

Accurate ADHD Diagnosis

Section 1. Basic Measure Information

1.A. Measure Name

Accurate ADHD Diagnosis

1.B. Measure Number

0088

1.C. Measure Description

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

Percentage of patients ages 4 through 18 years whose diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) was based on a clinical exam with a physician or other health care professional, as appropriate, which includes:

1. Confirmation of functional impairment in two or more settings; AND
2. Assessment of core symptoms of ADHD, including inattention, hyperactivity, and impulsivity, either through the use of a validated diagnostic tool based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR) for ADHD or through direct assessment of the patient.

Note: The two ADHD measures submitted are separate and independent measures of ADHD care.

1.D. Measure Owner

Pediatric Measurement Center of Excellence (PMCoE) and the Agency for Healthcare Research and Quality (AHRQ).

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.**

ADHD Diagnosis and Follow-up

- 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

Patients ages 4 through 18 years whose diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) was based on a clinical exam with a physician or other health care professional, as appropriate which includes:

1. Confirmation of functional impairment in two or more settings AND
2. Assessment of core symptoms of ADHD, including inattention, hyperactivity, and impulsivity, either through the use of a validated diagnostic tool* based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR) for ADHD or through direct assessment of the patient.

*Validated diagnostic tool may include any of the following examples, all of which are based on the DSM-IV criteria for ADHD. Other validated diagnostic tools based on the DSM-IV criteria may be available and would be acceptable for this measure; this list is not intended to be all-inclusive.

- Conners Ratings Scales.
- Barkley ADHD Rating Scale.
- Vanderbilt Parent and Teacher Assessment Scales.
- ADHD Rating Scale-IV (DuPaul, et al.).

- Swanson, Nolan, and Pelham-IV (SNAP-IV) Questionnaire.

1.H. Numerator Exclusions

None.

1.I. Denominator Statement

All patients ages 4 through 18 years with a diagnosis of ADHD.

1.J. Denominator Exclusions

This measure has no exclusions.

1.K. Data Sources

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

Paper medical record; electronic health record.

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

Feasibility testing and guidance for implementation of this measure as an eMeasure using electronic health record data sources.

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.

Percentage of patients ages 4 through 18 years whose diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) was based on a clinical exam with a physician that included:

- Confirmation of functional impairment in two or more settings; AND
- Assessment of core symptoms of ADHD including inattention, hyperactivity, and impulsivity, either through use of a validated diagnostic tool based on DSM-IV-TR criteria for ADHD or through direct assessment of the patient (see Table 1).

Table 1. Accurate Diagnosis Measure Summary

Numerator statement	Patients whose diagnosis of attention deficit hyperactivity disorder (ADHD) was based on a clinical exam with a physician that includes confirmation of functional impairment in two or more settings AND assessment of core symptoms of ADHD including inattention, hyperactivity, and impulsivity, either through use of a validated diagnostic tool based on DSM-IV-TR criteria for ADHD or through direct assessment of the patient.
Denominator statement	All patients aged 4 through 18 years with a diagnosis of ADHD.
Denominator exclusions	This measure has no exclusions.
Supporting guideline and other references	The following clinical recommendation statements are quoted verbatim from the AAP 2011 ADHD guideline (p. 1018) and represent the evidence base for the measure. To make a diagnosis of ADHD, the primary care clinician should determine that Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria have been met (including documentation of impairment in more than one major setting), with information obtained primarily from reports of parents or guardians, teachers, and other school and mental health clinicians involved in the child's care. The primary care clinician should also rule out any alternative cause and should include assessment for other conditions that might coexist or be comorbid with or consequent to ADHD, including emotional or behavioral (e.g., anxiety, mood, oppositional defiant, and conduct disorders), and physical (e.g., tics, sleep apnea) conditions. Primary care clinicians should evaluate children 4-18 years of age for ADHD who present with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity. Parent and teacher rating scales that use DSM-IV criteria for ADHD are helpful in obtaining the information required to make a DSM-IV diagnosis. Broadband rating scales that assess mental health functioning in general do not provide reliable and valid indications of ADHD diagnoses. Multiple informants are required for clinicians to determine the nature and severity of symptoms, their impact on function in two or more settings and whether the child/adolescent meets DSM-IV criteria for diagnosis of ADHD. In most cases, the teacher provides those reports. It is also stated that interviews with the parents/guardians and with the parents/guardians and with the children are also essential in the diagnostic process).
Aggregate evidence quality	B
Benefits	The use of DSM-IV criteria has led to more uniform categorization of the condition across professional disciplines.
Harms/risks, costs	The DSM-IV system does not specifically profile for the developmental level differences and might lead to some misdiagnoses.
Benefits-harms assessment	The benefits far outweigh the harms.
Value judgments	The committee took into consideration the importance of coordination between pediatric and mental health services.
Role of patient preferences	Although there is some stigma associated with mental health disorder diagnoses resulting in some families preferring other diagnoses, the need for better clarity in diagnoses was felt to outweigh this preference.
Exclusions	None.
Intentional vagueness	None.
Policy level	Strong recommendations.

Notes: Settings = home school, and community. Validated diagnostic tool = may include any of the following tools (all based on the DSM-IV criteria for ADHD): Conners Rating Scales, Vanderbilt Parent and Teacher Assessment Scales, ADHD Rating Scale-IV (DuPaul, et al.), Swanson, Nolan, and Pelham-IV (SNAP IV) Questionnaire. This list is not intended to be an all-inclusive list of tools; other validated diagnostic tools based on the DSM-IV criteria may be available and would be acceptable for this measure.

For Construction using Manual Chart Abstraction: Please see supporting documents for an example of the PMCoE ADHD Measures Worksheet for complete Specifications (Section 2, Attachment 1), ADHD Measures Manual Chart Abstraction Tool and Algorithm (Section 2, Attachment 2) and Guidance for Location of Measure Elements (Section 2, Attachment 3).

For Construction as eMeasures in the Electronic Health Record (EHR): There are significant transitions in medical documentation occurring in health care. Testing in the Chicago Pediatric Quality and Safety Consortium (CPQSC) institutions found great variability in documentation of ADHD care. In two settings, while electronic medical record systems have been generally, paper records are still used for documentation of mental health diagnosis and treatment, including ADHD diagnosis and treatment. In two of the CPQSC settings (one of which was a Cook County public institution), the electronic systems were sufficiently sophisticated to make construction of the “Accurate Diagnosis of ADHD” measure feasible in the EHR. An additional site would be able to implement the measure as an eMeasure with minor workflow modifications.

Please see supporting documents for an example of the eMeasure Data Element Table (DET) tool (Section 2, Attachment 4) and Summary and Quality Review of the DET (Section 2, Attachment 5). However, to facilitate this method for measurement, there are recommendations we would make based on the testing experience and results.

Administrative Claims Data Measure Construction: The 2011 American Academy of Pediatrics (AAP) ADHD Guideline represents a shift in recommended tools and standards for ADHD diagnosis (AAP, 2011). While there is a code for conducting a standardized assessment that includes mental health assessment, and that code could be used to assess this measure in administrative claims data, the use of this code is not a standard at this time, and it does not require the use of a validated tool or assess that these requirements are met in two settings. Therefore, to improve the reliability and accuracy of billing for this diagnostic activity and to permit the use of administrative claims for specification of this measure, new billing fields and codes would be needed in order to account for whether or not recommended care was delivered. These new codes could also be used to assess whether a validated tool has been used and whether the requirements have been met for accurate diagnosis of ADHD to assess the use of a validated tool or completion of the requirements for patients 4 through 18 years of age according to the current best evidence. See Section 2, Attachment 6 in the supporting documents for an example of claims specification.

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).**

Prevalence

According to the statistics provided by the Centers for Disease Control and Prevention (CDC, 2010a), for children ages 4-17 years of age:

- 5 million children (9 percent of this age group) have ADHD.
- The percentage of children with a parent-reported ADHD diagnosis increased by 22 percent between 2003 and 2007.
- Rates of ADHD diagnosis increased an average of 3 percent per year from 1997 to 2006 and an average of 5.5 percent per year from 2003 to 2007.

In a study by Visser and Lesesne (2007), researchers found that in 2007, the estimated prevalence of parent-reported ADHD (ever) among children aged 4-17 years was 9.5 percent, representing 5.4 million children. Of those with a history of ADHD, 78 percent (4.1 million, or 7.2 percent of all children ages 4-17 years) were reported to currently have the condition. Of those with current ADHD, nearly half (46.7 percent) had mild ADHD, with the remainder having moderate (39.5 percent) or severe (13.8 percent) ADHD. ADHD (ever) was more than twice as common among boys as girls (13.2 percent vs. 5.6 percent, respectively). High rates of ADHD (ever) were noted among multi-racial children (14.2 percent) and children covered by Medicaid (13.6 percent).

Nearly one in 10 children aged 4-17 years was diagnosed with ADHD by 2007. The overall estimate for the prevalence of children with a history of ADHD diagnosis in 2007 was higher than a recent estimate (8.4 percent of children aged 6-17 years) based on annual data from the

2004-2006 National Health Interview Survey (NHIS). The NHIS report documented an average annual increase in diagnosed ADHD (ever) of 3 percent from 1997 to 2006 (Pastor, Reuben, 2008); in this report, we document a greater average annual increase (5.5 percent) over a slightly later period (2003-2007).

A study by Rowland, Umbach, and Stallone (2005) estimated the prevalence of medication treatment for ADHD among elementary school children in a North Carolina county. Parents of 7,333 children in grades 1 through 5 in 17 public elementary schools were asked whether their child had ever been given a diagnosis of ADHD by a psychologist or physician and whether their child was currently taking medication to treat ADHD. Parents of 6,099 children (83 percent) responded. Observations from this study suggest that the prevalence of medication treatment for ADHD is higher among boys than girls and among whites compared with African Americans.

Costs

ADHD diagnosis, follow-up, and treatment represent a significant share of the cost of health care and health care provided to children. Using a prevalence rate of 5 percent, a conservative estimate of the annual societal cost of illness (COI) for ADHD in childhood and adolescence is \$42.5 billion, with a range of \$36 billion to \$52.4 billion in 2005 dollars. (Pelham, Wheeler, Chronis, 2008).

Morbidity

ADHD has a multidimensional effect on an individual's daily life functioning and can culminate in significant costs attributable to greater health care needs, more frequent unintentional injury, co-occurring psychiatric conditions, and productivity losses. ADHD medications can reduce symptoms, but they can be associated with side effects and symptoms affecting morbidity.

Importance of Accurate Diagnosis

Validated tools have demonstrated effectiveness for diagnosing ADHD and for distinguishing ADHD from the diagnosis of other conditions that may have some of the same symptomology and or impairment. The use of validated tools for accurate diagnosis or the application of all of the DSM-IV diagnostic requirements for an accurate diagnosis of ADHD provides clinicians with a common understanding and knowledge base for the relevant components of documentation necessary to validate the existence of ADHD diagnosis, the need for treatment, the impact of ADHD on the individual's educational performance, and the need for accommodations for students seeking reasonable academic accommodations.

When less rigorous methods are applied to the diagnosis of ADHD, the positive existence of the condition may be missed, leading to potential social and academic struggle; or, a diagnosis of ADHD may be made erroneously when another condition is present that may need immediate attention to prevent increased severity. Either false negative or false positive diagnostic errors can lead to poor quality of care and potential harm.

Known Gaps in Care

Diagnosis of ADHD

A study by Stein, McCue Horwitz, Penfold, et al. (2009), aimed to evaluate physician opinion on identifying and treating children with mental illness. The results showed that pediatricians are least likely to agree on identifying and treating learning problems. Of the physicians surveyed, 66 percent think pediatricians should treat or manage ADHD. In practice, few usually inquire about mental health conditions, and few report that they treat mental health conditions.

DSM-IV Criteria

As reported in the AAP ADHD Guideline published in November 2011, the use of DSM-IV criteria has led to more uniform categorization of the condition across professional disciplines (AAP, 2011). Developed through several iterations by the American Psychiatric Association, the DSM-IV criteria were created through use of consensus and an expanding research foundation. Use of the DSM-IV criteria, in addition to having the best evidence to date for criteria for ADHD, also affords the best method for communication across clinicians and is established with third-party payers. A cross-sectional survey by Froehlich and colleagues evaluated a nationally representative sample of the U.S. population from 2001-2004 and found that those lacking DSM-IV ADHD data were significantly more likely to be younger (mean age, 9.9 years vs. 12.1 years). Additionally, less than half of children who met DSM-IV criteria for ADHD reportedly had their conditions diagnosed or been treated with ADHD medications (Froehlich, Lanphear, Epstein, et al., 2007).

Potential for Quality Improvement

Hoagwood and colleagues found that about 50% of children with ADHD seen in practice settings obtain care that matches guidelines of the American Academy of Child and Adolescent Psychiatry (Hoagwood, Kelleher, Feil, et al., 2000). Physicians identify critical barriers to service provision for these children, namely lack of pediatric specialists, problems with insurance coverage, and waiting lists. These trends in treatment and variations in service delivery suggest that there are major gaps between the research base and clinical practice.

This represents significant potential for quality improvement in the area of accurate ADHD diagnosis.

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).**

In addition to the evidence of general importance described above, these measures also have specific features that are important to Medicaid and/or CHIP.

Prevalence

In the United States, according to statistics provided by the Centers for Disease Control and Prevention and several seminal studies, for children ages 4-17 years of age:

- Five million children (9 percent) have ADHD (see <http://www.chadd.org/Understanding-ADHD/About-ADHD/Data-and-Statistics/General-Prevalence.aspx>) .
- When compared with children who have excellent or very good health, children who have fair or poor health status are more than twice as likely to have ADHD (8 percent vs. 21 percent) (CDC, 2010a).
- Parents report that approximately 9.5 percent (5.4 million) of children 4-17 years of age have ever been diagnosed with ADHD, as of 2007 (CDC, 2010b).
- The percentage of children with a parent-reported ADHD diagnosis increased by 22 percent between 2003 and 2007 (see <http://www.chadd.org/Understanding-ADHD/About-ADHD/Data-and-Statistics/General-Prevalence.aspx> and Coyer, Kenney, 2013).
- Rates of ADHD diagnosis increased at a greater rate among older teens as compared to younger children (CDC, 2010b).
- The highest rates of parent-reported ADHD diagnosis were noted among children covered by Medicaid and multi-racial children (CDC, 2010b; Coyer, Kenney, 2013).
- As of 2007, parents of 2.7 million youth ages 4-17 years (66.3 percent of those with a current diagnosis) report that their child was receiving medication treatment for the disorder (see <https://www.cdc.gov/ncbddd/adhd/data.html>).
- Rates of medication treatment for ADHD varied by age and sex; children 11-17 years of age were more likely than those 4-10 years of age to take medication, and boys were 2.8 times as likely to take medication as girls (see <https://www.cdc.gov/ncbddd/adhd/data.html>).
- In 2003, geographic variability in prevalence of medication treatment ranged from a low of 2.1 percent in California to a high of 6.5 percent in Arkansas (see <https://www.cdc.gov/ncbddd/adhd/data.html>).
- Additionally, in a study by Visser et al. (2007), high rates of ADHD were noted among multi-racial children (14.2 percent) and children covered by Medicaid (13.6 percent) (CDC, 2010b).

Accurate Diagnosis

The process required to sustain appropriate treatments and achieve successful long-term outcomes hinges on accurate and consistent ADHD diagnosis.

Relevance to the Early and Periodic Screening, Diagnostic, and Treatment Benefit

The Centers for Medicare and Medicaid Services (CMS) has stressed the importance of the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit in relation to these measures. When screening for ADHD, it is expected that that there will be a comprehensive

health and developmental history obtained, as well as laboratory tests when indicated. When a further evaluation is indicated, diagnostic services must be provided. Necessary referrals to behavioral or medical treatment should be made without delay, and follow-up should occur to ensure the enrollee receives a complete diagnostic evaluation. Quality assurance procedures also must be in place to assure that comprehensive care is provided. In keeping with the EPSDT benefit expectations, when ADHD or any similar condition is diagnosed using screening and diagnostics, necessary health care services must be made available for treatment. Simply screening and diagnosing ADHD is not sufficient.

Specific relevance to Medicaid/CHIP or to populations overrepresented in Medicaid or CHIP:

According to a report to Congress (see Medicaid.gov Web site) on Medicaid and CHIP:

1. Children enrolled in Medicaid or CHIP are more likely than privately insured or uninsured children to be in fair or poor health and to have certain impairments and health conditions (e.g., ADHD/ADD, etc.) (Coyer, Kenney, 2013).
2. According to survey data, the prevalence of ADHD/ADD among Medicaid/CHIP enrolled children is high but variable: 43.2 percent for Supplemental Security Income (SSI) children, 40.3 percent for non-SSI CSHCN, and 2.0 percent for children who are neither SSI nor children with special health care needs (CSHCN).
3. ADHD is significant in the population of CSHCN enrolled in Medicaid/CHIP (Coyer, Kenney, 2013).

Overuse

The use of stimulant medications in the United States has risen, and as a result, there is concern about the potential for over-diagnosis of ADHD and overuse of medications. A study by Scheffler, Hinshaw, Modrek, et al. (2007) reveals that the United States is the world's largest consumer of ADHD medications. Factors that may influence this finding include the number of U.S. medical specialists who are able to diagnose and treat ADHD. Notably, little difference exists in the rates of ADHD between the United States and other countries. However, the rates of "diagnostic prevalence" (namely, cases actually diagnosed by clinicians) fall behind true prevalence outside the United States.

Underuse

As reported by Bussing, Zima, Mason, et al, in 2005, a study performed on an elementary school district found that care for ADHD was remarkable for underuse and attrition of medication treatment, as well as poor linkage to relevant school services. Their assessment of 226 parent and child interviews and 12-month follow-up surveys (n=220) were conducted among a high-risk sample of elementary school students screened for ADHD risk.

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

Describe, if known, how this measure complements or improves on an existing measure in this topic area for the child or adult population, or if it is intended to fill a specific gap in an existing measure category or topic. For example, the proposed measure may enhance an existing measure in the initial core set, it may lower the age range for an existing adult-

focused measure, or it may fill a gap in measurement (e.g., for asthma care quality, inpatient care measures).

This measure intends to enhance currently existing measures as seen in "Existing ADHD Measures - Prior to PQMP" document (see supporting documents, Section 5, Attachment 3).

This measure builds on the Institute for Clinical Systems Improvement's (ICSI) measure, which is used to assess the percentage of patients newly diagnosed with ADHD whose medical records contain documentation of DSM-IV criteria (ICSI, 2010).

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: Yes. Other community and public health settings.**
- 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): No.**
- p. Population – infants (29 days to 1 year) (specify age range): No.**
- q. Population – pre-school age children (1 year through 5 years) (specify age range):**
Yes; 4-5 years.
- r. Population – school-aged children (6 years through 10 years) (specify age range):**
Yes; 6-10 years.
- s. Population – adolescents (11 years through 20 years) (specify age range): Yes; 11-18 years.**
- t. Population – other (specify age range): Yes; 11-18 years.**
- 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.

In November 2011, the AAP published an evidence-based Guideline for ADHD Diagnosis, Follow-up, and Treatment based on extensive review of the existing evidence. In the 2011 AAP ADHD Guideline, there were several recommendations with high levels of evidence that represented a new standard of care for children with ADHD. One of these recommendations with strong levels of evidence (“B” level of evidence) was as follows:

Action Statement 2: To make a diagnosis of ADHD, the primary care clinician should determine that Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSMIV) criteria have been met (including documentation of impairment in more than one major setting), with information obtained primarily from reports of parents or guardians, teachers, and other school and mental health clinicians involved the child’s care. The primary care clinician should also rule out any alternative cause and should include assessment for other conditions that might coexist or be comorbid with or consequent to ADHD, including emotional or behavioral (e.g., anxiety, mood, oppositional defiant, and conduct disorders) problems, developmental (e.g., learning and language disorders or other neurodevelopmental disorders) issues, and physical (e.g., tics, sleep apnea) conditions (Quality of Evidence: B/Strong Recommendation).

The evidence base for this statement can be found in AAP ADHD Guideline Evidence (see supporting documents, Section 5, Attachment 1). The following attachments (see supporting documents) were prepared or consulted to describe the evidence base influencing the development of this measure:

AAP ADHD Guideline Evidence (Section 5, Attachment 1). This document is an excerpt from the AAP ADHD Guideline which highlights the evidence base used for the AAP's recommendation of Action Statement 5a.

ADHD Gaps in Care (Section 5, Attachment 2) - This document, prepared by our ADHD Quality Measures Leadership Team, highlights the gaps in care. This was done by consulting relevant literature, and the document was utilized to inform measure topics and measure development.

Existing ADHD Measures (Section 5, Attachment 3). This document, prepared by our ADHD Quality Measures Leadership Team, highlights the ADHD measures that were in existence prior to our development work. This was prepared by consulting national quality standards databases, and the document was utilized to inform measure topics and measure development.

ADHD Guidelines Review (Section 5, Attachment 4). This document, prepared by our ADHD Quality Measures Leadership Team, describes the current guidelines, their aspect of care, the recommendations, and the evidence ranking or rating.

ADHD Measures Worksheet (Section 2, Attachment 1). This document, prepared by our ADHD Quality Measures Leadership Team, describes the prevalence, morbidity, costs, medication use, disparities, and opportunities for improvement of ADHD care.

AAP ADHD Guideline (Section 2, Attachment 5). This document, published in November 2011 by AAP, provided a new standard of care for ADHD diagnosis and follow-up care. The Guideline represents a new standard of care in many dimensions including: accurate diagnosis with a validated tool, eligible age for diagnosis, behavior therapy as first-line treatment, and timing for follow-up.

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.

Validated tools now exist that facilitate the complete evaluation of core symptoms and impairment of ADHD (like a Checklist) to ensure all elements of the DSM-IV criteria are assessed and therefore can as well distinguish the diagnosis of ADHD from other conditions with similar symptoms. This represents an enhancement in the delivery of ADHD diagnostic care and will facilitate the accuracy of ADHD diagnosis.

Accurate diagnosis is a core element of safe, high quality care.

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.

Manual Chart Abstraction of the Measures

Testing Sites

The testing sites for the testing of this measure were the hospitals of the Chicago Pediatric Quality and Safety Consortium (CPQSC). These hospitals include Mount Sinai Children's Hospital, John H. Stroger Hospital of Cook County, Advocate Lutheran General Hospital/ Lutheran General Children's Hospital, Advocate Christ Medical Center/ Hope Children's Hospital, and Anne and Robert H. Lurie Children's Hospital. Each site will participate in the testing of the ADHD Measure: Accurate ADHD Diagnosis and ADHD Measure: Behavior Therapy as First-line Treatment for patients 4 through 5 years of age who are diagnosed with ADHD (Behavior Therapy as First-line Treatment).

Methods

Each site identified two research nurses, experienced in chart abstraction, who received training on how to identify, select, and stratify by age group the charts for inclusion in the testing of the construction of this measure through manual chart abstraction and of the reliability of the abstraction of the elements for the construction of the ADHD measure being tested. A chart abstraction tool and algorithm were developed by the ADHD Quality Measures Leadership Team. Training was delivered, and relevant training materials were provided. This tool (Section 6, Attachment 1 in the Supporting Documents) was used at each site to complete the manual chart abstractions. At each site, two research nurses were instructed to identify a retrospective set of 25-40 charts, between December 2011 and June 2012 that matched the denominator criteria while taking into account any exclusions that may have existed. For this measure, chart abstractors abstracted the relevant elements from the charts regarding demographics, numerator elements, and denominator elements and noted any exclusions according to the developed algorithm.

To complete the manual chart abstraction, the following algorithm was followed.

1. Select Charts: Patients diagnosed with ADHD.
2. Stratify and select by age groups 4-5, 6-10, 10-14, 15-18.
3. Review criteria for inclusion: age, date of diagnosis.
4. Collect demographics and elements for equity assessment: Gender, Race/Ethnicity, Language Preference, Insurance status/type, Age.

5. Patients' charts for ages 4 through 5 can be reviewed for both measures: Accuracy of ADHD Diagnosis and Behavior Therapy as First-line Treatment.
6. Review and document measure elements in the ADHD Measures Chart Abstraction Tool.
7. Record summary of measure elements.
8. Review documentation for a medical reason that behavior therapy should not be the first-line treatment. If yes, exclude the chart for the ADHD measure – Behavior Therapy as First-line Treatment.
9. Note relevant comments.

Analysis

Data analyses included construction of the measure and assessment of the agreement. The intent of data analysis was to test the ability to construct the ADHD measure – Accurate Diagnosis – and the reliability of the construction of the measure to provide a basis for use of this measure as a measure of performance for public reporting and for use in quality improvement.

The results of this project will be reported as a summary of findings, aggregating the information found in the records from all sites, without any reference to any individual practice, patient, or patient level information.

Results

Of the 58 charts abstracted, 52 met the criteria. All of the elements necessary for the assessment of the ADHD measure Accurate Diagnosis were determined to be available for abstraction. Reliability of the abstracted elements was moderate. This measure is reproducible for manual chart abstraction under the conditions set forth.

Table 2. Reviewer Agreement of ADHD Measure Elements—Accurate Diagnosis

Data Element	Number	Agreement (percent)
Evidence in the chart of ADHD diagnostic clinical exam by physician (Yes-1/No-2)	53	59.62
Evidence in the chart of assessment of core symptoms of ADHD, (inattention, hyperactivity, and impulsivity) through a validated diagnostic tool (Yes-1/No-2) or Evidence in the chart of assessment of core symptoms of ADHD based on DSM-IV criteria through direct assessment of the patient (Yes-1/No-2)	53	65.54
Evidence in the chart of assessment of impairment in two settings (Yes-1/No-2)	52	66.66
Overall ADHD measure (clinical exam by physician, evidence of impairment in two settings, and either assessment through validated tool or direct assessment)	52	43.14

Note: Results can be found in Supporting Documents, Section 8, Attachment 1.

6.B. Validity

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

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

The measure was assessed for content validity by looking for agreement among subject matter experts, specifically by the panel of stakeholder representatives participating in the ADHD Expert Work Group during the development process (see Supporting Documents, Appendix A of Section 2, Attachment 1). This subject matter expert panel consisted of 25 members, with representation from pediatricians, pediatric neurologists, social workers, school psychologists, family physicians, school-based learning disability specialists, teachers, parents, consumer representatives, child and adolescent psychologists, occupational therapists, clinical psychologists, pediatric nurses, and measure methodologists.

Additionally, input on the content validity of draft measures was obtained through a 21-day public comment period convened by the PCPI. All comments received were reviewed by the expert work group, and the measures were adjusted as needed. (See Supporting Documents, Section 6, Attachment 2)

Finally, there was consensus within the Expert Work Group that both backwards and forward assessment of the measure reflected at “face value” (1) the elements of an accurate diagnosis for ADHD, and (2) that a process of Accurate Diagnosis was reflected in the measure. The following questions were considered during the content validity assessment of this measure.

1. How strong is the scientific evidence supporting the validity of this measure as a quality measure?

Answer: As the AAP describes in the 2011 ADHD Guideline, the level of evidence is very strong. A multilevel, systematic approach was taken to identify the literature that built the evidence base for both diagnosis and treatment. To increase the likelihood that relevant articles were included in the final evidence base, the reviewers first conducted a scoping review of the literature by systematically searching literature using relevant key words and then summarized the primary findings of articles that met standard inclusion criteria. The reviewers then created evidence tables that were reviewed by content area experts who were best able to identify articles that might have been missed through the scoping review. Articles that were missed were reviewed carefully to determine where the abstraction methodology failed, and adjustments to the search strategy were made as needed (Woods, Woolraich, Pierce, 2014). Finally, although published literature reviews did not contribute directly to the evidence base, the articles included in review articles were cross-referenced with the final evidence tables to ensure that all relevant articles were included in the final evidence tables. For the scoping review, articles were abstracted in a stratified fashion from three article-retrieval systems that provided access to articles in the domains of medicine, psychology, and education: PubMed (www.ncbi.nlm.nih.gov/sites/entrez), PsycINFO (www.apa.org/pubs/databases/psycinfo/index.aspx), and ERIC (www.eric.ed.gov). English language, peer-reviewed articles published between 1998 and 2009 were queried in the three search engines. Key words were selected with the intent of including all possible articles that might have been relevant to one or more of the questions of interest. The articles included in relevant review articles were revisited to ensure their inclusion in the final evidence base. The evidence tables were then presented to the committee for expert review. The DSM-IV system is used by professionals in psychiatry, psychology, health care systems, and primary care. Use of DSM-IV criteria, in addition to having the best evidence to date for criteria for

ADHD, also affords the best method for communication across clinicians and is established with third-party payers (AAP, 2011).

2. Are all individuals in the denominator equally eligible for inclusion in the numerator?

Answer: Yes; there are no exclusions or exceptions for this measure.

3. Is the measure a result that is amenable to and under the control of the performance of clinicians who are providing ADHD care?

Answer: Yes, the measure assesses whether a clinician used a validated tool and assesses for all of the Core Symptoms of ADHD across two settings, with impairment documented for a period of 6 months. The 2011 AAP ADHD Guideline recommends that all of the requirements of the DSM-IV criteria be evaluated. This measure assesses whether a clinician performing a diagnosis of ADHD conducts the evaluation based on all of the DSM-IV criteria. This can be done using a validated tool which facilitates completion of all of the elements, or can be done by completing all of the elements of the DSM-IV criteria for diagnosis independently. Yes, this measure is in the control of the clinician being assessed. Validated diagnostic tool is clearly defined within the measure to encompass scales that are more well-known (Conners, Vanderbilt, etc.) as well as specify that the list of scales is not all-inclusive and can include others as long as they are based on the DSM-IV criteria. Because these criteria are not always used, this measure provides two options for diagnosis of ADHD utilizing DSM-IV criteria.

4. How well do the measure specifications capture the event that is the subject of the measure?

Answer: The measure, as specified, directly assesses the 2011 AAP ADHD Guideline Recommendation 2, which is based on a strong level of evidence. The Guideline recommendation: “Action Statement 2: To make a diagnosis of ADHD, the primary care clinician should determine that Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria have been met (including documentation of impairment in more than one major setting), with information obtained primarily from reports of parents or guardians, teachers, and other school and mental health clinicians involved in the child’s care. The primary care clinician should also rule out any alternative cause and should include assessment for other conditions that might coexist or be comorbid with or consequent to ADHD, including emotional or behavioral (e.g., anxiety, mood, oppositional defiant, and conduct disorders), developmental (e.g., learning and language disorders or other neurodevelopmental disorders), and physical (e.g., tics, sleep apnea) conditions (Quality of Evidence: B/Strong Recommendation).”

5. Does the measure provide for fair comparisons of the performance of providers, facilities, health plans, or geographic areas?

Answer: Yes, the measure calls for evidence-based evaluation of all of the requirements for ADHD diagnosis according to the DSM-IV criteria, either through the use of a validated tool of which several now exist or by evaluation of the existence of Core symptoms and

impairment independently across more than one setting and for at least 6 months for an accurate diagnosis of ADHD. The measure provides for fair comparisons of the performance of providers, facilities, health plans, or geographic areas in several ways. This measure captures not only whether or not the physician used the DSM-IV criteria to make an accurate ADHD diagnosis but by also capturing referrals made by physicians who are not comfortable making the diagnosis, the measure does not miss these circumstances. As the AAP Guideline states, at any point at which a clinician feels that he or she is not adequately trained or is uncertain about making a diagnosis or continuing with treatment, a referral to a pediatric or mental health subspecialist should be made. In addition, relegating mental health conditions exclusively to mental health clinicians is not a viable solution for many clinicians, because in many areas access to mental health clinicians to whom they can refer patients is limited. Access in many areas is also limited to psychologists when further assessment of cognitive issues is required and not available through the education system because of restrictions from third-party payers in paying for the evaluations on the basis of them being educational and not health related.

6. Does the measure allow for adjustment of the measure, excluding patients with rare performance-related characteristics when appropriate?

Answer: There are no exclusions or exceptions for this measure. When a diagnosis of ADHD is performed, it should be performed accurately and according to criteria.

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

From the outset, the PMCoE ADHD Leadership Team was focused on the incorporation of specified elements to assess equity/disparities, particularly race/ethnicity, socioeconomic status, and language. This focus included understanding and implementing effective methods for assessment of the equity/disparities in measures of ADHD diagnosis, follow-up, and treatment. Attention to equity/disparities assessment was incorporated into each stage of the measure development and testing process.

ADHD is the most common neurobehavioral disorder of childhood and often persists into adulthood. A 2003 CDC survey found an estimated 7.8 percent of children aged 4-17 years had ever been diagnosed with ADHD (CDC, 2010b). Health practitioners should be aware of changes in the demographic patterns of ADHD in the United States, and that an estimated 1 million more children were reported with ADHD in 2007 than in 2003. Gaps in care are known to exist and vary among racial and ethnic groups. Of note is the 53 percent increase in diagnosis

of ADHD for Hispanic children during 2003-2007. We also know that children living in socioeconomically disadvantaged neighborhoods are less likely to obtain a diagnosis of ADHD. Despite a diagnosis of ADHD, black and Hispanic children are less likely to be prescribed a stimulant drug. Additionally, children with private insurance are more likely to obtain a prescription for a stimulant drug, while children with no insurance or public insurance are less likely to be prescribed a stimulant. For this reason, it is important to have measures that allow us to monitor and ultimately address disparities as well as changes in diagnosis and treatment (CDC, 2010b).

Measure Development and Specification

Generally, race/ethnicity assessment is addressed following the development of a particular measure of health care quality. The PMCoE ADHD Leadership Team aimed to incorporate specification of elements to assess equity/disparities for race/ethnicity within the measure development and specification phase. Three levels of race/ethnicity measure specification have been established:

Office of Management and Budget (OMB). OMB utilizes broad racial and ethnic categories in government data. The five racial categories are black, white, Asian, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander. Ethnicity is defined as Hispanic or non-Hispanic.

Institute of Medicine (IOM). The IOM (2009) recommends using the OMB broad categories of race and ethnicity as well as more finely-tuned categories of ethnicity and language need.

The Affordable Care Act. The ACA utilizes data standards for race and ethnicity built upon the OMB standard, adding the type of granularity for Asian and Latino populations that is used in the American Community Survey (ACS) and that was used in the 2000 and 2010 Decennial Census. Based on assessment of the testing sites, we included the OMB/ACA race/ethnicity requirements in the assessment specification of the measures (U.S. Department of Health and Human Services [HHS], 2011).

Testing

The Chicago Pediatric Quality and Safety Consortium (CPQSC), a network of care systems, provided the testing sites for this measure. The sites were assessed for the methods used for documentation of racial and ethnic categories, language preference, and type of insurance.

It was determined that all of the testing sites adhere to the OMB standards for collection of race/ethnicity data. These standards define race and ethnicity quite broadly to constitute four distinct categories: American Indian or Alaskan Native, Asian or Pacific Islander, Black and White. Ethnicity is recorded as Hispanic or non-Hispanic (HHS, 2011). The ACA recommends collection of race/ethnicity data for the assessment of disparities and use of the race/ethnicity data collection standards established by the OMB as the starting point and added further granularity and collection principles. It is important to note that the IOM expands the OMB standards as more finely-tuned categories of racial and ethnic data, including factors of national origin, such as Cuban or Mexican rather than the broad category of Hispanic. Additionally, the distinctions of national origin, such as Chinese or Vietnamese, rather than the broad category of

Asian may make it possible to reveal disparities in care and differential outcomes or perhaps cultural barriers to health care and access to timely diagnosis of illness. The IOM standard provides more detailed data and analysis so that interventions are more specific to distinct populations. However, it has the disadvantage of small sample sizes within certain populations (HHS, 2011).

All of the testing sites complied with the OMB standard. Those institutions and practices within the CPQSC that used EHRs for the assessed clinical settings related to ADHD included queryable fields in their EHR to capture the measure elements in order to stratify the measure by OMB designated sub-populations. Stratified measures can be used internally or more broadly by the medical community to better target interventions to specific sub-populations of patients and families to improve the equity of ADHD diagnosis, follow-up, and treatment (Institute of Medicine [IOM], 2009).

7.B. Special Health Care Needs

According to the AAP ADHD Guidelines (AAP, 2011), ADHD is to be considered a chronic condition and as such merits the inclusion of youth with this diagnosis as children and youth with special health care needs (CYSHN). Especially important to CYSHN is the establishment and regular care from a provider that is their medical home. No other consideration was incorporated into the measure.

7.C. Socioeconomic Status

Information on insurance status and type was incorporated as a proxy for SES into the measure specification. This will enable stratification of this measure by insurance status and type, which will also provide stratified information about ADHD patients and family SES. Children of different socioeconomic statuses make up a diverse population of individuals with needs of varying complexity. The elements specified to assess SES and insurance status and type include Private Insurance, Medicaid/CHIP, Uninsured, Dually Eligible.

7.D. Rurality/Urbanicity

While most children live in urban metropolitan areas, the care context for children in rural environments can differ significantly and substantial variations in care can exist, particularly for mental health disorders. This topic was considered in discussions among members of the ADHD Expert Work Group, as was the challenge of available clinical resources. As initial testing was to take place in urban/suburban care settings, this measure was not initially specified to stratify results across different levels of rurality/urbanity. This consideration of rurality/urbanity can be readdressed in further future testing.

7.E. Limited English Proficiency (LEP) Populations

Measure Development and Specification

This measure specifying Accurate ADHD Diagnosis was developed to include elements related to language preference according to the IOM standard categories of proficiency of spoken English to enable stratification of the measure by language preference. Such measures were

included during the measure development. The IOM recommendation is to assess language need–hierarchy; for example:

- What is the patient’s English proficiency?
- What is the patient’s preferred language when communicating with his/her health care provider?
- What is the patient’s preferred language for receiving written materials?
- What language does the patient speak at home?

Testing

Testing at each of the participating sites in CPQSC was conducted to determine the methods, capacity, and current status related to collecting information on the assessment of English language proficiency at each of the participating CPQSC testing sites. Specifically, we assessed:

- How are you collecting these data?
- When are these data being collected (upon admission?)
- What style are you using to collect this information?
- Is all of this information recorded and recorded in OMB-style?
- Where is the most reliable place to obtain these data?
- Do they have a field for this?
- Is it possible to get the information we want from it?
- Are variables located in queriable fields

Section 8. Feasibility

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

8.A. Data Availability

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

The CPQSC, a network of sites with larger pediatric services in the Chicago metropolitan area, was the setting to test the feasibility and reliability of the manual chart abstraction and eMeasure construction for the ADHD Measure – Accurate Diagnosis.

Manual Chart Abstraction

Manual chart abstraction of this measure using either paper records or EHRs is feasible and reliable. All of the elements for construction of this measure are present and able to be reliably abstracted through manual chart abstraction of paper records or EHRs. New elements were based on the 2011 AAP ADHD Guideline recommendations for a new standard of care for pediatric patients diagnosed with ADHD. Documentation of the use of specific validated tools could be

indicated in the notes sections of charts, whether paper or electronic, and the tools themselves could be available for abstraction as they could be added to the paper charts, scanned into electronic charts, or found in queryable fields.

eMeasures Constructed Through Electronic Health Records

Assessment of the feasibility of construction of the ADHD measure – Accurate Diagnosis as an eMeasure in the EHR, was conducted using the AMA-PCPI methodology. A Data Element Table (DET) tool was developed by the American Medical Association’s (AMA’s) Physician Consortium for Performance Improvement (PCPI) testing team. The DET was based on the measure elements and specifications in an Excel spreadsheet designed to capture information that can determine whether or not a site can feasibly collect the data electronically for the measure. It is structured to collect meta data about each data element necessary to construct each measure stored in the EHR. It will also collect information related to integrity and validity of the element’s data collection.

Specifically, the DET is designed to capture the following information:

- **Data element information:** Whether or not the data element is captured in the EHR, the data source application, primary user interface data location, data type, coding system, unit of measure, frequency of collection, and calculability within the measure context.
- **Measure integrity information:** An assessment by the testing site as to what degree the measure, as specified, retains the originally stated intention of the measure.
- **Measure validity information:** An assessment by the testing site as to what degree the scores obtained from the measure, as specified, will accurately differentiate quality performance across providers.

The responses collected by the DET are used to assess technical and implementation feasibility for each measure. The responses were captured in the form of a rating using the following responses:

- “Feasible. Can do today.”
- “Feasible with workflow modifications/changes to EHR.”
- “Non-feasible. Unable to do today.”

This information was entered from drop-down options pertaining to the specific criteria and in free text fields for questions related to specific workflow and EHR configurations. The free text fields and specific narrative questions provide qualitative feedback from the sites that can be factored into the overall feasibility grade for the measure.

The DET is completed by staff at each testing site. After the completion of the DET by the testing sites, a determination can be made as to which of the measures are feasible for eMeasure construction at each site. For some sites, all of the measures in the Maternity Care Performance Measurement Set may be collected, for others it may be only a few. Once the completed DETs were submitted by the test sites, the ADHD Quality Measures Leadership Team, in conjunction with the AMA-PCPI Team, conducted quality assurance of the DETs to ensure the data were complete and ready for analysis. A series of analyses were subsequently performed in order to characterize the feasibility, integrity, and face validity of the measures being tested.

Feasibility testing was conducted at four sites within the CPQSC. Two test sites reported that their EHR can capture all data elements through code, text, or Boolean format. A third test site reported that all data elements except for one are available in their EHR and could be easily addressed with workflow changes.

Measure Technical Feasibility and Implementation Feasibility

The CPQSC sites also used the scale below to assess measure implementation feasibility. Implementation feasibility represents the site’s ability to implement the measure using current workflows and EHRs and addresses issues of projected data reliability related to the consistency with which providers document and capture the data elements needed to implement the measure.

- “Feasible. Can do today.”
- “Feasible with workflow modifications/changes to EHR.”
- “Non-feasible. Unable to do today.”

The technical feasibility and implementation feasibility were rated the same for each of the measures. For example, if the technical feasibility of a measure was rated as “Feasible. Can do today,” its implementation feasibility was also rated as “Feasible. Can do today.” Two of the four sites that evaluated the technical and implementation feasibility for this measure selected the highest rating of “Feasible. Can do today.” At a third site, one of the elements was not available, but only minimal changes would be required; they are able to calculate the measure with their current technical configuration.

Empirical testing of the feasibility of eMeasure implementation of the ADHD measure of Accurate Diagnosis determined that it is possible to construct this measure as an eMeasure in some settings. See Table 3.

Table 3. eMeasure Feasibility Results

Institution	Electronic health record system	Feasible for implementation	Elements missing
John H. Stroger Jr Hospital of Cook County	Cerner	Yes	Not applicable
Advocate Lutheran General Hospital	Cerner	Yes	Not applicable
Advocate Christ Hope	Not available for mental health records	No	Mental health records are in paper form
Ann & Robert H. Lurie Children’s Hospital	EPIC	Yes, with workflow modifications	“Initial Diagnosis Date” and “Problem” are not filled out consistently
Mt. Sinai	Paper records are used for mental health documentation	No	Paper records are used for mental health documentation

Administrative Claims Data

Although there is a code for conducting a standardized assessment that includes mental health assessment, and that code could be used to assess this measure in administrative claims data, this is not a standard at this time. Currently, there is no ability to distinguish between evidence-based treatment and non-evidenced-based treatment. Recommendations include designating a distinct code to differentiate diagnostic processes. See Section 6.

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?

Manual Chart Abstraction

While all of the elements for construction of this measure in paper records or EHRs were available and the measure as constructed was feasible and reliable, there are improvements that could facilitate collection and reporting of this measure through the availability of specific fields or workflow documents to indicate the specific elements, such as documentation of the use of a specific validated tool, the setting in which evaluation took place, and so on.

eMeasures Constructed Through Electronic Health Records

The data elements for this measure are currently available in three of the four testing sites. With publication of the AAP ADHD Guideline (2011), it was not expected that many of the systems would have the capability to demonstrate measure implementation within EHRs; however, empirical testing of the feasibility of eMeasure construction of the ADHD measure of Accurate Diagnosis determined that eMeasure construction of this measure is possible in some settings. Additionally, the team learned valuable information about the nature of the documentation of the relevant elements, what currently exists, and potential enhancements to these systems to be able to construct this measure as an eMeasure in more settings. Necessary workflow changes to ensure documentation in structured fields through an ADHD Follow-up and Treatment Workflow Document would assist clinicians with reliable documentation of eMeasure elements in the structured fields and could facilitate the documentation of all eMeasure elements necessary to assess the quality and accuracy of ADHD diagnosis. Additionally, it would be helpful to add fields to EHRs and coding systems to indicate the use of a validated tool or completion of the requirements for accurate diagnosis as part of the diagnostic process for the accurate diagnosis of ADHD in patients ages 4 through 18. Adding these fields would facilitate more broadly the reliable construction of this measure as an eMeasure.

Administrative Claims Data

Although there is a code for conducting a standardized assessment that includes mental health assessment and that code could be used to assess this measure in administrative claims data, this is not a standard at this time. A new specific billing code to bill for the use of evidence-based validated tools and the requirements recommended for accurate diagnosis of ADHD is needed to bill for accurate diagnosis of ADHD. This could then be used as an administrative claims code to improve the performance of this measure as constructed through the use of administrative claims data. However, construction of this measure through manual chart abstraction and construction in the EHR likely will continue to be superior methods for calculation and use of this measure.

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 measure is an enhancement of the Institute for Clinical Systems Improvement (ICSI) measure “Diagnosis and management of attention deficit hyperactivity disorder (ADHD) in primary care for school-age children and adolescents: percentage of patients newly diagnosed with ADHD whose medical record contains documentation of DSM-IV-TR or DSM-PC criteria.” The existing measure was enhanced to include the use of new evidence-based validated diagnostic tools in the diagnosis of ADHD. The specification of the measure was enhanced to include elements for equity/disparities assessment within the measure. Furthermore, the specifications of this ADHD measure of Accurate Diagnosis were also enhanced to enable construction of this ADHD measure as an eMeasure.

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 measure is not in use and has not been used.

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

This measure is not in use and 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?

This measure can be implemented and assessed through the review of patients' EHRs.

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?

The CDC reports that between 7 and 13 percent of children in 2007-2008 were diagnosed with ADHD. This is a highly prevalent condition and aspect of pediatric care. From this we can predict that there is a sufficient sample size for comparison, but this assessment has not been conducted. (<https://www.cdc.gov/ncbddd/adhd/features/adhd-parent-reporting.html>)

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?

No.

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

None known, but this deserves further study.

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?

The data sources for reporting this measure are through the review of patients' EHRs.

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?

ADHD is a highly prevalent condition in children 4-17 years of age. However, we do not know the prevalence in specific MSAs or HHRs and thus cannot assess the sufficiency of sample size for comparison in these geographic units.

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?

No.

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

Unknown.

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?

The data sources for reporting this measure are through the review of patients' EHRs.

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?

Children aged 4-17 with a diagnosis of ADHD represent 11.2 percent of the children covered in Medicaid/CHIP and offer a sizable sample for potential comparison.

(<http://www.urban.org/sites/default/files/alfresco/publication-pdfs/412783-The-Composition-of-Children-Enrolled-in-Medicaid-and-CHIP-Variation-over-Time-and-by-Race-and-Ethnicity.PDF>)

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?

No.

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

Unknown.

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?

The data sources for reporting this measure are through the review of patients' EHRs.

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?

ADHD is a highly prevalent condition in children 4-17 years of age. However, we do not know the prevalence in specific MSAs and, thus, are unable to assess the sufficiency of sample size for comparison. This deserves further study.

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?

No.

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

Unknown.

Provider Level

Individual practitioner: Can compare individual health care professionals

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?

The data sources for reporting this measure are through review of patients' EHRs.

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?

ADHD is a highly prevalent condition in children 4-17 years of age. However, some providers may focus on children with this disorder, while other providers may care for only a few patients with ADHD. We do not know the prevalence of ADHD patients in the practices of specific providers and thus cannot assess the sufficiency of sample size for comparison.

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?

No.

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

Unknown.

Provider Level

Hospital: Can compare hospitals

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

Yes.

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

The data sources for reporting this measure are through review of patients' EHRs.

***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?**

ADHD is a highly prevalent condition in children 4-17 years of age. However, some providers may focus on children with this disorder, while other providers may care for only a few patients with ADHD. We do not know the prevalence of ADHD patients in the practices of specific providers and thus cannot assess the sufficiency of sample size for comparison. This deserves further study.

***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?**

No.

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

Unknown.

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?**

The data sources for reporting this measure are through review of patients' EHRs.

***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?**

ADHD is a highly prevalent condition in children 4-17 years of age. However, some providers may focus on children with this disorder, while other providers may care for only a few patients with ADHD. We do not know the prevalence of ADHD patients in the practices of specific

providers and thus cannot assess the sufficiency of sample size for comparison. This deserves further study.

***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?**

No.

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

Unknown.

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).

For Public Reporting

This measure can be used to provide transparency concerning comparative best evidence-based practice to assess the accuracy of the applied diagnostic processes for patients aged 4 through 18 years with ADHD and their families. This measure is meant to be used to calculate performance and/or reporting at the practice, institution, health plan, State, regional, and national levels.

For Performance Improvement

Performance measurement serves as an important component in a quality improvement strategy. This measure can be used appropriately for performance measurement directed at improving ADHD diagnostic patient care for patients 4 – 18 years of age. The measure can provide critical information for improvement as it is linked directly to specific diagnostic processes and operational steps that clinicians can apply in practice to improve care.

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.

The adoption of EHRs has enabled the standardization of documentation of clinical information. The 2011 AAP ADHD guidelines established diagnostic, follow-up, and treatment recommendations that represent a new standard of care for pediatric patients diagnosed with

ADHD. Measures that reflect these diagnostic, follow-up, and treatment standards have been developed through broad stakeholder involvement in an Expert Work Group. Adoption of these new measures and incorporation of workflow documents within the EHR to enable the documentation of the critical elements of the standard of care represented in the AAP guidelines on ADHD can facilitate and support the diffusion of current best evidence for diagnosis and care for pediatric patients.

If these elements are represented through new workflow documents, these measures could be constructed regularly in the EHR to provide consistent feedback to clinics, practices, and institutions on their performance relative to their own previous practice for improvement, relative to best practices in the field and for public reporting.

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?

While this measure was not fully tested as part of an EHR, this measure was tested to determine initial feasibility and guidance for implementation using EHR data sources.

The testing was completed within the CPQSC, a testing network that comprises Chicago-area hospitals with pediatric services seeking to understand and improve the quality and safety of pediatric medical care. Member hospitals include John H. Stroger Jr Hospital of Cook County, Advocate Christ Hope Children's Hospital, Advocate Lutheran General Hospital, Ann & Robert H. Lurie Children's Hospital, Mount Sinai Children's Hospital, and Northwestern Memorial's Prentice Women's Hospital. The network's unique characteristics include its heterogeneous settings of urban and suburban environments, the diversity of the populations served, and the broad diversity of both patients and providers. Sites tested the feasibility of implementing the ADHD measures to help determine the necessary workflow and documentation practices to assure uniform data collection and identify best practices in data collection.

Three hospitals were able to participate in the testing, and results of the testing included two of the three hospitals reporting that this measure was feasible and they could implement it into their system today. The third hospital reported that it was potentially feasible with modifications to the workflow, specifically their system currently allowed for uncoded entry of the diagnosis such that workflow changes would require "Initial Diagnosis Date" to always be filled out and "Problem" to be entered every time and particularly on initial diagnosis.

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.

The information needed to calculate the measure may be captured as part of the routine clinical workflow as follows:

- Initial ADHD Diagnosis Encounter: coded field within the chart in "Registration System" field.
- ADHD Diagnosis with confirmation of validated tool: Free text in progress note.
- ADHD Diagnosis with confirmation of functional status: Free text in progress note.
- ADHD Diagnosis with confirmation of symptoms of inattention: Free text in progress note.
- ADHD Diagnosis with confirmation of symptoms of hyperactivity: Free text in progress note.
- ADHD Diagnosis with confirmation of symptoms of impulsivity: Free text in progress note.

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.

Working with the AMA-PCPI process for developing the EHR specification, the National Quality Forum (NQF) Quality Data Model (QDM) was followed as noted below:

- The QDM vocabulary recommendations named by the Health IT Standards Committee (of the Office of the National Coordinator for Health IT), (e.g., SNOMED, RXNorm, LOINC).
- Vocabulary standards consistent with recommendations proposed for Stage II of CMS EHR incentive program (Meaningful Use).

11.E. Health IT Calculation

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

The likelihood that missing or ambiguous information will lead to calculation errors is average. With missing data, for example, if assessment of symptoms of hyperactivity is missing, it will lead to an inability to calculate the measure. However, with ambiguous data, for example a progress note that is non-specific about the type of tool used to determine diagnosis, the measure may overcompensate by counting patients who were assessed using a non-validated tool as part of the measure. One way to reconcile this in future systems is to have two distinct codes to identify the assessment with a validated tool versus an assessment with a non-validated tool.

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?

Pediatric quality metrics for ADHD diagnosis and care are now being recommended through the CHIPRA and AHRQ Pediatric Quality Measures Program (PQMP) to assess adherence to the

standards for ADHD diagnosis and care established through the recommendations in the AAP's 2011 ADHD Guidelines. These measures, with broader use of EHR systems in pediatric primary and specialty care and with minor modifications to the EHR documentation systems to include Workflow Documents to provide a critical set of brief and defined queryable documentation elements could be used to develop clinical decision support systems to alert clinicians to the need for use of specific tools for diagnosis and specific therapy recommendations. The use of computerized decision support built to support these diagnostic and care recommendations could provide a vehicle for education and real-time clinical decisionmaking for diagnosis and care, as well as facilitate and support the adoption of the ADHD care Guidelines.

Section 12. Limitations of the Measure

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

Administrative Claims Data

Limitations in calculating this measure from administrative claims data include the inability to procure distinct codes that accurately represent the numerator. Since there is no specific code for using a validated tool (e.g., a code specifying the Vanderbilt Parent and Teacher Assessment Scales), it is not possible to distinguish between validated and non-validated assessment or diagnostic tools. A recommendation to overcome this limitation would be to establish two distinct billing codes that would differentiate assessment methods.

Electronic Health Records

Limitations in constructing the measure from EHR data include current workflow in the field. Recommendations to overcome this limitation would be to establish a standardized workflow or establish required fields for completion when diagnosing ADHD. For example, having a field for "ADHD Assessment Method" with a drop-down menu of various options would result in a more accurate calculation of our measure, as this information is currently found in progress notes as free text and is not usually available in an electronic search.

Testing Environment

The testing of this measure in the CPQSC has provided a solid foundation for understanding the validity, feasibility, and reliability of the ADHD measures through medical record review and assessment of the feasibility of construction via EHR with recommendations to make this possible. While this exclusive area of testing has been a limitation, it should be noted that U.S. metropolitan areas are home to 80 percent of the Nation's children (Acevedo-Garcia, McArdle, Osypuk, et al., 2007). Together, the CPQSC networks represent a diverse and unique set of characteristics; the initial testing results from the CPQSC have provided a valuable glimpse into the potential for the assessment of ADHD care quality that this measure holds.

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.

Attention Deficit Hyperactivity Disorder (ADHD) is prevalent in the pediatric population. According to CDC statistics (2010a), 5 million children ages 4-17 years (9 percent of this age group) have ADHD. ADHD is also very prevalent in the Medicaid/CHIP population. According to a report on Medicaid and CHIP to Congress, children enrolled in Medicaid or CHIP are more likely than privately insured or uninsured children to be in fair or poor health and to have certain impairments and health conditions (e.g., ADHD/ADD, etc.) (see www.medicaid.gov). According to the survey data, the prevalence of ADHD/ADD among Medicaid/CHIP enrolled children is high but varied: 43.2 percent for SSI children. Over the course of 2 years, the AAP convened an ADHD Work Group to review the current evidence on ADHD diagnosis, follow-up, and treatment. Based on this review of the evidence, in November of 2011 the AAP released an ADHD Guideline with several critical recommendations for ADHD diagnosis, follow-up, and treatment.

A critical recommendation related to the accurate diagnosis of ADHD was established. In addition, in the interval between the previous AAP Guideline and the 2011 Guideline, several tools were validated for use in the accurate diagnosis of ADHD. Validated tools now exist that facilitate the complete evaluation of core symptoms and impairment of ADHD (like a Checklist) to ensure all elements of the DSM-VI criteria are assessed and that it is possible to distinguish the diagnosis of ADHD from other conditions with similar symptoms. This represents an enhancement in the delivery of ADHD diagnostic care and will facilitate the accuracy of ADHD diagnosis.

Validated tools have now demonstrated effectiveness for diagnosing ADHD and distinguishing ADHD from the diagnosis of other conditions that may have some of the same symptomology and or impairment. The use of validated tools for accurate diagnosis or the application of all of the diagnostic requirements for an accurate diagnosis of ADHD provides clinicians with a common understanding and knowledge base of the components of documentation that are necessary to validate the existence of ADHD, the need for treatment, the impact of ADHD on the individual's educational performance, and the need for accommodations for students seeking reasonable academic accommodations.

When less rigorous methods are applied to the diagnosis of ADHD, the positive existence of the condition may be missed, leading to potential social and academic struggle, or the case in which the diagnosis of ADHD may be made erroneously when another condition is present that may need immediate attention to prevent increased severity. Either false negative or false positive diagnostic errors can lead to poor quality of care and potential harm.

This measure captures not only whether or not the physician used the DSM-IV criteria to make an accurate ADHD diagnosis but by also capturing referrals made by physicians who are not comfortable making the diagnosis, the measure does not miss these circumstances. As the AAP Guideline states, at any point at which a clinician feels that he or she is not adequately trained or is uncertain about making a diagnosis or continuing with treatment, a referral to a pediatric or mental health subspecialist should be made.

In addition, relegating mental health conditions exclusively to mental health clinicians also is not a viable solution for many clinicians, because in many areas access to mental health clinicians to whom they can refer patients is limited. Access in many areas is also limited to psychologists when further assessment of cognitive issues is required and not available through the education system because of restrictions from third-party payers in paying for the evaluations on the basis of them being educational and not health related. Accurate diagnosis is a core element of safe, high quality care.

Background on Measure Development

In early 2009, Congress passed the Children's Health Insurance Program Reauthorization Act (CHIPRA, Public Law 111-3), which presented an unprecedented opportunity to measure and improve health care quality and outcomes for children. As part of this law, the CHIPRA Pediatric Quality Measures Program (PQMP) was developed to establish a set of measures to effectively assess the quality of pediatric care. An Initial Core Set of 25 pediatric measures were developed and selected for recommended use (AHRQ, 2010). In addition, seven Centers of Excellence were funded by the Agency for Healthcare Research and Quality (AHRQ) to extend, improve, add to, and strengthen the Initial Core Set of pediatric quality measures as part of the CHIPRA PQMP. The Pediatric Measurement Center of Excellence (PMCoE) comprised the Medical College of Wisconsin (Lead); Northwestern University, Feinberg School of Medicine (NU-FSM); the American Medical Association – Physician Consortium for Performance Improvement (AMA-PCPI), the American Academy of Pediatrics (AAP), the American Board of Pediatrics (ABP), the American Board of Medical Specialties (ABMS), Children's Hospital and Health System (CHHS), Truven Health Analytics (formerly Thomson Reuters) (THA), and TMIT Consulting, LLC (TMIT) was funded by AHRQ to develop, extend and test pediatric quality measures. The proposed PMCoE measure development and testing method applies the AMA-PCPI's (PCPI™) methodology.

The PMCoE was assigned to develop and extend pediatric quality measures for ADHD. An ADHD Measures Leadership Team was established and led by Donna Woods, EdM, PhD from NU-FSM and included Mark Antman, DDS, and Molly Siegel, MS from the AMA-PCPI; Fan Tait, MD, FAAP, and Keri Thiessen, MEd, from the AAP; Nicole Muller and Caroline Mazurek, MS, also from NU-FSM; Ramesh Sachdeva, MD, from the Medical College of Wisconsin; and two ADHD experts who served as the Expert Work Group Co-Chairs, Mark Wolraich, MD, and Karen Pierce, MD. The ADHD Measures Leadership Team reviewed in detail the level of evidence for the current AAP Guideline recommendations, existing ADHD measures, and associated peer reviewed literature, including systematic reviews related to ADHD diagnosis, follow-up, and treatment. This review was used to facilitate the construction of an ADHD proposed measure set of potential measures for review and discussion by an ADHD Expert Work Group.

In November of 2011, as the result of 2 years of work, the AAP published an ADHD Guideline based on a review of the best evidence. Significant changes to the recommendations included age range changes, reducing the age of possible ADHD diagnosis to age 4; evidence-based age range recommendations for use of behavior therapy as first-line treatment prior to medication therapy for patients aged 4 through 5 based on the strongest level of evidence; enhancement of the diagnostic recommendations through the use of validated tools that include all of the DSM IV criteria; and designation of ADHD as a chronic condition with the recommendation for patients diagnosed with ADHD to be included as CYSHCN and treated in a medical home context, which would provide continuity of ADHD care.

The ADHD Measures Leadership Team then selected and convened an Expert Work Group comprising a diverse set of stakeholders in pediatric ADHD care. All Expert Work Group participants underwent the rigorous AMA-PCPI Conflict of Interest, Disclosure, and Review process. A diverse set of stakeholders was selected based on expertise and experience in many different areas and included clinical and caregiver perspectives as well as methodology, measure testing, and health IT expertise. The selected Expert Work Group included:

- Developmental-behavioral Pediatricians.
- Child and Adolescent Psychiatrists.
- Primary Care Pediatricians.
- Clinical Psychologists.
- Pediatric Neurologists.
- Family Physicians.
- School Psychologists.
- Parents.
- Teachers.
- Allied Health Professionals.
- School-based Learning Disability Specialists.
- Pediatric Nurse Care Equity.
- Expert in Maintenance of Certification Requirements.

The national ADHD Expert Work Group was convened in Chicago, IL at the AAP campus for an in-person meeting in February 2012, where ADHD measures were developed and enhanced. Additional considerations including the ability to specify and operationalize the measures were discussed. See Appendix 1 in the Supporting Documents for a list of the ADHD Expert Work Group members. The ADHD Expert Work Group was convened again at the end of February in a follow-up phone conference to review the measure recommendations discussed in the initial meeting, confirm the changes that were made, and discuss the need for further refinement of the measures. The diversity of the stakeholders has enabled a rich and meaningful dialogue to continue throughout the measure development process. The diverse perspectives have also contributed to the robustness of each ADHD measure.

This work presents the measures resulting from these activities. The proposed measures will assess effective ADHD treatment for patients aged 4 through 5 years who have been diagnosed with ADHD based on the recommendations in the 2011 AAP ADHD Guideline. The measures

developed by the ADHD Expert Work Group through discussion of the evidence on ADHD diagnosis, follow-up, and treatment and the 2011 AAP ADHD Guideline were prepared for a Public comment period. Comments were solicited throughout this period from relevant stakeholder organizations, with requests to circulate the measures within their membership. Following Public Comment, the measures were refined by the Expert Work Group and finalized for testing.

Measure Testing

The measures were tested and found to be valid measures that can be reliably constructed through manual chart abstraction using either paper medical records or EHRs. The measures were assessed for feasibility of implementation as eMeasures in the EHR; we found that at some testing sites, the eMeasures were feasible while at others modifications to the systems or the implementation of workflow documentation would be necessary. The use of administrative claims to calculate the measure would require the establishment of new specific billing codes, as this measure establishes a new standard of care that currently does not have a standard billing code.

These measures are meant to be used to assess performance for reporting at the group or system level. Performance measurement serves as an important component in a quality improvement strategy for ADHD diagnosis and treatment.

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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.

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