/moderate quality relative to children with continuous adequate coverage (Ogbuanu, et al., 2012b).

Policy Factors

From a global perspective, policy changes affect insurance coverage patterns and health outcomes of children. As described previously, many States have implemented various strategies for streamlining and simplifying the enrollment and renewal processes for Medicaid and CHIP. In a California-based study examining two cohorts of children before and after a policy change

extending the Medicaid eligibility redetermination period from 3 to 12 months, Bindman, et al. (2008b) found that more children had continuous Medicaid coverage and a reduction in hospitalizations for ambulatory care-sensitive conditions after the policy change. In another California-based cross-sectional study, Millett and colleagues demonstrated that individuals in counties with a choice of Medicaid plans were less likely to have continuous enrollment and higher annual ambulatory care-sensitive admission rates than individuals in counties with no choice of Medicaid plans (Millett, Chattopadhyay, Bindman, 2010). Changes in children's' uninsurance rates from 2007 to 2010 were attributed to policy changes by multiple States (Kaiser, 2012a). A 2013 study showed that seven States that adopted a continuous-eligibility policy in 2009 were able to increase average length of child enrollment (Ku, et al., 2013). Generating additional evidence elucidating the pathway that encompasses policy context, insurance coverage, service delivery, and outcome is critical.

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

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

Not applicable.

Section 6. Scientific Soundness of the Measure

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

6.A. Reliability

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

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

For the purposes of this report, we define the reliability of the metrics as their ability to produce consistent as well as precise results under similar conditions. Specifically, we determined whether the retention rates measured by each metric and the rankings based on these rates were consistent on repeated sampling from the population of beneficiaries. Reproducibility is relevant for States that may decide to compare retention rates across counties—for example, to identify counties that have retention rates in the top and bottom 5 percent within the State. If the metrics are reproducible, the retention rates and rankings measured using random samplings should be consistent when repeated.

To test reproducibility at the State level, we implemented random sampling of sizes 2,000, 5,000, and 10,000 stratified by county. We stratified by county to ensure the sample was representative of the population and to avoid the possible bias from simple random sampling because counties might differ markedly in patient characteristics and the outcome retention metrics. For example, if the eligible population for a metric in a given State is 50 percent in County A, 20 percent in County B, and 30 percent in County C, then the sample composition when resampling using 2,000 observations comprises 1,000 (i.e., 2000*0.5) observations from County A, 400 (i.e., 2000*0.2) observations from County B, and 600 (i.e., 2000*0.3) observations from County C. Three samples of each size were then used to calculate the metric and assess similarities across samples within a State.

Given that each of the samples within each State and county are independent, we used Greenwood's method for variances (and confidence bounds) of differences (Greenwood, 1926; Hosmer, Lemeshow, May, 2011). With multiple samples, we estimated pairwise differences among these samples and the width of the resulting 95 percent confidence interval of these differences. The small confidence intervals of each metric in each State indicate a high degree of reliability (see table in Supporting Documents).

6.B. Validity

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

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

Please see Supporting Documents for our extensive validation work:

- Informing coverage through the natural experiment of appendicitis.
- Case study: Illinois and the All Kids Insurance Act (Illinois General Assembly, 2006).
- Construct Validity: Comparison with existing administrative data and survey-based metrics.
- Predictive Validity: Association between Informed Participation and (a) achievement of selected CHIPRA core set metrics and (b) hospitalization for ambulatory care-sensitive conditions.

Section 7. Identification of Disparities

CHIPRA requires that quality measures be able to identify disparities by race, ethnicity, socioeconomic status, and special health care needs. Thus, we strongly encourage nominators to have tested measures in diverse populations. Such testing provides evidence for assessing measure's performance for disparities identification. In the sections below, describe the results of efforts to demonstrate the capacity of this measure to produce results that can be stratified by the characteristics noted and retain the scientific soundness (reliability and validity) within and across the relevant subgroups.

7.A. Race/Ethnicity

Methods

For these analyses, race and ethnicity were determined based on the race/ethnicity variable reported in the MAX data and classified based on Office of Management and Budget guidelines. White was defined as white, not of Hispanic origin. Black was defined as black, not of Hispanic origin. For Hispanic, we combined children reported as "Hispanic or Latino" and "Hispanic or Latino and one or more races." Other included American Indian, Alaska Native, Asian, Pacific Islander, and children with missing race/ethnicity information. We stratified the 18-month coverage fraction by enrollee race/ethnicity for the eight States (Illinois, Louisiana, Montana, North Carolina, New Hampshire, New York, Oregon, and Utah). Racial proportions vary drastically from State to State. Louisiana is the only State with a majority of non-Hispanic black enrollees with 53.8 percent. New Hampshire, Montana, Oregon, and Utah all have significant majorities of non-Hispanic white enrollees, and only New York has a plurality of Hispanic enrollees.

Results

Coverage fractions varied by race within States and were generally split between non-Hispanic blacks having the highest coverage fraction in three States, and Hispanics having the highest coverage fraction in four States. The only outlier was Montana, where the "other" ethnic group had the highest coverage fraction. Hispanics were outliers in Oregon, where their coverage fraction was over 7 percent higher than that of any of their peers. Non-Hispanic blacks were the outlier in Utah, where their coverage was over 4 percent greater than that of any of their peers. Most shockingly, non-Hispanic whites in Utah had a coverage fraction of just 62.89 percent, less than any other ethnic group in any other State (see table in the Supporting Documents).

7.B. Special Health Care Needs

Methods

Based on published peer-reviewed literature, we compiled a list of pediatric chronic conditions (ensuing list of ICD-9 codes) where each condition was represented in all or most of the papers (Valentine, Neff, Park, 2000; Ireys, Anderson, Shaffer, et al., 1997; Todd, Armon, Griggs, et al., 2006; Fowler, Gallagher, Homer, 2001; Neuzil, Wright, Mitchel, et al., 2000; Feudtner, Christakis, Donnell, 2000; Feudtner, Hays, Haynes, et al., 2001; Seferian, Lackore, Rahman, et al., 2006). See Table 4 in the Supporting Documents for listing of the ICD-9 codes of the chronic conditions included in our analysis.

Results

We present State-by-State rates of Coverage PI stratified by the presence of a chronic condition. The proportion of enrollees with chronic care needs ranged from 25 percent to 33 percent in five of the six States, with Louisiana's rate of 32.5 percent being the highest. Yet in Utah, the share of children suffering from chronic illnesses was 16.2 percent, nearly half that of Louisiana. Coverage fractions were higher for children with chronic care needs in every State; the rate was typically between 5 and 13 percentage points higher for enrollees with chronic conditions. In

Utah, the coverage fraction was the lowest of all States both in children with and without chronic disease (see table in Supporting Documents).

7.C. Socioeconomic Status

Methods

Socioeconomic measures at the individual or census-tract level are not included in the MAX data. Although 5-digit-zip code-based socioeconomic measures have significant limitations, we performed analyses using three socioeconomic variables (percent with high school degree, percent with income below the Federal poverty level [FPL], and income level) stratified by quartiles in order to demonstrate that these analyses are feasible (Krieger, Williams, Moss, 1997). These variables were abstracted from U.S. census 5-digit-zip code-level data and merged with the MAX data. If 9-digit-zip code data were available in MAX, these analyses would produce more robust and meaningful results.

Results

As noted in the methods section, these analyses were performed for the purposes of demonstrating feasibility and NOT for the purposes of assessing the significance of associations. The ensuing summary text is provided to assist readers in reviewing the large volume of tabulated results that underscore the limited utility of 5-digit-zip code-level socioeconomic indicators in these analyses.

Enrollees in each State were stratified by three socioeconomic variables, measured at the five-digit ZIP code level for all enrollees and separated into quartiles: percentage of residents below the FPL, percentage of residents who graduated high school, and median income. In all States, coverage did not vary by much (less than 10 percentage points) between the highest and lowest quartiles for any measure. The coverage fraction across poverty quartiles lacked a coherent pattern, although the extremes show that ZIP codes with a lower percentage of enrollees below the FPL had better coverage than those with a higher percentage above the FPL. Differences across income quartile were also small and lacked a coherent pattern across States; looking at just the extremes, the lowest income quartile always had better coverage than the highest quartile. Trends for education were clear: while coverage fractions were generally homogenous and never differed by more than 10 percentage points between the most and least educated quartiles, coverage fractions in every State improved as the high school graduation rate of enrollee ZIP codes fell (see table in the Supporting Documents).

7.D. Rurality/Urbanicity

Methods

A crosswalk was performed between the MAX data and the 2010 Census urban and rural classification (http://www.census.gov/geo/www/ua/2010urbanruralclass.html). There are two types of urban areas: urbanized areas have 50,000 or more people residing in that area; urban clusters have at least 2,500 and less than 50,000 people residing in that area. Rural area encompasses all population, housing, and territory not included within an urban area.

Results

We stratified coverage fractions within each State by the urbanicity and rurality level of enrollees' zip codes. In Louisiana, Montana, New York, and North Carolina, the coverage fractions were drastically lower for enrollees who lacked a geographic status, by 20 to 40 percentage points vis-à-vis any other category. In contrast, coverage fractions were highest for enrollees who lacked a geographic status in Illinois and Oregon, but the differences were not as drastic with only a 1.8 percent and 5.3 percent difference, respectively. Coverage rates were generally similar between urban, rural, and urban cluster areas in each State (see table in the Supporting Documents).

7.E. Limited English Proficiency (LEP) Populations

Limited English proficiency data are not available in the MAX dataset; thus, we were unable to perform these analyses.

Section 8. Feasibility

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

8.A. Data Availability

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

Informed Participation is designed to be used with the Medicaid Analytic eXtract (MAX) or similar administrative datasets. However, States and programs do not have consistent reporting standards when contributing to MAX. Some States do not report enrollment data, and none reports claims for their State-funded (S-CHIP) programs. For children enrolled in federally run CHIP programs (M-CHIP), States report the number of days that a child is enrolled which is used in a decision rule determining whether a child is considered covered. Since this information is not included with any of the States that do report S-CHIP status, children are considered to be "enrolled" for the whole month if they have evidence of S-CHIP enrollment via a monthly indicator in the MAX data. In States that do not report S-CHIP enrollment to MAX, we must assess only the Medicaid and M-CHIP children to estimate enrollment. Additionally, while some States usually provide managed care claims, others do not (Byrd, Verdier, 2011; Levinson, 2009). For this reason, particularly as the appendicitis natural experiment used to create Informed Participation requires use of claims data (which may be missing or incomplete in States with high managed care populations), we developed a filter to assess data quality and determine whether Informed Participation may be implemented in a given State and year. We also analyzed the metric's robustness to unobserved data, in order to be used in States that do not report S-CHIP enrollment data. Details of these analyses can be found in the Supporting Documents.

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?

States with separate Medicaid and CHIP administrations should develop ways to routinely merge their data to enhance the feasibility of the measure and facilitate implementation. In addition, routine inclusion of several specific elements (e.g., reason for enrollment, reason for disenrollment, English proficiency, etc.) would provide useful information. Currently, there is a CMS initiative entitled Transforming the Medicaid Statistical Information System (T-MSIS) designed to assess the feasibility of modifying the existing MSIS system to routinely collect additional data elements.

Additionally, although managed care data collection is improving, a unified standard for collecting and reporting claims from these programs would greatly enhance the use of MAX data for research and assessment purposes.

8.B. Lessons from Use of the Measure

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

This is a new measure that has not 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?

This is a new measure that has not been used.

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

This is a new measure that has not been used.

Section 9. Levels of Aggregation

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

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

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

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

State level* Can compare States

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

Yes.

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

Sample Size: **What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**
See section on reliability.

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

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
See Silber, Zeigler, Reiter, et al., in press. This article modifies Informed Participation by relaxing the upper and lower bounds that are used in Informed Participation. This modified measure is titled the Appendectomy Based Participation (ABP) rate. The correlation between Informed Participation and the ABP rate is greater than 0.99 when tested on 43 states with adequate data.

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

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)**
No.

Data Sources: **Are data sources available to support reporting at this level?**
Not applicable.

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 applicable.

In Use: **Have measure results been reported at this level previously?**
Not applicable.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
Not applicable.

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

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)**
No.

Data Sources: **Are data sources available to support reporting at this level?**
Not applicable.

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 applicable.

In Use: **Have measure results been reported at this level previously?**
Not applicable.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
Not applicable.

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

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

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?**
Not applicable.

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 applicable.

In Use: **Have measure results been reported at this level previously?**
Not applicable.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
Not applicable.

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

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?**
Not applicable.

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 applicable.

In Use: **Have measure results been reported at this level previously?**
Not applicable.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
Not applicable.

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

Provider Level
Hospital: Can compare hospitals

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

Data Sources: **Are data sources available to support reporting at this level?**
Not applicable.

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 applicable.

In Use: **Have measure results been reported at this level previously?**
Not applicable

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
Not applicable.

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

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

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

Data Sources: **Are data sources available to support reporting at this level?**
Not applicable.

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 applicable.

In Use: **Have measure results been reported at this level previously?**
Not applicable.

Reliability & Validity: **Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?**
Not applicable.

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

Section 10. Understandability

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

State Medicaid and CHIP Stakeholder Input

We engaged Medicaid and CHIP leadership from three States to acquire input on the understandability and usability of the Coverage metrics. Our understanding of the original intent and purpose of the CMS duration measure as described by CMS was that a focus on assessing duration among the newly enrolled precluded the need to address left hand censoring, i.e., the inability to accurately assess duration for those already enrolled at the beginning of an observation window.

States described a significant proportion of their enrollees as being continuously enrolled for longer durations and therefore ultimately ineligible for calculation in the CMS duration measure. This is an issue that is likely to be applicable to other States. Indeed, Fairbrother (2005) found that almost half of Medi-Cal children had been enrolled continuously for 3 years. The issue of restricting the eligible population to new enrollees is not an insignificant issue, as it in many ways presents a similar challenge that exists in calculating quality metrics that require continuous enrollment criteria. As described by States' leaders, HEDIS like-metrics, which use continuous enrollment criteria for denominator inclusion, can result in the exclusion of a large segment of the population. Using MAX data, we found that in most States, a mere 15-30 percent of individuals were eligible according to the continuous enrollment criteria for a specified quality metric. We expected that conversely, the application of criteria restricting the denominator to new enrollees would have the same type of impact on inclusivity of the general population. States expressed that devising a metric that would provide a better snapshot across the entire population would be valuable.

Given the conceptual challenge around a measure that only examines individuals newly enrolled during a specified observation window, one State suggested that the specifications for such a measure would be more applicable to the newborn population, whereby the identification of total months eligible should reflect an anchor date that begins with the date of birth. The 18-month observation window was viewed as appropriate given longer durations of enrollment for some segments of the population. We asked States for their thoughts on how they might expect outcomes to be influenced differentially by coverage versus duration. Some States suggested that while metrics would likely affect preventive care, acute, time-sensitive conditions would be more affected by gaps, as children experiencing a coverage gap would have delayed treatment.

States have been active in implementing numerous strategies to streamline and facilitate the enrollment process, including greater use of automation and technology. However, as States described, implementing more targeted strategies to help close gaps in coverage is inherently more complex because those strategies would require determination of the reasons an individual was disenrolled and whether it was an appropriate or inappropriate action. The Coverage metrics were constructed in part to acknowledge and give credit to States that focused on efforts to bring individuals back into the system, a metric property that is not reflected in the CMS duration measure. In summary, States saw merit in the conceptual underpinnings of the Coverage metrics and were interested in further exploring its application.

Section 11. Health Information Technology

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

11.A. Health IT Enhancement

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

Creation of a common insurance eligibility platform that includes information from both private and public insurers would greatly enhance the use of this measure because existing datasets (e.g., MAX, MSIS) do not include information about eligibility or enrollment among children who are privately (i.e., commercially) insured. Routine inclusion of insurance status in electronic health records, immunization registries, and regional health information organizations (RHIOs) would also greatly enhance the use of this measure.

11.B. Health IT Testing

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

Yes.

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

The measure has been tested using the MAX datasets available from RESDAC, the CMS data clearinghouse. The MAX data are compiled based on core MSIS information that States are required to report to CMS on an ongoing and regular basis. Some States are in the process of testing the measure using the MSIS data.

11.C. Health IT Workflow

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

Currently, the information required to compute this measure is captured by States in administrative Medicaid and CHIP files, which are also reported to CMS on a quarterly basis.

11.D. Health IT Standards

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

Yes.

If yes, please describe.

Data elements in this measure are supported explicitly by the Office of the National Coordinator for Health IT Standards and Certification criteria. The rules about electronically calculating all of the clinical and ambulatory quality measures specified by CMS for eligible hospitals and critical

access hospitals will allow this measure to be validated. The rule about the ability to retrieve patient demographic data—including preferred language, gender, race, ethnicity, and date of birth—is essential for identifying disparities among these subgroups.

11.E. Health IT Calculation

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

There may be missing information for States that have separate Medicaid and SCHIP administration. Incomplete matching of the Medicaid and SCHIP data may underestimate the number of children still enrolled in public insurance.

There are also year-to-year anomalies with State data collection, which may affect the accuracy of the measure. For the MAX dataset, these potential issues are reported by CMS, and the data are validated.

11.F. Health IT Other Functions

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

Additional information capturing private insurance eligibility and more systematic collection and population of the data field "reason for disenrollment" would significantly enhance the performance of this measure.

Section 12. Limitations of the Measure

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

The primary limitations with the three Coverage metrics are related to the administrative data sources with which they are designed to be used. Children who are eligible but not enrolled are not observed, and one cannot know why a child disappears from the enrollment files because the reason for disenrollment is not recorded (in contrast, survey methods allow accurate assumptions about continuing eligibility due to reported income data). Using MAX data, we cannot know whether children are falling off the insurance rolls due to acquisition of employer-based insurance or an income increase (good reasons) or due to failure by the State or parent/guardian to appropriately re-enroll them (a bad reason).

For this reason, analysts using MAX must make assumptions about eligibility in order to make effective use of administrative data—in this case, we define the eligibility assumptions of Coverage PE and PI in order to create upper and lower bounds on the "true" measure of continuity. Since Coverage is a ratio of insured to eligible months, Coverage PE will tend to underestimate true coverage due to the people who drop out of Medicaid and CHIP for good

reasons. Similarly, Coverage PI may overestimate coverage, as some children may have been truly eligible prior to their first evidence of enrollment.

Although Coverage PE and PI are highly correlated with each other and either metric can be used to track State performance over time, States may want to know which metric will give them a more accurate picture of their patterns of enrollment. For this reason, we developed "Informed Participation," based on rates of pre-hospitalization enrollment among pediatric appendectomy patients. Informed Participation's stronger correlation with the American Community Survey (ACS)—which can identify eligible unenrolled children—relative to PE and PI indicates that by examining the random event of appendicitis, we are able to circumvent some inherent limitations of administrative data. But Informed Participation is also limited by variable and incomplete reporting of managed care claims in some States, and not all States may have sufficiently complete claims data to effectively implement the metric.

Section 13. Summary Statement

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

Due to the nature of the administrative datasets used for public insurance program assessment, and the complexities inherent in measuring insurance continuity, it is extremely difficult for any single metric to provide a complete picture. Thus, we have developed a suite of five metrics, Duration of First Observed Enrollment, Duration of Newborns' First Observed Enrollment, Coverage Presumed Eligible, Coverage Presumed Ineligible, and Informed Participation, each of which measures different population, enrollment, and retention properties. Taken together, we believe that the Insurance Continuity Metric Suite is able to provide a comprehensive and accurate way to assess State and program performance. Our findings are summarized here:

(1) **The current CMS-endorsed Duration metric has strengths and weaknesses.** The primary strength is that it provides a reflection of a State's ability to retain children enrolled in public insurance and will reflect State efforts to reduce barriers to re-enrollment. The weaknesses of the metric are that due to left hand censoring, it often only reflects 15-30 percent of the Medicaid/CHIP population; this 15-30 percent is not a random sample and will display differences in characteristics from the full population. Specifically, Duration excludes the most "successful" children, those with long-term continuous enrollment, from inclusion. Also, Duration does not reflect the length or frequency of gaps in enrollment. Stakeholders were concerned that using the Duration metric alone may not appropriately incentivize or reward outreach efforts to reduce gaps.

(2) **The Newborn Duration metric does not suffer from left-hand censoring and should be reported separately**. It also provides focus on infants, a vulnerable subgroup for whom access to regular medical care is particularly important.

(3) **Due to the fact that administrative datasets used for assessment do not include reason for disenrollment, accurately assessing Coverage requires the use of different assumptions about eligibility.** The assumptions used in Coverage PE and Coverage PI tend to form upper and lower bounds on what we may consider "true" coverage rates.

(4) **Coverage PE and Coverage PI are highly correlated with each other.** Either may be used to rank-order States or track performance trends across time.

(5) **Informed Participation performed better with regard to construct validity (correlations and errors versus the ACS-derived survey) than PE, PI, or Duration.** This suggests that IC constitutes a refinement of the metrics and is better able to reflect a State's true coverage and account for the fact that children who are eligible but not enrolled (observable in the ACS survey) cannot be observed in the administrative data.

(6) **Informed Participation was also more sensitive to changes in State policy.** This was seen in the Illinois case study.

(7) **All five measures performed well with regard to predictive validity and positive (CHIPRA core set metrics) and negative (ACSC hospitalization) outcomes.**

(8) **All five measures are sensitive to disparities among vulnerable populations.**

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

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

Public Disclosure Requirements

Each submission must include a written statement agreeing that, should U.S. Department of Health and Human Services accept the measure for the 2014 and/or 2015 Improved Core Measure Sets, full measure specifications for the accepted measure will be subject to public disclosure (e.g., on the Agency for Healthcare Research and Quality [AHRQ] and/or Centers for Medicare & Medicaid Services [CMS] websites), except that potential measure users will not be permitted to use the measure for commercial use. In addition, AHRQ expects that measures and full measure specifications will be made reasonably available to all interested parties. "Full measure specifications" is defined as all information that any potential measure implementer will need to use and analyze the measure, including use and analysis within an electronic health record or other health information technology. As used herein, "commercial use" refers to any sale, license or distribution of a measure for commercial gain, or incorporation of a measure into any product or service that is sold, licensed or distributed for commercial gain, even if there is no actual charge for inclusion of the measure. This statement must be signed by an individual authorized to act for any holder of copyright on each submitted measure or instrument. The authority of the signatory to provide such authorization should be described in the letter.

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