Use of Multiple Concurrent Antipsychotics in Children

Section 1. Basic Measure Information

1.A. Measure Name

Use of Multiple Concurrent Antipsychotics in Children

1.B. Measure Number

0126

1.C. Measure Description

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

The percentage of children 1 to 17 years of age on any antipsychotic medication for longer than 90 days during the measurement year who were on two or more concurrent antipsychotic medications for longer than 90 days.

Note: While a rate of zero is not expected for this measure, a lower rate indicates better performance.

1.D. Measure Owner

The National Committee for Quality Assurance (NCQA) on behalf of the National Collaborative for Innovation in Quality Measurement (NCINQ) and the Rutgers University-based, multi-State MEDNET consortium.

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.**

   Not applicable.

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.**

   Antipsychotic Medication Use Measures for Children and Adolescents.

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

Those on two or more concurrent antipsychotic medications for at least 90 days during the measurement year.

1.H. Numerator Exclusions

None.

1.I. Denominator Statement

Children aged 0 to 20 years on any antipsychotic medication during the measurement year.

- Age stratification: 0-5 years, 6-11 years, 12-17 years.
- Continuous eligibility: At least 3 months.
- Benefit: Medical and pharmacy.

1.J. Denominator Exclusions

None.

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 see Section 2, Technical Specifications, in the Supporting Documents.

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).**

Antipsychotic medications offer the potential for effective treatment of psychiatric disorders in children; however, they can also increase a child's risk for developing serious health concerns, such as metabolic and physical health complications. Antipsychotic use is an important area of interest for measures development given the increased use of these medications in children and adolescents. This measure was developed as part of a set of measures to assess the use of antipsychotic medications in a general population of children, as well as those children in the foster care system. This measure in particular assesses the proportion of children who are prescribed multiple concurrent antipsychotic medications.

Importance

Antipsychotic prescribing for children has increased rapidly in recent decades, driven both by new prescriptions and by longer duration of use (Patten, Waheed, Breese, 2012). While some evidence supports the efficacy of antipsychotics in youth for certain narrowly defined conditions, less is known about the safety and effectiveness of antipsychotic prescribing patterns in community use (e.g., combinations of medications, off-label prescribing, or dosing outside of recommended ranges).

Increasing Use of Antipsychotics, Particularly Costly Atypical Antipsychotics

The frequency of prescribing antipsychotics among youth increased almost five-fold from 1996 to 2002, from 8.6 per 1,000 children to 39.4 per 1,000 (Seida, Schouten, Boylan, et al., 2012). The increase in antipsychotic prescribing among youth is associated with the availability of atypical antipsychotic medications (or second-generation antipsychotics), which have different yet equally concerning side effect profiles from conventional antipsychotics (Olfson, Blanco, Liu, et al., 2006). Although the atypical antipsychotic agents are less likely than conventional antipsychotic agents to cause extrapyramidal side effects, a risk for disfiguring movement disorders remains, and atypical agents are more likely to cause metabolic disturbance including elevated blood glucose and cholesterol levels, weight gain, and diabetes. Atypical antipsychotics doubled their share of all psychotropic medication prescriptions among privately insured youth between 1997 and 2000, from 2.4 percent of all psychotropic prescriptions to 5.1 percent (Martin, Leslie, 2003). A national study of Medicaid-enrolled children found that prescribing of atypical antipsychotics increased 62 percent from 2002 to 2007 (Matone, Localio, Huang, et al., 2012). Atypical antipsychotics have the greatest mean prescription cost ($132) of any psychotropic medication (Martin, Leslie, 2003), and they are the most costly drug class within the Medicaid program (Crystal, Olfson, Huang, et al., 2009).

Analysis of data from the National Ambulatory Medical Care Survey found that predictors of antipsychotic use among youth included male sex, public insurance, and a diagnosis of psychosis, tic disorder, or pervasive development disorder or mental retardation (Olfson, et al., 2006). Additionally, the use of multiple concurrent antipsychotics in adults has not been shown to be cost effective (Lochmann van Bennekom, Gijsman, Zitman, 2013).

Risks of Antipsychotics, Particularly for Subgroups

Both the efficacy and side effects of antipsychotic medications vary depending on age. Children and adolescents prescribed antipsychotics are more at risk for serious health concerns including weight gain, extrapyramidal side effects, hyperprolactinemia, and some metabolic effects (Correll, Kratochvil, March, 2011). Risks of multiple concurrent antipsychotics in comparison to monotherapy have not been systematically investigated; existing evidence appears largely in case reports and includes increased risk of serious drug interactions, delirium, serious behavioral changes, cardiac arrhythmias, and death (Safer, Zito, Dosreis, 2003).The field in general lacks high-quality studies of side effects associated with the use of multiple concurrent medications (Van Bennekom, et al., 2013).

While there is no research on the long-term effects of multiple concurrent antipsychotics on children's health, the increased side effect burden of certain antipsychotic medications for youth, such as weight gain and metabolic disturbances, has implications for future physical health concerns including obesity and diabetes. Girls treated with certain antipsychotics may also be at increased risk for gynecological problems (Talib, Alderman, 2013) and osteoporosis (Cohen, Bonnot, Bodeau, et al., 2012). Research demonstrating that the pharmacokinetics of antipsychotics may vary by developmental stage (Correll, et al., 2011) also suggests that use of multiple concurrent antipsychotics may pose differing risks for children and for adolescents.

Opportunity for Improvement

Data on Frequency of Multiple Antipsychotic Use

A recent systematic review found that among youth prescribed any antipsychotic, about one in ten (9.6 percent, SD 7.2 percent) received multiple concurrent antipsychotics (Toteja, Gallego, Saito, et al., 2014). Studies of multiple concurrent antipsychotics among youth prescribed any antipsychotic have found that its prevalence among adolescents is twice that of children, and that the rate among adolescents has increased two-fold from the 1990s to 2000s (Toteja, et al., 2014).

Options for Improving Care

Several approaches to improving the quality of psychotropic prescribing practices have been documented in the literature, including use of treatment algorithms (Moore et al., , Buchanan, Buckley, 2007), supervisory review of performance measures with individual psychiatrists (Patrick, Schleifer, Nurenberg, et al., 2006), and audit and feedback to hospital leadership on concomitant antipsychotic prescribing (Finnerty, Kealey, Leckman-Westin, et al., 2011). These quality improvement strategies underscore the need for reliable and valid measures of multiple concurrent antipsychotics. Certain States have implemented prior authorization or second opinion programs to manage pharmacy benefits for Medicaid (Crystal, et al., 2009), but the impact of these initiatives on the quality of prescribing is unclear (Constantine, Bengtson, Murphy, et al., 2012).

Health Disparities

Disparities Based on Race/Ethnicity

Overall, there is evidence to suggest that there may be racial disparities in antipsychotic medication practices for adults with schizophrenia, although these may not generalize to all ages

or diagnoses (Busch, Lehman, Goldman, et al., 2009; Kuno, Rothbard, 2002; Rost, Hsieh, Xu, et al., 2011). Research on potential ethnic/racial disparities in the use of multiple concurrent antipsychotics is mixed. Meta-analyses have found no association between race/ethnicity and the use of multiple antipsychotics (Gallego, Bonnett, Zhyang, et al., 2012; Toteja, et al., 2013), but a recent study of Medicaid-enrolled children in one State found that black youths were more likely than white youths to be prescribed concomitant antipsychotics (Dosreis, Yoon, Rubin, et al., 2010), suggesting that certain populations of youth may be at higher risk for this quality concern.

Disparities for Children in Foster Care

In the last 10 years, the use of psychoactive medication among children and adolescents has increased, especially among those in foster care. According to one study, one in ten school-aged children (ages 6 to 11) and one in six adolescents (ages 12 to 18) were taking antipsychotics by 2007. The study looked at 686,000 foster-care children enrolled in Medicaid from 2002-2007 and saw that both overall psychoactive use and polypharmacy of psychoactive drugs increased from 2002 to 2004 but then declined from 2005 to 2007. However, prescriptions for antipsychotics increased each year from 2002 to 2007 (Children's Hospital of Philadelphia, 2012).

A study of children placed into foster care in New York found that black children were more likely to be prescribed second-generation antipsychotics than children identified as Latino or other race (white and Asian) (Linares, Martinez-Martine, Castellanos, 2013).

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).**

A recent study found that increases in Medicaid eligibility were associated with the rise in prevalence of antipsychotic use among youth over a 10-year period, with those eligible by income accounting for nearly half of all Medicaid-enrolled youth on antipsychotics in 2006 (Zito, Burcu, Ibe, et al., 2013).

A review of prescribing patterns in Medicaid programs in seven States found that the percentage of youth aged 6-17 filling at least one antipsychotic prescription increased from 2.7 percent in 2001 to 4.2 percent in 2004 (Crystal et al., 2009). A study of Medicaid programs in 16 States found that the percentage of enrollees under age 19 on an antipsychotic varied greatly according to eligibility category, ranging from 0.6 percent for State Children's Health Insurance Program (CHIP) enrollees to 13.4 percent for those eligible under Aged, Blind and Disabled provisions; the rate for foster care youth was 12.4 percent (Medicaid Medical Directors Learning Network and Rutgers Center for Education and Research on Mental Health Therapeutics, 2010).

One study of a large Medicaid fee-for-service program in one State found that about 7 percent of children age 6-17 on any antipsychotic were prescribed two or more antipsychotics for longer than 60 days (Constantine, Boaz, Tandon, 2010). As of September 1, 2011, 4.1 percent of youth under age 18 in the New York State Medicaid behavioral health population on any antipsychotic were on two or more antipsychotics for longer than 90 days.

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).

Not applicable.

Section 4. Measure Categories

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

Does the measure address this category?

a. **Care Setting – ambulatory:** Yes.
b. **Care Setting – inpatient:** No.
c. **Care Setting – other – please specify:** No.
d. **Service – preventive health, including services to promote healthy birth:** No.
e. **Service – care for acute conditions:** No.
f. **Service – care for children with acute conditions:** Yes.
g. **Service – other (please specify):** No.
h. **Measure Topic – duration of enrollment:** No.
i. **Measure Topic – clinical quality:** Yes.
j. **Measure Topic – patient safety:** Yes.
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):** Yes; 0-5 years.
p. **Population – infants (29 days to 1 year) (specify age range):** Yes; 0-5 years.

q. **Population – pre-school age children (1 year through 5 years) (specify age range):** Yes; 0-5 years.
r. **Population – school-aged children (6 years through 10 years) (specify age range):** Yes; 6-11 years.
s. **Population – adolescents (11 years through 20 years) (specify age range):** Yes; 12-17 years.
t. **Population – other (specify age range):** No.
u. **Other category (please specify):** Not applicable.

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

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

5.A. Research Evidence

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

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

There is little empirical evidence to support the use of multiple concurrent antipsychotics in the mental health treatment of youth. None of the 10 American Academy of Child and Adolescent Psychiatry (AACAP) practice parameters recommend concurrent use of multiple antipsychotic medications. The AACAP Practice Parameters for the Use of Atypical Antipsychotic Medications in Children and Adolescents states “the use of multiple AAAs (atypical antipsychotics) has not been studied rigorously and generally should be avoided.” The Texas Psychotropic Medication Utilization Parameters for foster Children includes “two or more concomitant antipsychotic medications” as a situation that “suggests the need for additional review of a patient’s clinical status.” See Section 5.A Research Evidence Table in the Supporting Documents.

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.

The proposed measure identifies children at risk of problems related to use of multiple concurrent antipsychotics. Potential problems include increased risk of serious drug interactions, delirium, serious behavioral changes, cardiac arrhythmias, and death. These risks are in addition to the side effects of antipsychotic medications that include metabolic disturbance, a serious concern for children. This measure is intended for use by States and plans to target inappropriate prescribing practices.

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.

Key Findings

Performance Rates

Based on 2008 MAX data for 11 States, the average percentage of children with use of multiple concurrent antipsychotics among the general population of children was 6.6 percent, with a range of 2.8 to 9.4 percent. For children in foster care, the average rate was 7.9 percent (ranging from 1.9 to 10.6 percent). Because this measure focuses on overuse, a lower rate indicates better performance.

Based on 2010 New York State Medicaid claims data, the average performance rate for health plans was 4.4 percent, with a range of 1.8 to 7.0 percent.

Health Care Disparities

Use of multiple concurrent antipsychotic medications was higher among black, non-Hispanic children and children in foster care.

Reliability and Validity

Our results showed that this measure is reliable at the State level, with a lower reliability statistic at the health plan level. The measure had an average reliability at the State level of 0.99 (range 0.96 to 0.99) and plan level of 0.64 (range 0.28 to 0.87).

Stakeholder reviews of the specifications and field test results indicate the measure has face validity. In addition, we assessed construct validity by comparing measure performance rates to rates of hospitalization for behavioral health issues. We found positive correlation between rates as would be expected: a lower rate of multiple concurrent antipsychotic use was associated with lower rates of behavioral health hospitalization.

Methods

NCINQ employed a multi-step process that included working with a wide range of stakeholders to define measure specifications and review testing results. We tested the measure in both a general population and foster care population of children and adolescents in Medicaid using 2010 New York State Medicaid claims data for 17 health plans, the 2008 Medicaid Analytic Extract (MAX) data files for 11 States, and data from MEDNET States from 2005. We also posted measures for public comment. During testing we determined the following:

1. The optimal way to define measure components.
2. The feasibility of the measure.
3. The scientific soundness of the measure after revising based on feasibility results and stakeholder input.
4. The performance and gaps in care as demonstrated by the measure.

The total study group in the MAX data included 194,461 children overall enrolled in Medicaid and 33,332 children in foster care, all children under age 21 as of December 31 of the data year.

NCINQ estimated reliability with a beta-binomial model. Reliability used here is the ratio of signal to noise. The signal in this case is the proportion of the variability in measured performance that can be explained by real differences in performance. A reliability of zero implies that all the variability in a measure is attributable to measurement error. A reliability of 1.0 implies that all the variability is attributable to real differences in performance. The higher the reliability score, the greater is the confidence with which one can distinguish the performance of one reporting entity from another. A reliability score greater than or equal to 0.7 is considered acceptable. Our results showed that this measure had high reliability at the State level, with an average reliability score of 0.99 (range 0.96 to 0.99). Plan-level reliability was lower, with an average of 0.64 (range 0.28 to 0.87). Higher reliability at the State level is likely due to the larger denominator sizes.

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).

We assessed validity by (1) obtaining multi-stakeholder feedback on the face validity of the measure specifications and study results; and (2) examining correlation between measure performance and behavioral health hospitalization rates to assess concurrent validity. See Supporting Documents for Section 6.B, Validity Tables.

Face Validity

Validity refers to whether the measure represents the concept being evaluated. To assess different perspectives on the measure's validity, NCINQ reviewed the specifications and field test results with our NCINQ advisory panels and other stakeholders. NCINQ's stakeholders include patients and families, clinicians, and State Medicaid officials, as well as experts in the fields of child health, foster care, and measure development (i.e., individuals well positioned to speak to this measure's face validity). This process ensures measures are reasonable and important to those using them.

Our advisory panels concluded the measure is a valid way to assess the use of multiple concurrent antipsychotic medications in children and adolescents. Our panels felt specifications addressed concerns raised about the appropriate timing of the measure (i.e., 90 days of concurrent use).

Construct Validity

We examined the relationship between hospitalizations for behavioral health conditions and measure performance. For this measure we anticipated that entities that have better management of antipsychotic medication use (e.g., lower rates of multiple concurrent antipsychotic medication use) would also have better outcomes for children (e.g., lower rates of behavioral health hospitalizations). We found this association for the foster care population (correlation = 0.19) but not for the general population of children in Medicaid (correlation=0.01). This is likely due to the homogeneity across States for foster care populations and the heterogeneity across States for the general Medicaid population.

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

Using the MAX data files, NCINQ was able to collect race and ethnicity data for five categories: white Non-Hispanic, black Non-Hispanic, Hispanic, other, and unknown. NCINQ saw rates of multiple concurrent antipsychotic medication use range from 6.1 percent in Hispanics to 9.1 percent in "other" among the general population of children and from 1.5 percent among unknown to 8.6 percent in "other." For both the general population and children in foster care, other and black non-Hispanic children had the highest rate of multiple concurrent antipsychotic use (Table 1). These rates are consistent with our literature review, showing that black children are more likely than children of other races/ethnicities to be prescribed multiple antipsychotics.

Table 1. Race/Ethnicity Breakdown of Children on Multiple Concurrent Antipsychotics; Totals for General and Foster Care Populations

Race/Ethnicity	General Population (percent)	Foster Care Population (percent)
White, non-Hispanic	6.5	7.1
Black, non-Hispanic	7.5	8.1
Hispanic	6.1	6.4
Other	9.1	8.6
Unknown	6.3	1.5

7.B. Special Health Care Needs

In the absence of a standardized definition for "special health care needs," NCINQ explored the relationship between the general population of children and children in the foster care system, defined as children who had spent any period of time in the foster care system. As expected, based on the literature, we saw a higher rate of multiple antipsychotic medication use in children in foster care compared with the general population of children (Table 2).

Table 2. State Performance by Population

	General Population	Foster Care Population
Percentage of children on two or more concurrent antipsychotics for longer than 90 days	6.6	7.9

7.C. Socioeconomic Status

We used only Medicaid data; thus, we were unable to assess socioeconomic status information.

7.D. Rurality/Urbanicity

For the general population of children, higher rates of multiple concurrent antipsychotic use were seen in metropolitan areas (6.8 percent). In the foster care population, higher rates were seen in rural areas, with the lowest rate seen in metropolitan areas (Table 3).

Table 3. Rurality/Urbanicity Breakdown of Children on Multiple Concurrent Antipsychotics, Totals for the General and Foster Care Populations

Urbanicity (County-Level)	General Population (percent)	Foster Care Population (percent)
Metropolitan	6.8	6.6
Non-Metropolitan	6.2	7.7
Rural	5.7	9.5

7.E. Limited English Proficiency (LEP) Populations

We were unable to assess information on limited English proficiency.

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?

All data needed to calculate the measure Use of Multiple Concurrent Antipsychotics in Children are present in administrative claims data.

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?

Not applicable.

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.

A similar measure is used by New York State and State collaboratives focusing on quality improvement. See Section 8.B, Performance Rates, in the Supporting Documents.

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

Not applicable.

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

Not applicable.

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?**
Not available at this time.

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

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

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

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 available at this time.

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

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

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

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 available at this time.

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

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

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

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 available at this time.

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?**
Selection bias to plans.

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 available at this time.

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

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

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

Provider Level
Hospital: Can compare hospitals

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

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

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

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

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

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

Provider Level

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

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

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

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

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

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

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).

NCINQ convened multi-stakeholder advisory panels with representation from a wide range of stakeholders, including consumers, pediatricians, family physicians, adolescent medicine physicians, health plans, State Medicaid agencies, and researchers. We also convened two targeted panels of stakeholders with particular relevance to antipsychotics measures: (1) a Foster Care Panel with representatives from State child welfare and behavioral health services, Medicaid officials, the Administration on Children, Youth and Families, and foster care alumni and (2) the Center for Health Care Strategies Improving the Use of Psychotropic Medications Among Children in Foster Care (PMQIC) Workgroup, a six-State collaborative working with cross-agency teams to improve issues around use of psychotropic medications among youth. Input from these groups, in particular from our targeted panels, was instrumental in ensuring that these measures would address the needs of children in Medicaid and the foster care system who might be exposed to antipsychotic medications. Throughout the measure development process, we presented the measures to these panels and solicited feedback on importance, understandability, and usability. In addition, we posted the measures for public comment to obtain feedback from an even wider audience of stakeholders. In addition to our usual questions around importance of the topic, usability, and feasibility of implementation, we specifically sought feedback on the appropriateness of our continuous eligibility definitions, how we defined antipsychotic "use," and appropriateness of the specifications for foster care populations.

On balance, the measure Use of Multiple Concurrent Antipsychotics in Children received full support (all commenters either supported the measure as specified or supported with suggested modifications) and was identified as a priority measure among the antipsychotic medication use

measures set. Stakeholders noted the measure topic is of particular importance for the child and adolescent population. Commenters provided feedback on the appropriate age range and continuous eligibility definition, which informed our final specifications. While there were concerns about the lack of mental health providers and limitations of claims data, stakeholders expressed that the measure as specified is understandable and sensible to obtain the information we are seeking.

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.

NCINQ's development and testing focused on reporting at the State and health plan levels, using administrative claims data only. This measure is slated for e-measure specification through a contract from the Office of the National Coordinator for Health IT and the Centers for Medicare & Medicaid Services.

11.B. Health IT Testing

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

No.

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

Please see response to 11.A, above.

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.

Please see response to 11.A, above.

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)?

Please see response to 11.A, above.

If yes, please describe.

Please see response to 11.A, above.

11.E. Health IT Calculation

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

Please see response to 11.A, above.

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?

Please see response to 11.A, above.

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).

Our measures development process—including feedback from advisory panels, public comment, and field testing—helps us to identify potential limitations of proposed measures. For this measure, Use of Multiple Concurrent Antipsychotics in Children, we identified some limitations. The performance rate on average was very low, which may impede our ability to detect differences among reporting entities. However, on balance, our advisory panels concluded that the benefits of such a measure outweigh the concerns and have recommended that the measure be finalized.

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.

The Use of Multiple Concurrent Antipsychotics in Children measure addresses an important health concern, particularly among Medicaid and foster care youth. As indicated by the literature and our analyses, antipsychotic prescribing is prevalent in these populations. The potential for harm includes both risk of serious drug interactions, behavioral issues and cardiac problems as well as risk of side effects, including metabolic harms that are particularly consequential for children and adolescents, who are in early developmental stages along the life course.

Based on 2008 MAX data for 11 States, the average percentage of children with use of multiple concurrent antipsychotics among the general population was 6.6 percent. Among foster care

children, the average rate was 7.9 percent (a lower rate represents better performance). Based on 2010 New York State Medicaid claims data, the average performance rate for health plans was 4.4 percent. We found that the measure is reliable at the State level, with an average State-level reliability of 0.99. At the plan-level, the reliability was 0.64. Stakeholder input indicated the measure has face validity. In addition, our assessment of construct validity showed correlation at the State level between lower use of multiple concurrent antipsychotics and lower rates of behavioral health hospitalization among foster care youth. Our test results, as well as further stakeholder input, informed the finalization of the measure specifications.

A wide array of stakeholders provided input for this measure, both through our development process and public comment; they included State Medicaid and child welfare officials, as well as clinicians, consumers, and foster care alumni. Our stakeholders indicated the measure is a high priority for these populations and recommend its finalization and consideration for use in quality improvement and accountability programs. This claims-based measure is feasible for health-plan and State implementation, which may make it particularly useful for the Children's Core Set of Health Care Quality Measures for Medicaid and CHIP.

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Section 14: Identifying Information for the Measure Submitter

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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.

AHRQ Publication No. 14(18)-P011-1-EF
May 2018