ADHD Chronic Care Follow-up

Section 1. Basic Measure Information

1.A. Measure Name

ADHD Chronic Care Follow-up

1.B. Measure Number

0145

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 aged 4 through 18 years with a diagnosis of attention deficit hyperactivity disorder (ADHD) for whom follow-up care was provided within the calendar year.

1.D. Measure Owner

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

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 who attended at least one ADHD follow-up care visit within the calendar year.

1.H. Numerator Exclusions

None.

1.I. Denominator Statement

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

1.J. Denominator Exclusions

Documentation of medical reason(s) for not providing follow-up care (e.g., patient with multiple psychiatric conditions referred to other provider).

Documentation of system reason(s) for not providing follow up care (e.g., patient for whom the follow-up visits were not all with the same practice).

1.K. Data Sources

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

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

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

Not applicable.

Section 2: Detailed Measure Specifications

Provide sufficient detail to describe how a measure would be calculated from the recommended data sources, uploading a separate document (+ Upload attachment) or a link to a URL. Examples of detailed measure specifications can be found in the CHIPRA

Initial Core Set Technical Specifications Manual 2011 published by the Centers for Medicare & Medicaid Services. Although submission of formal programming code or algorithms that demonstrate how a measure would be calculated from a query of an appropriate electronic data source are not requested at this time, the availability of these resources may be a factor in determining whether a measure can be recommended for use.

Administrative Data Testing

All of the elements for construction of this measure were present and able to be abstracted through our testing of billing and insurance data provided by Truven Health Analytics in their MarketScan database (comprising both Medicaid and commercial claims data). See the supporting documents for Attachment 2.1, which is the specifications worksheet that was used; it describes how the measure could be calculated from administrative claims data sources.

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), for children ages 4-17, 5 million children (9 percent of this group) had been diagnosed with ADHD, the percentage of children with a parent-reported ADHD diagnosis increased by 22 percent between 2003 and 2007, and 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 (Bloom, Cohen, Friedman, 2010).

In 2007, the estimated prevalence of parent-reported ADHD among children aged 4-17 years was 9.5 percent, representing 5.4 million children (Visser, Danielson, Bitsko, et al., 2014). Of children with a history of ADHD, 78 percent (4.1 million, or 7.2 percent of all children aged 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 is more than twice as common among boys as girls (13.2 percent versus 5.6 percent), and high rates of ADHD (ever) were noted among children of racial and ethnic minority groups (14.2 percent) and children covered by Medicaid (13.6 percent) (Visser, et al., 2014). Similarly, annual data from the 2004-2006 National Health Interview Survey (NHIS) found an ADHD prevalence of 8.4 percent among children 6-17 years old.

Costs

ADHD diagnosis, follow-up, and treatment represent a significant share of the cost of health care provided to children. Using a prevalence rate of 5 percent, a conservative estimate of the annual societal cost of illness for ADHD in children and adolescence is $42.5 billion, ranging between $36 and $52.4 billion, in 2005 dollars (Pelham, Foster, Robb, 2007).

A study using 1996 Medical Expenditure Panel Survey (MEPS) data compared the costs associated with pediatric ADHD to the cost of asthma and the general pediatric population and found that the health care costs were $1,151 for ADHD, $1,090 for asthma, and $712 for the general population (Chan, Zhan, Homer, 2002). Extrapolating across MEPS data with a 3.5 percent population prevalence of ADHD, an expenditure of $1,150.65 per child represents $2.5 billion in costs. For children with ADHD, outpatient and prescription costs accounted for roughly 36 percent and 27 percent, respectively (Chan, et al., 2002).

Morbidity

ADHD has a multidimensional effect on an individual's daily 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 might be associated with side effects and symptoms affecting morbidity (CDC, 2010).

While some core problems evident in young patients with ADHD, such as hyperactivity, generally improve by adulthood; many other symptoms of the disorder may persist into

adulthood including impaired social relationships, low self-concept, drug use, and educational and occupational disadvantages (Ingram, Hechtman, Morgenstern, 1999).

ADHD as a Chronic Condition

The 2011 American Academy of Pediatrics (AAP), ADHD Clinical Practice Guidelines suggests that primary care clinicians recognize ADHD as a chronic condition and therefore, consider children with ADHD as children and youth with special health care needs (CYSHN) (AAP, 2011). This is based on previously stated evidence that ADHD symptoms often may persist into adolescence and adulthood (Barkley, Fischer, Edelbrock, et al., 1990; Biederman, Faraone, Milberger, et al., 1996). The National Survey of Children with Special Health Care Needs found that children without a medical home were twice as likely as those who had a medical home to forego needed care and to have unmet health care service needs (Strickland, McPherson, Weissman, et al., 2004; Culpepper, Fried, 2013).

Importance of ADHD Follow-up Care

There is evidence that ADHD treatment can improve the likelihood of a positive outcome and reduce the negative consequences of ADHD in the short term; however, residual benefits of pharmacological treatment may subside when medication is discontinued (Barkley, et al., 1990). Therefore, given that ADHD symptoms may manifest for as long as 8 years after diagnosis and that ADHD treatment has been shown to work in the short term although it may require many modifications, regular ADHD follow-up care is to ensure that a child is adhering to a treatment plan.

Known Gaps in Care

A survey about the AAP's ADHD Guidelines found that of the 60 percent who responded, nearly every pediatrician reported prescribing a medication for ADHD in the past year (97.8 percent), 91.5 percent of pediatricians were familiar with the Guidelines, and 78.1 percent reported incorporating ADHD Guidelines into their practice; however, only 41.6 percent of pediatricians reported routine follow-up visits (three to four per year) for children diagnosed with ADHD Rushton, Fant, Clark, 2004). An additional study found that approximately 50 percent of children with ADHD seen in practice settings obtain care that matches Guidelines of the American Academy of Child and Adolescent Psychiatry. Critical barriers to service provision included lack of pediatric specialists, insurance coverage, and waiting lists. This suggests there may be major gaps between the research base and clinical practice (Hodgkins, Sasane, Christensen, et al., 2011). Family physicians were less likely than either pediatricians or psychiatrics to engage in follow-up care and mental health counseling (Barkley, et al., 1990).

A longitudinal cohort study of children aged 5 to 11 who were receiving ADHD care in primary or specialty care settings found that at three 6-month intervals, receipt of a non-stimulant medication refill prescription was poor (31-49 percent) and could be related to poor ADHD management and a lack of follow-up visits (Zima, Bussing, Tang, et al., 2010). Further, data from community-based samples indicate that average time to discontinuation of medicine is 4 months, and that families are fully compliant with treatment regimens for an average of only 2 months (Bussing, Zima, Mason, et al., 2005). Mean grade point average (GPA) has been shown to be significantly higher during stimulant-adherent marking periods than during non-adherent

marking periods for Medicaid-eligible children diagnosed with ADHD (p<.0001), with adherence being associated with a 0.108 increase in GPA (Marcus, Durkin, 2011).

Potential for Quality Improvement

In a survey of pediatricians' attitudes regarding caring for patients diagnosed with ADHD, taking responsibility for ADHD follow-up care is an important correlate of self-reported behavior in caring for children with ADHD (McCarthy, Asherson, Coghill, et al., 2009; Gajria, Lu, Sikirica, et al., 2014). Studies suggest that without appropriate follow-up, patients discontinue treatment—whether it is medication treatment or behavior therapy—and with consistent follow-up, the likelihood of continuation and adherence improves.

One study found that over a third of the study sample that received ADHD treatment (medication or behavioral treatment) discontinued treatment during the study period. Parental reasons for discontinuation included side-effect experiences, taking a summer medication break, changes in providers, and keeping the child off treatment to see whether ADHD had remitted in the meantime (Palli, Kamble, Chen, et al., 2012). Similar issues with ADHD treatment adherence have also been noted in large, multi-center studies such as the Multimodal Treatment Study of Children with ADHD (MTA) (Swanson, Arnold, Kraemer, et al., 2008).

ADHD follow-up care and treatment adherence can be enhanced by improving the relationship between parents and health care providers, so parents feel both involved and knowledgeable about their child's health condition and treatment regimen. The medical home and the chronic care model both emphasize patient and family involvement in care; as a result, treating ADHD as a chronic care condition within a medical home may serve to improve ADHD treatment overall. As treatment adherence and medication side effects can be barriers to care, following up with patients is critical to ensure that children receive safe and adequate treatment and do not stop treatment prematurely.

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, measures of ADHD follow-up have specific importance to Medicaid and/or CHIP.

Prevalence

According to statistics provided by CDC (Bloom, et al., 2010), for children 4-17 years of age, 5 million children (9 percent) have ADHD, boys (12 percent) continue to be more than twice as

likely as girls (5 percent) to have ADHD. 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). The highest rates of parent-reported ADHD diagnosis were noted among children covered by Medicaid and children of racial and ethnic minority groups, 14.2 percent and 13.6 percent respectively (Visser, et al., 2014).

Cost

ADHD is a costly condition, and several State Medicaid Programs have studied the costs of ADHD care (Barner, Khoza, Oladapo, 2011; Fullerton, Epstein, Frank, 2014; Thompson, Varley, McClellan, et al., 2009). A study using administrative data from Florida's Medicaid program for fiscal years 1996-2005 found that among children aged 3 to 17 who had two or more outpatient or inpatient claims with ADHD on different days during the fiscal year (N=107,486), the average health care cost per child increased 60 percent over a nearly 10 year period, from $3,258 to $5,187. Mental health care spending constituted a little over 80 percent of total spending and increased at a similar rate over the study period, while inpatient spending and medication spending each accounted for 11 percent of mental health care spending initially and 18 percent and 20 percent, respectively, by the end of the study period.

Pharmaceutical spending increased almost three-fold, primarily due to price increases in medications but also due to a 37 percent increase in use (Fullerton, et al., 2012). A study of continuously enrolled Texas Medicaid children between 3 -18 years of age with two or more ADHD prescription claims (N=62,789) found that non-stimulant medications had the highest mean medication cost per patient per day ($4.04 +/- $2.15), while immediate-release stimulants had the lowest cost per person per day ($1.24 +/- $0.97) (Barner, et al., 2011).

In 2004, Washington State Medicaid convened a mental health drug workgroup that met to review prescription data, discuss issues related to implementation of a preferred drug program, and make recommendations to improve quality and safety. The workgroup developed a set of safety thresholds based on utilization data and published literature that, when exceeded, would require a second opinion record review before authorization for medication continuation. The thresholds were implemented, and overall cost for ADHD prescription requests was evaluated. The cohort exposed to second opinions spent $1,185,401 less on ADHD medications than the cohort that was not exposed. Throughout the study period (2004-2008; before and after implementation), overall users of stimulants decreased by 2.2 percent, whereas overall costs increased by 16.5 percent (Thompson, et al., 2009).

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

The Early Periodic Screening, Diagnostic, and Treatment (EPSDT) Program is the child health component of Medicaid. It is required in every State and is designed to improve the health of low income children by financing necessary pediatric services (Maternal and Child Health Bureau [MCHB], 2016a). Medicaid's EPSDT program has been shaped to fit the standards of pediatric care and to meet the special physical, emotional, and developmental needs of low-income children. Since 1967, the purpose of the EPSDT program has been "to discover, as early as possible, the ills that handicap our children" and to provide "continuing follow up and treatment so that handicaps do not go neglected (MCHB, 2016a)."

Federal law requires that Medicaid cover a comprehensive set of benefits and services specifically for children. Since one in three U.S. children under age 6 is eligible for Medicaid, EPSDT offers a very important way to ensure that young children receive appropriate health, mental health, and developmental services (MCHB, 2016a).

Mental Health and EPSDT

Both the Title V Maternal and Child Health Services Block Grant and the EPSDT component of Medicaid recognize mental health as an integral aspect of children's health care, and research demonstrates the value of early identification and intervention to address children's needs. In Title V, the definition of children with special health care needs (CSHCN) includes social-emotional and mental health needs (MCHB, 2016b). The AAP's 2011 ADHD Guideline has designated ADHD as a chronic condition. The guideline recommends the use of the Chronic Care Model and the Medical Home for screening, treatment and follow-up and describes pediatric patients diagnosed with ADHD as CYSHN (AAP, 2011).

From screening, to diagnosis, to treatment, Medicaid and EPSDT are critical to financing evidence-based mental health services for children (Howell, Teich, 2008). Federal law requires comprehensive well-child examinations with screening services through EPSDT, including screening for potential developmental, mental, behavioral, and/or substance use disorders. EPSDT also finances diagnostic and treatment services, if medically necessary, for these conditions (MCHB, 2016a).

The Centers for Medicare and Medicaid Services (CMS) has stressed the importance of the EPSDT benefit in relation to these measures. For ADHD, it is expected that a comprehensive health and developmental history will be obtained and that laboratory tests will be performed when indicated. In keeping with the EPSDT benefit expectations, when ADHD is diagnosed, necessary health care services must be made available for treatment, and physicians must follow-up with patients to ensure that ADHD is managed appropriately. Simply screening and diagnosing ADHD is not sufficient (MCHB, 2016a). Quality assessment procedures should be in place to assure that comprehensive care is provided.

Specific Relevance to Medicaid/Children's Health Insurance Program (CHIP) or to Populations Overrepresented in Medicaid or CHIP

According to a report 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.). The prevalence of ADHD/ADD among Medicaid/CHIP enrolled children is high but varied: 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 CSHCN (Medicaid and CHIP Payment Access Commission [MACPAC], 2012).

ADHD Follow-Up of Medicaid/CHIP Populations

The AAP encourages the use of Medical Homes to ensure continuity of care from birth to young adulthood and to provide coordinated health care among specialists and related service providers (AAP, 2011). In order to promote optimal health, care must be accessible, continuous,

comprehensive, family-centered, coordinated, compassionate, and culturally affective. However, studies have indicated that 41 percent of children with Medicaid coverage suffer 2-4 month gaps in coverage every year (Brito, Grant, Overholt, et al., 2008). In addition, uninsured children are three times as likely as insured children to have at least one unmet health care need during the year (Brito, et al., 2008). An assessment of 226 parent and child interviews and 12-month follow-up surveys among a sample of high-risk elementary school children screened for ADHD risk found high rates of medication underuse and treatment attrition (Bussing, Zima, Mason, et al., 2005). This indicates that Medicaid/CHIP populations tend to suffer gaps in insurance coverage while also having additional health care needs that may manifest in ADHD treatment attrition if their care is not properly managed by physicians.

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).

The ADHD follow-up measure proposed in this report aims to measure the management of ADHD as a chronic condition. This measure intends to enhance the currently existing ADHD Follow-Up Care measure in the CHIPRA Core Set (CMS, 2013). The current measure, Follow-up Care for Children Prescribed Attention Deficit Hyperactivity Disorder (ADHD) Medication, aims to measure the percentage of children newly prescribed ADHD medication that had at least three follow-up care visits within a 10-month period, including one within 30 days from the first time ADHD medication was dispensed. The enhanced follow-up measure intends to address three limitations of the current Initial Core ADHD follow-up measure:

1. The current measure only considers medication management and does not consider patients receiving Behavior Therapy.
2. The current measure is specified to require a Drug Enforcement Administration (DEA) number, and Federally Qualified Health Centers (FQHC) do not routinely submit DEA numbers as part of their billing, which means the care of children with ADHD in FQHCs will fall out of the measure.
3. The current measure only considers care delivered within the first 10-months of diagnosis and treatment and ignores the fact that AAP considers ADHD to be a chronic care condition that must be properly managed throughout childhood and adolescence, regardless of treatment type.

Furthermore in the testing of an ADHD measure, we found that the look-back period to determine a new diagnosis will not be accurate, and many patients will fall out of the measure.

This measure also complements additional CHIPRA Core Set candidate measures, such as Follow up After Hospitalization for Mental Illness. Further, this proposed measure complements two measures previously created by this measure development team:

- Accurate ADHD Diagnosis, which measures the percentage of patients aged 4 through 18 years whose ADHD diagnosis was based on a clinical exam with a physician or other health care professional and included confirmation of functional impairment in two or more settings, as well as assessment of core symptoms of ADHD through use of a validated diagnostic tool based on the DSM-IV-TR for ADHD or through direct assessment of the patient.
- Behavior Therapy as First-Line Treatment for Preschool-Aged Children, which measures the percentage of patients aged 4 through 5 years with a diagnosis of ADHD for whom ADHD-focused evidence-based behavior therapy was prescribed as the first line of treatment.

References

American Academy of Pediatrics. Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Pediatrics 2011;128(5):1-16.

Barkley R, Fischer M, Edelbrock C, et al. The adolescent outcome of hyperactive children diagnosed by research criteria: I. An 8-year prospective follow-up study. J Am Acad Child Adolesc Psychiatry 1990; 29(4):546-57.

Barner JC, Khoza S, Oladapo A. ADHD medication use, persistence, and cost among Texas Medicaid children. Curr Med Res Opin 2011; 27(Suppl):2:13-22.

Biederman J, Faraone S, Milberger S, et al. A prospective 4-year follow-up study of attention-deficit hyperactivity and related disorders. Arch Gen Psychiatry 1996; 53:437-46.

Bloom B, Cohen RA, Freeman G. Summary health statistics for U.S. children: National Health Interview Survey, 2009. National Center for Health Statistics. Vital Health Stat 10(247); 2010. Available at http://www.cdc.gov/nchs/data/series/sr_10/sr10_247.pdf. Accessed November 3, 2016.

Brito A, Grant R, Overholt S, et al. The enhanced medical home: the pediatric standard of care for medically underserved children. Adv Pediatr 2008; 55:9-28.

Bussing R, Zima BT, Mason D, et al; Use and persistence of pharmacotherapy for elementary school students with ADHD. J Child Adolesc Psychopharmacol 2005; 15(1):78-87.

Centers for Disease Control and Prevention. Increasing Prevalence of Parent-Reported Attention Deficit/Hyperactivity Disorder Among Children. Morb Mortal Wkly Rep 2010; 59(44):1439-43.

Centers for Medicare & Medicaid Services. Core set of children's health care quality measures for Medicaid and CHIP (child core set): technical specifications and resources manual for Federal fiscal year 2013 reporting. Washington, DC: National Committee for Quality Assurance; 2013.

Chan E, Zhan C, Homer C. Health care use and costs for children with attention-deficit/hyperactivity disorder. Arch Pediatr Adolesc Med 2002; 156:504-11.

Culpepper L, Fried R. Attention-deficit/hyperactivity disorder in a chronic care paradigm. Postgrad Med 2013; 125(4):78-86.

Fullerton CA, Epstein AM, Frank RG, et al. Medication use and spending trends among children with ADHD in Florida's Medicaid program, 1996-2005. Psych Serv 2012; 63(2):115-21.

Gajria K, Lu M, Sikirica V, et al. Adherence, persistence, and medication discontinuation in patients with attention-deficit/hyperactivity disorder – a systematic literature review. Neuropsychiatr Dis Treat 2014; 10:1543-69.

Hodgkins P, Sasane R, Christensen L, et al. Treatment outcomes with methylphenidate formulations among patients with ADHD: retrospective claims analysis of a managed care population. Curr Med Res Opin 2011; 27(Suppl 2):53-62.

Howell EM, Teich J. Variations in Medicaid mental health service use and cost for children. Adm Policy Ment Health 2008; 35(3):220-8.

Ingram S, Hechtman L, Morgenstern G. Outcome issues in ADHD: adolescent and adult long-term outcome. Ment Retard Dev Disabi Res Rev 1999; 5:243-50.

Marcus SC, Durkin M. Stimulant adherence and academic performance in urban youth with attention deficit/hyperactivity disorder. J Am Acad Adolesc Psychiatry 2011; 50(5):480-9.

Maternal and Child Health Bureau. EPSDT Overview. Updated July 2016(a). Available at http://mchb.hrsa.gov/maternal-child-health-initiatives/mchb-programs/early-periodic-screening-diagnosis-and-treatment. Accessed November 7, 2016.

Maternal and Child Health Bureau. Title V: Maternal and Child Health Services Block Grant Program. Updated July 2016(b). http://mchb.hrsa.gov/programs/titlevgrants/. Accessed November 7, 2016.

McCarthy S, Asherson P, Coghill D, et al. Attention-deficit hyperactivity disorder: treatment discontinuation in adolescents and young adults. Br J Psychiatry 2009; 194(3):273-7.

Medicaid and CHIP Payment Access Commission (MACPAC). Report to the Congress on Medicaid and CHIP. June 2012. Available at https://www.macpac.gov/wp-content/uploads/2015/06/2012-06-15_MACPAC_Report-1.pdf. Accessed November 7, 2016.

Palli SR, Kamble PS, Chen H, et al. Persistence of stimulants in children and adolescents with attention-deficit/hyperactivity disorder. J Child Adolesc Psychopharmacol 2012; 22(2):139-48.

Pelham WE, Foster EM, Robb JA. The economic impact of attention-deficit/hyperactivity disorder in children and adolescents. J Pediatr Psychol 2007; 32(6):711-27.

Rushton JL, Fant KE, Clark SJ. Use of practice guidelines in the primary care of children with attention-deficit/hyperactivity disorder. Pediatrics 2004; 114(1):e23-8.

Strickland B, McPherson M, Weissman G, et al. Access to the medical home: results of the National Survey of Children with Special Health Care Needs. Pediatrics 2004; 113(5 Suppl):485-92.

Swanson J, Arnold E, Kraemer H, et al. Evidence, interpretation, and qualification from multiple reports of long-term outcomes in the multimodal treatment study of children with ADHD (MTA): part II: supporting details. J Atten Disord 2008; 12(1):15-43.

Thompson JN, Varley CK, McClellan J, et al. Second opinions improve ADHD prescribing in a Medicaid-insured community population. J Am Acad Child Adolesc Psychiatry 2009; 48(7):740-8.

Visser SN, Danielson ML, Bitsko RH, et al. Trends in the parent-report of health care provider-diagnosed and medicated attention-deficit/hyperactivity disorder: United States, 2003-2011. J Am Acad Child Adolesc Psychiatry 2014; 53(1):34-46.

Zima BT, Bussing R, Tang L, et al. Quality of care for childhood attention deficit hyperactivity disorder in a managed care Medicaid program. J Am Acad Child Adolesc Psychiatry 2010; 49(12):1225-37.

Section 4. Measure Categories

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

Does the measure address this category?

a. **Care Setting – ambulatory:** Yes.
b. **Care Setting – inpatient:** No.
c. **Care Setting – other – please specify:** Yes; other community and public health settings.
d. **Service – preventive health, including services to promote healthy birth:** Yes.
e. **Service – care for acute conditions:** No.
f. **Service – care for children with acute conditions:** Yes.
g. **Service – other (please specify):** Yes; mental health specialty care.
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:** Yes.
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):** No.
u. **Other category (please specify):** Not applicable.

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

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

5.A. Research Evidence

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

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

In November 2011, the AAP published a new 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 represent 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 4: The primary care clinician should recognize ADHD as a chronic condition, and therefore, consider children and adolescents with ADHD as children and youth with special health care needs. Management of children and youth with special health care needs should follow the principles of the chronic care model and the medical home.**

The evidence base for this statement can be found in the AAP's ADHD Guideline (see Supporting Documents, Attachment 5.1). The following materials were prepared or consulted to describe the evidence base influencing the development of this measure:

American Academy of Pediatrics (AAP) ADHD Guideline (see Supporting Documents, Attachment 5.1) – This document, published in November 2011 by the American Academy of Pediatrics, provided a new standard of care for ADHD diagnosis and follow-up. 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. It also highlights the evidence base used for the AAP's recommendation of Action Statement 4.

Existing ADHD Measures (see Supporting Documents, Attachment 5.2) **–** 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; the document was utilized to inform measure topics and development.

ADHD Guidelines Review (see Supporting Documents, Attachment 5.3) **–** 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 Chronic Care Follow-up Measure Worksheet (see Supporting Documents, Attachment 5.4) **–** This document, prepared by our ADHD Quality Measures Leadership Team, provides a description of the proposed measure, as well the numerator and denominator statements.

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.

ADHD as a Chronic Condition

As included in the 2011 clinical practice guideline, the AAP suggests that primary care clinicians recognize ADHD as a chronic condition and, therefore, consider children with ADHD as CYSCHN (AAP, 2011). This is based on previously stated evidence that ADHD symptoms often may persist into adolescence and adulthood (Barkley, Fischer, Edelbrock, et al., 1990; Biederman, Faraone, Milberger, et al., 1996). Longitudinal research studies published as early as 1990 that studied the natural progression of ADHD, found that children with ADHD continued to manifest impaired functioning for as long as 8 years after diagnosis (Barkley, et al., 1990; Biederman, et al., 1996). Biederman et al. (1996) followed children for 4 years and found that at endpoint, 15 percent of children with ADHD had achieved remission.

Similarly, after 8 years of follow-up, Barkley et al. (1990) found that 71.5 percent of children with initial ADHD met the revised third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IIIR) criteria for ADHD with a mean number of 9 symptoms versus 1.5 symptoms in the control group. The AAP ADHD Clinical Practice Guideline also recommends that after medication titration is complete (if applicable), pediatricians should follow up with children diagnosed with ADHD at least twice per year for ADHD-related issues (AAP, 2011).

Children and Youth with Special Health Care Needs

In the late 1990s, the Federal Maternal and Child Health Bureau's Division of Services for Children with Special Health Care Needs (DSCSHCN) workgroup defined CSHCN as "[children] who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally." The workgroup went on to define "children at increased risk" as those exhibiting certain biological or environmental characteristics associated with a heightened probability of developing a chronic physical, developmental, behavioral, or emotional condition and "services of a type or amount beyond that required by children generally" was considered to include the use of routine health services that exceeds the requirements of most children (McPherson, Arango, Fox, et al., 1998).

The Medical Home

The AAP developed the medical home as a model of delivering primary care that is accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective to every child and adolescent. Medical homes address preventive, acute, and chronic care from birth into adulthood (AAP, 2002). In addition to many other services, the medical home provides primary care, including acute, chronic, and preventive services such as immunizations, growth and developmental assessments, appropriate screening, and patient and parent counseling about health, nutrition, safety, parenting, and psychosocial issues. Likewise, the medical home provides developmentally appropriate and culturally competent health assessments and counseling to ensure successful transitioning to adult-oriented health care (AAP, 2004).

Chronic Care Model

The Chronic Care Model is designed to help practices improve patient health outcomes by changing the delivery of ambulatory care through interrelated system changes meant to make patient-centered, evidence-based care easier to accomplish (Barr, Robinson, Marin-Link, et al., 2003). Patients of physicians who are participating in a chronic care model have been found to be more knowledgeable, use recommended therapies more frequently, visit the emergency department less often, and experience 35 percent fewer days in the hospital (Asch, Baker, Keesey, 2005). Further, interventions that result in improved disease control reduce total health care costs for patients and result in an increase in quality-adjusted life years (QALYs) at a price considered to be cost-effective from a societal perspective (Huang, Zhang, Brown, et al., 2007).

Impact of Follow-up on Treatment Adherence

A study of children 6 to 18 years of age who had recently initiated ADHD medication found that 79 percent of those children were still taking their medication at least 1 year later, and that

parents of those children were more likely to have discussed the risks and benefits of ADHD medication with primary care providers (p=.03) and were less likely to report psychological side effects (p>.001) (Toomey, Sox, Rusinak, et al., 2012). Increased parental knowledge about ADHD and a good relationship with the health provider has been found to increase willingness to initiate medication use, while the provider's ability to clarify treatment preferences, discuss available options, and maintain a treatment alliance with the family is crucial to treatment longevity (Charach, Fernandez, 2013).

A study of parents with a child on ADHD medication found that 21 percent of parents reported that their child had discontinued ADHD medication. Of those who discontinued, 42 percent did so within 1 month of initiation, 33 percent within 2 to 3 months, 21 percent within 4 to 6 months, and 4 percent in greater than 6 months. Medication side effects (62 percent) and minimal medication effect (34 percent) were the most common reasons provided for discontinuation (Toomey, et al., 2012). Reported side effects included loss of appetite, sleep, psych (mood changes, irritability, depression, and personality changes), tics, and other. Further, 26 percent of side effects were reported as very severe, 26 percent as severe, 35 percent as moderate, and 13 percent as mild. Safety information for stimulant medications approved for ADHD treatment by the U.S. Food and Drug Administration also notes that appetite suppression and insomnia are usually of mild severity and are more common than the more severe adverse effects such as tics and bizarre behaviors. In addition, depending on medication prescribed, headaches, dizziness, and stomachaches may occur (Wolraich, McGuinn, Doffing, 2007).

References

American Academy of Pediatrics. Medical Home Initiatives for Children with Special Needs Project Advisory Committee. The Medical Home. Pediatrics 2002; 110(1):184-6.

American Academy of Pediatrics. Medical Home Initiatives for Children with Special Needs Project Advisory Committee. Policy statement: organizational principles to guide and define the child health care system and/or improve the health of all children. Pediatrics 2004; 113(5):1545-47.

American Academy of Pediatrics. Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Pediatrics 2011; 128:1007-22.

Asch SM, Baker DW, Keesey JW, et al. Does the collaborative model improve care for chronic heart failure? Med Care 2005; 43(7):667-75.

Barkley R, Fischer M, Edelbrock C, et al. The adolescent outcome of hyperactive children diagnosed by research criteria: I. An 8-year prospective follow-up study. J Am Acad Child Adolesc Psychiatry 1990; 29(4):546-57.

Barr VJ, Robinson S, Marin-Link B, et al. The expanded Chronic Care Model: an integration of concepts and strategies from population health promotion and the Chronic Care Model. Hosp Q 2003; 7(1):73-82.

Biederman J, Faraone S, Milberger S, et al. A prospective 4-year follow-up study of attention-deficit hyperactivity and related disorders. Arch Gen Psychiatry 1996; 53:437-46.

Charach A, Fernandez R. Enhancing ADHD medication adherence: challenges and opportunities. Curr Psychiatry Rep 2013; 15(7):371.

Huang ES, Zhang Q, Brown SE, et al. The cost-effectiveness of improving diabetes care in U.S. federally qualified community health centers. Health Serv Res 2007; 42(6 Pt 1):2174-93.

McPherson M, Arango P, Fox H, et al. A new definition of children with special health care needs. Pediatrics 1998; 102(1):137-40.

Toomey SL, Sox CM, Rusinak D, et al. Why do children with ADHD discontinue their medication? Clin Pediatr 2012; 51(8):763-9.

Wolraich M, McGuinn L, Doffing M. Treatment of attention deficit hyperactivity disorder in children and adolescents: safety considerations. Drug Saf 2007; 30(1):17-26.

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.

A follow-up measure to enhance the current Initial Core set ADHD Follow-up measure was developed and specified, based on AAP's 2011 ADHD Guideline and consensus of a broad range of ADHD experts and stakeholders, who were members of the Pediatric Measurement Center of Excellence Expert Workgroup. The Truven MarketScan database, which includes administrative claims from both Medicaid/CHIP and commercial claims, was used to iteratively test the enhanced ADHD Follow-up Care measure and assess reliability.

For each measure component (numerator, denominator, and exclusions), the specifications were tested through implementation. Results were reviewed and reliability was assessed based on comparison with the total ADHD population in Medicaid/CHIP and commercial insurance,

respectively. The reliability and performance of the enhanced ADHD Follow-up measure was also compared with the Initial Core ADHD Follow-up measure.

Results of the analyses of the measure led to substantial changes to the specifications of the initially proposed measure. The first version of the measure (see Supporting Documents, Attachment 6.1) included three components. Each measure component was investigated. After the initial diagnosis for ADHD, the following elements were required: (1) a follow-up visit with an ADHD diagnosis code within 45 days; (2) three total visits with an ADHD diagnosis code within 365 days; and (3) assessments of ADHD symptoms using a validated diagnostic tool (CPT code 96110) within 365 days.

Follow-up Visit Definition and Specification

The Initial CHIPRA Core Measure focuses on children 6-12 years old with a follow-up visit 30 days post-ADHD medication prescription date, putting the focus of the measure on medication monitoring. In order to qualify for the measure, a follow-up visit with a prescribing provider (follow-up visit code and DEA number to represent the provider has prescribing privileges) and a medication prescription code must be documented. A substantial number of children and visits in Federally Qualified Health Centers are missed when using this methodology, as DEA numbers are restricted to individual-level providers; institutional providers do not have a DEA number. Children ages 4-5 and 13-18 with an ADHD diagnosis are not included in this measure.

The proposed enhanced ADHD Follow-up Measure was focused on children 4-18 years of age who had at least three follow-up visits in the year (365 days) following ADHD diagnosis, with one visit within 45 calendar days after initial diagnosis. The follow-up ADHD specific-visit required an Evaluation and Management (E&M) visit code, ADHD diagnosis code, and a 96110 code for the use of a standardized tool. This specified the elements of recommended care and bypassed the need for a DEA number, which had caused all FQHC patients to drop out of the initial measure.

CPT Code 96110

Analysis: CPT code 96110 may be used to document the use of a validated, standardized screening tool to assess ADHD symptoms in follow-up visits as an enhancement to the Initial Core ADHD Follow-up measure. Use of CPT code 96110 was evaluated and found not to be reliable or valid as a method for assessment of standardized tool use (see Supporting Documents, Attachment 6.2). Only some States use this code for reimbursement, and many physicians do not use this code when not reimbursed.

Conclusion: CPT code 96110 is underutilized in administrative claims for the use of a standardized tool and, at this time, should not be used in the specification of an ADHD measure for accountability. Based on these results, the requirement to have follow-up visits with an assessment of ADHD symptoms using a validated diagnostic tool was eliminated from the proposed enhanced measure (see Supporting Documents, Attachment 6.3).

Assessment of Follow-up Visit Parameters

Analysis: To assess the parameters of follow-up visits (one within 45 days and two additional visits within 1 year), date of initial diagnosis must be identified. A longer clean period (then length of the period of enrollment required prior to the measurement year) was proposed and tested in the Truven MarketScan database by extending the denominator look-back period to 1 year to identify any prior diagnoses. The measure required 16 months of eligibility, and approximately 60 percent of the total population was lost, leading to limitations in the reliability and validity of the measure.

The reliability and performance of different look-back periods was tested by assessing the loss percentage of enrollees upon extending the continuous coverage requirement incrementally (14 months, 16 months, 19 months, 22 months, and 24 months) (see Supporting Documents Attachment 6.4). The results showed relatively stable denominator numbers, with a continuous reduction over time in both Medicaid and commercial populations. The 4-month clean period was not adequate to define an initial diagnosis. In the Medicaid population, 78 percent of the enrollees in the denominator had an ADHD diagnosis prior to the 4-month clean period, and 66 percent had one >240 days prior.

Conclusion: In the administrative claims, it was difficult to reliably determine the initial diagnosis of ADHD in order to assess appropriate visit timeframes following diagnosis. Attempts to change the length of the look-back period were not successful for reliably determining the initial ADHD diagnosis to specify follow-up time ranges. Many children diagnosed with ADHD potentially eligible for inclusion in the measure were dropped out of the measure with an extended look-back period, making the specification of initial diagnosis and assessment of the visit timeframes unreliable.

Initial Diagnosis and Look-back Period

In both the Initial CHIPRA Core ADHD Follow-up measure and the proposed enhanced ADHD Follow-up measure, a high percentage of children had a prior visit with an ADHD diagnosis code before the look-back period. Requiring a longer look-back period reduced the reliability of the measure by excluding too many potentially eligible children from the measure (see Supporting Documents, Attachment 6.5). As a result, the measure specifications were changed to assess continuous chronic care follow-up for ADHD. This change was conceptually consistent with the 2011 AAP ADHD Guideline recommended care and significantly improved the reproducibility of this measure in administrative claims-based data systems.

ADHD Chronic Care Follow-up

Analysis: The new measure specifications were tested, defining the coverage period as complete coverage in the measure year and at least 1 day of coverage in the prior year to allow for the broadest pool of patients possible. In order to meet the measure, an enrollee must have a valid E&M visit and ADHD diagnosis code. The proposed enhanced Follow-up measure requirements were as follows: 1) continuous enrollment period of all the days of one measurement year and 1 or more days in the prior year; 2) an ADHD diagnosis code at an outpatient physician visit in the identification year with a follow-up E&M visit code in the measurement year.

Conclusion: In the administrative claims, it was difficult to reliably determine the initial diagnosis of ADHD in order to assess appropriate visit timeframes following diagnosis. Attempts to change the length of the look-back period were not successful for reliably determining the initial ADHD diagnosis to specify follow-up time ranges. Many children diagnosed with ADHD potentially eligible for inclusion in the measure were dropped out of the measure with an extended look-back period, making the specification of initial diagnosis and assessment of the visit timeframes unreliable.

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Conclusion: When an E&M visit and an ADHD diagnosis code in the measurement year were considered, approximately 63 percent of Medicaid enrollees and 49 percent of commercial enrollees who were in the denominator met the measure. The performance of these measure specifications was consistent with performance in the literature and expert opinion. Codes related to well-child and immunization visits were excluded (see Supporting Documents, Attachment 6.6).

Final Measure performance and reliability testing results can be found in Attachment 6.8 (see Supporting Documents). The results of ADHD Chronic Care Follow-up demonstrated that when implemented, the measure results were in the range of what would be expected from current gaps in ADHD care research and expert opinion.

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 face validity by having the topic, language, specifications, and results reviewed by an Expert Workgroup that included a broad range of stakeholders. The PMCoE ADHD Measures Leadership Team convened a 24-member, multi-stakeholder advisory panel with representation from a wide range of stakeholders, including consumers, pediatricians, family physicians, adolescent medicine physicians, psychiatrists, teachers, State Medicaid agencies, and researchers. Input from these stakeholders was instrumental in ensuring that this measure would address the needs of children diagnosed with ADHD and respond to the needs of children in Medicaid. Throughout the measure development process, we presented the ADHD measures to this Expert Workgroup technical panel and the person within Illinois Health and Family Services (and the Illinois State Medicaid agency) who oversees quality measure use and application. We solicited feedback on importance, relevance, understandability, and usability.

Comments from the person within Illinois Health and Family Services (and the Illinois State Medicaid agency) who oversees quality measure use and application: "Reviewing the face validity, the measure is definitely do-able." In addition, some minor edits to the measure language were suggested from an entity that would attempt to program the measure as written. These were applied in the finalized version of the measure.

Additional representative comments from the review of this measure from this ADHD Expert Workgroup technical panel included:

- "Overall, the measure and specifications are good!"
- "I have reviewed these and have no edits or suggestions for revision. As a non-physician, I am somewhat limited in commenting on some aspects of these materials (e.g., visit codes), but overall the measure and data collection procedures make perfect sense to me. And, if I am interpreting the data correctly, it is sobering to note that a large percentage of children and adolescents with ADHD are not receiving follow-up care. This is not surprising, but is sobering nonetheless."
- "While I am an educator and do not have responsibilities of care as that of the primary care clinician, I do feel strongly that the ADHD treatment follow-up care should be the focus with the understanding that ADHD is a chronic condition. If treatment (which may change over time) is not sustained, negative outcomes are certainly more likely to occur."
- "The measure and documentation seem appropriate—I would say that the measure would be a minimum standard and that optimal care would require more than one visit a year."
- "…..everything looks good to me. Congratulations."
- "I agree with the intention to use a chronic care model in order to enhance treatment adherence and improve the quality of follow up care. It is sobering to see how low the percentages are for any one follow up visit in 1 year (63 percent Medicaid, 49 percent Commercial)."

Aside from just the numbers of children in each component, we also conducted complementary analyses to measure the validity. We implemented the existing Initial Core Measure of ADHD

and compared it to our proposed version (see Supporting Documents, Attachments 6.8-6.9). Since the measure requires a follow-up visit with an ADHD diagnosis code, we examined the most frequent diagnosis codes for visits without an ADHD code to determine if there was a pattern for these non-ADHD related visits (see Supporting Documents, Attachment 6.11). We also examined the likelihood that children met the follow-up requirement with a psychiatric E&M visit vs. a non-psychiatric visit (see Supporting Documents, Attachment 6.6-6.7).

Questions considered during face validity assessment of this measure included (followed by appropriate responses):

(1) How strong is the scientific evidence supporting the validity of this measure as a quality measure?
Answer: The scientific evidence is determined to be strong, Level B, according to the 2011 AAP ADHD Guideline, which recommends pediatric ADHD patients be considered as having a Chronic Condition and treated using the Chronic Care Model, requiring regular follow-up visits to ensure presence of the condition and monitor treatment plans.

(2) Are all individuals in the denominator equally eligible for inclusion in the numerator?
Answer: Yes, except for those in the exclusion categories, which include: Mood Disorders (296.xx), Autism (299.xx), Anxiety (300.xx), Substance Abuse (303.xx, 304.xx, 305.xx), and Anorexia (307.1).

(3) How well do the measure specifications capture the event that is the subject of the measure?
Answer: Results of testing of the new specifications of the enhanced ADHD Follow-up measure to assess Chronic Care Follow-up were strong (see Supporting Documents, Attachment 6.8). High level results include that 63 percent of Medicaid enrollees and 49 percent of commercial enrollees who had sufficient coverage (complete coverage in the measure year and at least 1 day of coverage in the prior year) and were diagnosed with ADHD in 2010 had any valid E&M visit with ADHD diagnosis code in the measurement year.

A question arose regarding the inclusion of psychiatric codes in the E&M code list specified in the measure. A list of psychiatric codes was provided to ensure that these were included: 90804-90807; 90862-90863 (medication management).

Data analyses results using the Truven MarketScan database determined that the measure has strong face validity for the measurement of ADHD ChronicCare Follow-up, both for the Medicaid/CHIP population and in the commercial insurance population.

(4) Does the measure provide for fair comparisons of the performance of providers, facilities, health plans, or geographic areas?
Answer: As specified, the measure is simple to construct and should provide a fair comparison of health plans and geographic areas.

(5) Does the measure allow for adjustment of the measure excluding patients with rare performance-related characteristics when appropriate?

Answer: The specified exclusion criteria already take this issue into account; additional criteria should not be necessary.

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

The ADHD Chronic Care Follow-up measure was tested in multiple racial/ethnic groups using the Medicaid data in the Truven MarketScan database. For results, see the Supporting Documents, Attachments 7.1-7.5. There were sufficient numbers of cases to assess disparities according to the Affordable Care Act Classification for the following race/ethnicity categories: white, black, Hispanic, other (American Indian or Alaska Native Asian or Pacific Islander; Missing/Unknown; Native Hawaiian or Other Pacific Islander; other) by plan or geography. Results of these analyses for children diagnosed with ADHD in the Medicaid covered population indicate that black children are slightly more likely to receive Chronic Care Follow-up than non-Hispanic white children (65.3 percent vs. 63.6 percent), but Hispanic (53.2 percent) and other minority children (57.4 percent) are less likely to receive appropriate Chronic Care Follow-up than non-Hispanic white children.

Although black children are more likely to be in the numerator than non-Hispanic white children, they are less likely to be in the measure denominator (9 percent vs. 14 percent), and the other groups are also less likely (4 percent for Hispanics and 11 percent for other minorities). All differences are statistically significant and represent disparities in care. However, bias may be introduced from the artificial loss of some potentially eligible children diagnosed with ADHD in the construction of the measure.

7.B. Special Health Care Needs

In the 2011 and 2001, American Academy of Pediatrics (AAP) ADHD Clinical Guidelines, ADHD is determined to be a Chronic Condition to be treated using the Chronic Care Model in the patient's Medical Home. Children diagnosed with ADHD, as ADHD is a chronic condition, are considered Children and Youth with a Special Health Care Needs (CYSHCN) and as such the results of these analyses report on disparities for Chronic Care Follow-up for these ADHD diagnosed CYSHCN. See above and the Supporting Documents, Attachments 7.1-7.5, for disparities in care by race and ethnicity for children diagnosed with ADHD.

7.C. Socioeconomic Status

The measure was tested in both commercial and Medicaid populations (see Supporting Documents, Attachment 7.6) as a proxy for socioeconomic status (SES). Since there were no other SES variables available in the MarketScan data, if SES information is available and there are sufficient numbers, then there are no additional issues with measuring SES-based disparities.

7.D. Rurality/Urbanicity

We had limited access to geographic identifiers in the MarketScan database so we did not measure urban/rural differences. However, if the information is available and there are sufficient numbers, then there are no additional issues around measuring urban/rural disparities.

7.E. Limited English Proficiency (LEP) Populations

Data on language proficiency was not available in the Truven MarketScan dataset. If it is available and there are sufficient numbers, then there are no additional issues around measuring LEP disparities.

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?

Administrative Claims Data: The data elements required for this measure currently exist at this time and are in widespread use. Testing in the Truven MarketScan Database showed that the specifications defining measurement are readily available and can be easily retrieved. This includes identifying the denominator population, which is any pediatric patient diagnosed with ADHD, as well as identifying those in the numerator, which requires a follow-up visit during one calendar year.

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?

Administrative Claims Data: Recommendations for future changes include monitoring the application and use of the 96110 code for billing for the use of a standardized tool in assessment of ADHD symptoms. If this billing code is used in more States and more States reimburse for 96110, the 96110 code could be applied to enhance the current CHIPRA Initial Core measure for ADHD Follow-up and the new enhanced ADHD Chronic Care Follow-up measure by adding this component of ADHD care quality to the assessment of the measure in administrative claims data.

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.

Not applicable.

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

Not applicable.

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

Not applicable.

Section 9. Levels of Aggregation

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

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

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

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

State level* Can compare States

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

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

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

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

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

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
For State programs that do not reimburse for mental health diagnoses codes, they may have trouble evaluating the population if physicians are not incentivized to mark a mental health diagnosis, like ADHD, in a primary field. This means that patients eligible for inclusion in the measure will likely be left out of the denominator if they are coded for another office visit reason.

Other geographic level: Can compare other geographic regions (e.g., MSA, HRR)

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

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

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

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

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

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

Medicaid or CHIP Payment model: Can compare payment models (e.g., managed care, primary care case management, FFS, and other models)

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

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

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

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

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

Unintended consequences: **What are the potential unintended consequences of reporting at this level of aggregation?**
When comparing Commercial to Medicaid insured patient populations, it was noted that there may be a higher frequency of psychiatric codes for follow-up visits in Medicaid versus the Commercial population.

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

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

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

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

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

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

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

Provider Level
Individual practitioner: Can compare individual health care professionals

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

No.

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

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

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

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

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

Provider Level
Hospital: Can compare hospitals

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

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

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

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

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

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

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

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

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

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

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

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

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

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).

The PMCoE ADHD Measures Leadership Team convened the PMCoE Expert Workgroup, a multi-stakeholder advisory panel with representation from a wide range of stakeholders, including consumers, pediatricians, family physicians, adolescent medicine physicians, psychiatrists, teachers, State Medicaid agency personnel, ADHD clinical experts, and researchers. Throughout the measure development and testing process, we presented the ADHD measure specification and testing results to this Expert Workgroup and solicited feedback on importance, relevance, understandability, and usability.

The PMCoE Expert Workgroup reviewed the ADHD Chronic Care Follow-up measure description, specifications, and implementation results. Input from these stakeholders was instrumental in ensuring that this measure would address the needs of children diagnosed with

ADHD and respond to the needs of children with an ADHD diagnosis in Medicaid/CHIP. See results presented in Section 6.b. on face validity.

The concept of chronic care follow-up was familiar and understandable to all queried and was considered a good focus and an enhancement to pediatric ADHD care quality measurement. The use of the ADHD diagnosis code with the evaluation and management codes to designate a visit related to ADHD follow-up visit was determined consistent with practice and would be understandable to clinicians yielding understandable results.

The exclusion of children with significant comorbidities was understandable to some, but others believed that their inclusion would better represent care as provided. While the use of a validated, standardized tool in the follow-up visit to assess symptoms was considered an enhancement. However, the fact that it is inconsistently used and not ever used in some States made removal of the 96110 code from the specifications of the measure understandable.

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.

PMCoE's development and testing of this measure focused on reporting at the State/health plan levels using administrative claims data only.

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?

Not applicable.

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.

Not applicable.

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)?

No.

If yes, please describe.

Not applicable.

11.E. Health IT Calculation

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

Not applicable.

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?

Not applicable.

Section 12. Limitations of the Measure

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

The measure development specification and testing process, including feedback from the PMCoE ADHD Expert Workgroup and iterative review of data queries by our Expert Workgroup co-chairs, enabled the identification of potential limitations of the proposed measure. For the ADHD Chronic Care Follow-up measure, we identified several limitations, as follows.

The first limitation is that this measure uses administrative claims data and is therefore subject to all issues related to this type of measure—that is, long continuous coverage requirements, lack of sufficient clinical detail, incomplete documentation of all diagnosis codes, and so on. More specifically, the original version of the measure tried to capture the full set of recommended elements for ADHD Follow-up care, but due to the limitations of administrative data, it was determined that it is not currently possible to translate all these elements into a measure. Even in the measure's final form, requiring that an ADHD diagnosis code be present at a follow-up visit may exclude potentially eligible ADHD-diagnosed patients if the provider does not document that diagnostic code. Also, the documentation of the ADHD diagnostic code and an Evaluation and Management code does not guarantee that the proper treatment protocol was followed; a known limitation of administrative claims data.

A second limitation involves State programs that do not reimburse for mental health diagnosis codes; evaluating the population may be problematic if physicians are not incentivized to mark a mental health diagnosis, like ADHD, in a primary field. This means that patients eligible for

inclusion in the measure will likely be left out of the denominator if they are coded for another office visit reason.

A third limitation involves the process for identifying the denominator. Any child with an ADHD diagnosis during the identification year is included in the denominator, so children with longer coverage periods are more likely to be included.

A fourth potential limitation involves the lack of a specified process for attributing children to specific physicians or practices within the specifications of the measure, which means that the measure can only be used to evaluate performance based on insurance status and State. However, some claims databases attribute enrollees to specific physicians, and there are also algorithms that can be used to attribute enrollees. Creating or recommending a specific attribution process was beyond the scope of work for this project, but if implementers have a process for attributing enrollees, then this measure can be used to evaluate physicians/practices if there are sufficient numbers.

An additional limitation emanates from the lack of specific standards for ADHD chronic care follow-up. Clinically, it was determined that a minimum of one visit per year would be necessary for chronic care follow-up. However, some ADHD-diagnosed patients may need more active follow-up, depending on the severity of symptoms, side-effects, and requirements for adherence. This would not be captured in this measure.

Results of testing and expert and stakeholder consensus led to the conclusion that the benefits of this measure, as specified, outweigh the potential limitations, and the limitations do not increase the burden or reporting or report the data in a biased way.

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.

Background on Measure Development

In early 2009, Congress passed the Children's Health Insurance Program Reauthorization Act (CHIPRA, Public Law 111-3). As part of this law, the CHIPRA Pediatric Quality Measures Program (PQMP) was developed to establish a set of measures to assess the quality of pediatric care. An Initial Core set of pediatric measures was developed, and 24 measures were selected for recommended voluntary use by State Medicaid Programs. In addition, seven Centers of Excellence, including the Pediatric Measurement Center of Excellence (PMCoE), were funded by the Agency for Healthcare Research and Quality (AHRQ) to enhance and strengthen this Initial Core set of pediatric quality measures.

PMCoE was assigned enhancement of the Initial Core set, Attention Deficit Hyperactivity Disorder (ADHD) Follow-up measure. An ADHD Measures Leadership Team was established and reviewed in detail the level of evidence for the current 2011 AAP ADHD Guideline, existing ADHD measures, and associated peer-reviewed literature related to ADHD diagnosis, follow-up, and treatment. This review was used to facilitate the construction of an ADHD proposed measure set for review and discussion by the PMCoE ADHD Expert Workgroup, a broad range of ADHD experts and stakeholders. Selection was based on expertise and experience in many different areas and included clinical and caregiver perspectives as well as methodology, measure testing, and health information technology expertise (see Supporting Documents, Attachment 13.1). PMCoE used the American Medical Association (AMA) Physician Consortium for Performance Improvement® (PCPI™) Methodology for measure development and testing.

ADHD Importance

ADHD is a highly prevalent condition among pediatric patients. It is estimated that 5 million children (9 percent of this group) have been diagnosed with ADHD, and that rates of ADHD diagnosis increased an average of 5.5 percent per year from 2003 to 2007 (Bloom, Cohen, Freeman, 2010). The highest rates of parent-reported ADHD diagnosis were noted among children covered by Medicaid and children of racial and ethnic minority groups (Visser, Danielson, Bitsko, 2014).

ADHD is costly, and it has been reported that only 50 percent of children with ADHD seen in practice settings obtain care that matches guidelines of the American Academy of Child and Adolescent Psychiatry (Hodgkins, Sasane, Christensen, et al., 2011).

The 2011 AAP ADHD Guideline designated ADHD as a chronic condition, and patients diagnosed with ADHD were to be considered as Children and Youth with Special Health Care Needs (CYSHCN), treated in a Medical Home context, and be seen at least annually (AAP, 2011).

Measure Testing

In 2013, work on the development, specification and testing of an enhanced ADHD Follow-up measure began. Testing results for the enhanced ADHD Chronic Care Follow-up measure (see Supporting Documents, Attachment 13.2) led the team to develop and specify a measure that is easily constructed, with acceptable reliability and validity, and focuses on the 2011 AAP ADHD Guideline Action Item #4, regarding Chronic Care for patients diagnosed with ADHD.

Conclusion

This ADHD Chronic Care Follow-up measure is an enhancement to the Initial Core set ADHD Follow-up Measure, which is built on assessment of ADHD medication use and requires a DEA number for the clinician visit. Given that the construction of the current Initial Core ADHD Follow-up measure is focused on medication treatment alone, 4-5-year-old children receiving Behavior Treatment (as first-line treatment) may fall out of the measure. Also, because a DEA number is associated with an individual clinician and not a clinic, and Federally Qualified Health Centers (FQHC) cannot bill using a DEA number, children seeking care at FQHCs who might otherwise be eligible may fall out of the measure as well.

References

American Academy of Pediatrics. Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Pediatrics 2011;128(5):1-16.

Bloom B, Cohen RA, Freeman G. Summary health statistics for U.S. children: National Health Interview Survey, 2009. National Center for Health Statistics. Vital Health Stat 10(247); 2010. Available at http://www.cdc.gov/nchs/data/series/sr_10/sr10_247.pdf. Accessed November 3, 2016.

Hodgkins P, Sasane R, Christensen L, et al. Treatment outcomes with methylphenidate formulations among patients with ADHD: retrospective claims analysis of a managed care population. Curr Med Res Opin 2011; 27(Suppl 2):53-62.

Visser SN, Danielson ML, Bitsko RH, et al. Trends in the parent-report of health care provider-diagnosed and medicated attention-deficit/hyperactivity disorder: United States, 2003-2011. J Am Acad Child Adolesc Psychiatry 2014; 53(1):34-46.

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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