

***Attention Deficit Hyperactivity Disorder***  
**Performance Measurement Set**

Supported by AHRQ/CHIPRA-PQMP

Proposed by the ADHD Expert Work Group (listed in *Appendix A*)

***In collaboration with the Pediatric Measurement Center of Excellence (PMCoE),  
comprising the following organizations:***

Medical College of Wisconsin  
American Academy of Pediatrics (AAP)  
American Board of Medical Specialties  
American Board of Pediatrics  
American Medical Association (AMA)  
Chicago Pediatric Quality and Safety Consortium  
Northwestern University Feinberg School of Medicine

**Status: *DRAFT measures***

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### *ADHD*

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## **Executive Summary: Toward Improving Outcomes for ADHD**

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. In addition, seven Centers of Excellence were funded by the Agency for Healthcare Research and Quality (AHRQ) to extend, improve, add to and strengthen this Initial Core set of pediatric quality measures as part of the CHIPRA PQMP. The Pediatric Measurement-Center of Excellence (PM-CoE) comprised of the Medical College of Wisconsin (Lead), Northwestern University, Feinberg School of Medicine (NU-FSM), the American Medical Association (AMA), the American Academy of Pediatrics (AAP), the American Board of Pediatrics (ABP), and the American Board of Medical Specialties (ABMS) was funded by AHRQ to develop, extend and test pediatric quality measures. The proposed PM-CoE measure development and testing method applies the American Medical Association (AMA)-convened Physician Consortium for Performance Improvement<sup>®</sup> (PCPI<sup>™</sup>) (AMA-PCPI) methodology.

### Reasons for Prioritizing Improvement in ADHD *High Impact Topic Area*

An article in the Journal of Consulting and Clinical Psychology (2011) outlines the results of a study by Bruchmuller et al, in which the researchers examine trends in diagnosis of ADHD. The researchers utilized a 2 series of 4 different case vignettes for the study design. Though the research was carried out in Germany, this study may have relevant implications to the understanding of whether ADHD is over-diagnosed in the United States. For the first vignette, where all criteria were met for ADHD diagnosis, approximately 79% of the therapists diagnosed ADHD. Nearly 10% stated they did not have enough information and just over 4% indicated 'suspected ADHD'. The remaining 7% of clinicians assigned a diagnosis other than ADHD, most often an adjustment disorder. The researchers also suggest that misdiagnosis of ADHD can lead to inappropriate medication recommendations, and this study provided evidence that medication was far more likely to be a recommended treatment when the diagnosis of ADHD was assigned.<sup>12</sup>

According to the statistics provided by the Centers for Disease Control and Prevention (CDC)<sup>1</sup>, for children ages 3-17 years of age:

- 5 million children (9% of this age group) have ADHD.
- Boys (12%) continue to be more than twice as likely than girls (5%) 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% vs. 21%).

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 might be associated with side effects and symptoms effecting morbidity.<sup>2</sup>

About 50% of children with ADHD seen in practice settings obtain care that matches guidelines of the American Academy of Child and Adolescent Psychiatry. Physicians identify critical barriers to service provision for these children, namely lack of pediatric specialists, insurance coverage, and waiting lists.

The aforementioned trends in treatment and physician variations in service delivery suggest there may be major gaps between the research base and clinical practice.<sup>3</sup>

A survey by Gardner, et al suggests that children treated for ADHD require additional follow-up visits to measure the impact of medication and support ongoing treatment. The survey included families of children 4 to 15 years of age who had been diagnosed with ADHD. In the initial office visit, parents and clinicians completed questionnaires, and six months after the initial visit, parents completed a second questionnaire. Children identified with ADHD, including those prescribed medication, had a median of only one follow-up visit with a health specialist. Researchers noted that this is too few visits to allow for medication adjustment or promote adherence to treatment.<sup>4</sup>

### **ADHD Work Group Recommendations**

<b>Measure #1:</b> Accurate ADHD Diagnosis
<b>Measure #2:</b> Follow Up and Symptom Management (Composite)
<b>Measure #3:</b> Behavior Therapy as First-Line Treatment for Preschool Aged Children

#### Other Potential Measures

The Work Group considered several other potential measures, though ultimately determined that they were not appropriate for inclusion in the measure set.

#### Technical Specifications

There are several data sources available for collecting performance measures; generally different data sources require different sets of measure specifications, due to the structure of the systems storing the data. The American Medical Association (AMA)- convened Physician Consortium for Performance Improvement (the PCPI™), recognizes that Electronic Health Records (EHRs) are the state of the art for clinical encounters and is focusing significant resources and expertise toward specifying and testing measures within EHRs, as they hold the promise of providing the relevant clinical data for measures and for providing feedback to physicians and other health care providers that is timely and actionable.

The type of specifications provided for this measurement set are aligned with the PCPI plans to focus on the development of EHR specifications for new measure development projects.

Additional detailed information regarding PCPI Specifications Methodology is included in the Technical Specifications section of this document.

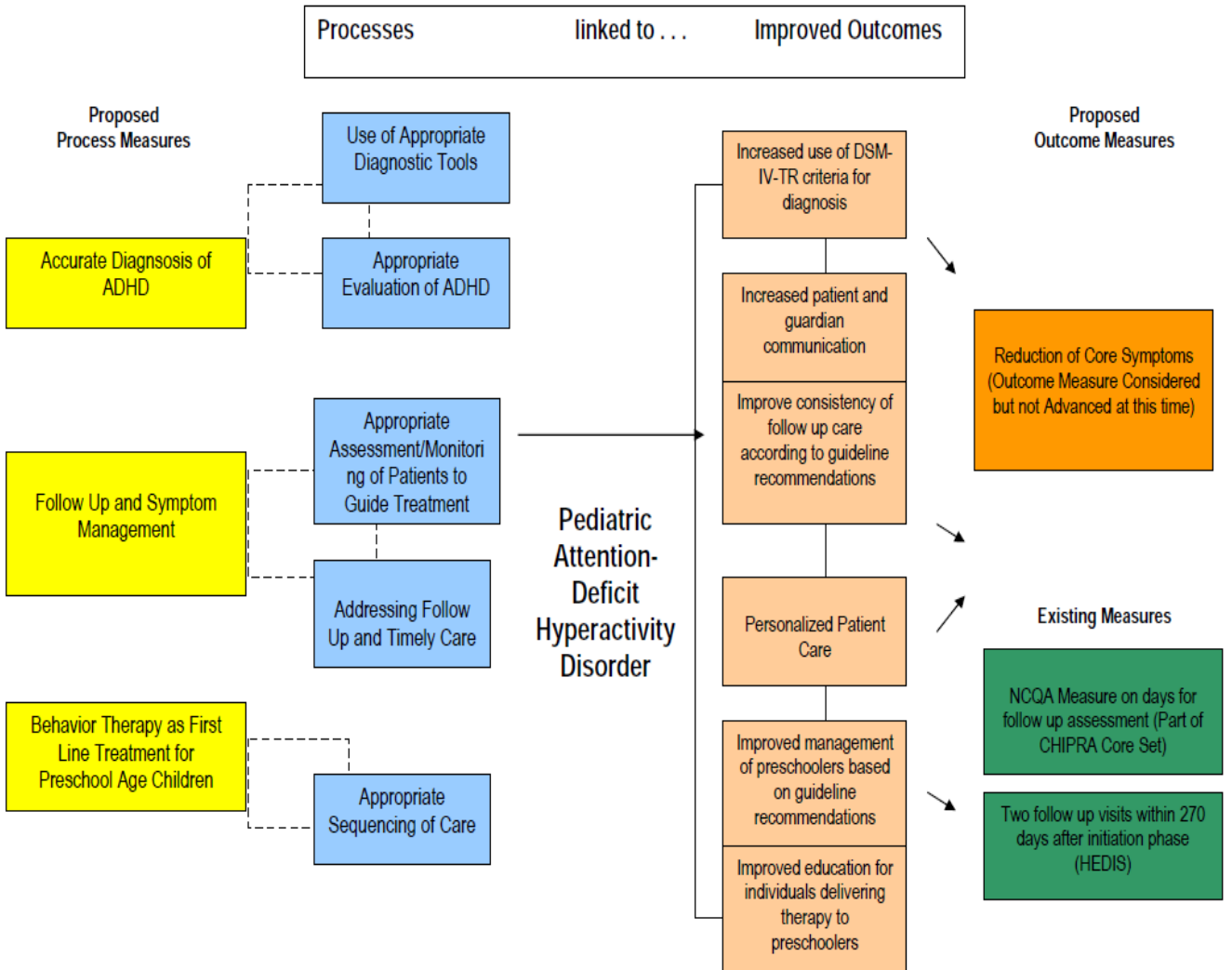
Another venue for advancing this work in EHR data measurement is the AMA/NCQA/HIMSS Electronic Health Record Association (EHRA) Collaborative (see [www.ama-assn.org/go/collaborative](http://www.ama-assn.org/go/collaborative)).

Testing and Implementation of the Measurement Set While these measures were not fully tested as part of an electronic health record, these measures were tested to determine initial feasibility and guidance for implementation using Electronic Medical Record data sources.

The testing was completed within the Chicago Pediatric Quality and Safety Consortium, a testing network comprised of 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.

Settings: Ambulatory Care, Behavioral Health Care, Community Health Care





## Purpose of Measurement Set

The PM-CoE was assigned, among other measures, to develop and extend pediatric quality measures for Attention Deficit Hyperactivity Disorder (ADHD). An ADHD Measures Leadership Team was established handled by Donna Woods, EdM, PhD from NU-FSM and included Mark Antman, DDS, and Molly Siegel, MS from the AMA; Fan Tait, MD, 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. The Work Group aimed to develop a comprehensive set of measures that support the efficient delivery of high quality health care in each of the Institute of Medicine's (IOM) six aims for quality improvement (safe, effective, patient centered, timely, efficient, and equitable).

## Importance of Topic

### *Prevalence*

- According to the statistics provided by the Centers for Disease Control and Prevention (CDC)<sup>1</sup>, for children ages 3-17 years of age:
  - 5 million children (9% of this age group) have ADHD.
  - Boys (12%) continue to be more than twice as likely than girls (5%) 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% vs. 21%).
- In a study by Visser et al., researchers found that in 2007, the estimated prevalence of parent-reported ADHD (ever) among children aged 4–17 years was 9.5%, representing 5.4 million children. Of those with a history of ADHD, 78% (4.1 million, or 7.2% of all children aged 4--17 years) were reported to currently have the condition. Of those with current ADHD, nearly half (46.7%) had mild ADHD, with the remainder having moderate (39.5%) or severe (13.8%) ADHD. ADHD (ever) was more than twice as common among boys as girls (13.2% versus 5.6%). High rates of ADHD (ever) were noted among multiracial children (14.2%) and children covered by Medicaid (13.6%).<sup>2</sup>
- Nearly one in 10 children aged 4–17 years 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% of children aged 6–17 years) based on annual data from the 2004–2006 National Health Interview Survey (NHIS) (2). The NHIS report documented an average annual increase in diagnosed ADHD (ever) of 3% from 1997 to 2006; this present report documents a greater average annual increase (5.5%) over a slightly later period (2003–2007).<sup>2</sup>
- A study by Rowland et al estimated the prevalence of medication treatment for attention deficit-hyperactivity disorder (ADHD) among elementary school children in a North Carolina county. The method was Parents of 7333 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 6099 children (83%) responded. Observations from this study suggest that the prevalence of

medication treatment for ADHD is higher among boys than among girls and higher among whites than among African Americans.<sup>5</sup>

### *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 might be associated with side effects and symptoms effecting morbidity.<sup>2</sup>

### *Costs*

- Each child with ADHD costs \$1954 per year, and there are potential medical and work-time cost savings achievable by eliminating disparities, which would equal \$660 million in savings per year.<sup>6</sup>
- Reductions in reading and math test scores for children with ADHD can lead to an increase in the probability of dropping out of high school. This would in turn have an effect on wages impacting the entire direct cost of ADHD. Mental health problems are 1 of the leading causes of days lost in the workplace. Therefore, mental health problems beginning in childhood may have a significant effect on productivity in society.<sup>7</sup>

### *Medication Use*

- In 2000, a survey conducted among school nurses in Maryland reported that 3.7% of all public elementary school children took ADHD medication at school.<sup>5</sup>

### *Disparities*

- In the aforementioned study by Visser, et al comparing ADHD prevalence data between 2003 and 2007, rates of increase were highest among older teens, multiracial and Hispanic children, in addition to children with a primary language other than English. A notable correlation was identified for age and survey year, with the rate of ADHD diagnosis increasing more for the oldest age group, namely 15–17 years.<sup>2</sup>

### **Opportunity for Improvement:**

#### *Disparities*

- A parent survey by Rowland et al evaluated the prevalence of ADHD medication treatment in a population of children grades 1–5 in 17 public elementary schools in a North Carolina county. Parents were asked if 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 6099 children (83%) responded to the survey. Results showed that Hispanic children were the least likely to have been given an ADHD diagnosis or to be receiving medication treatment for ADHD. This was true also for African American children, compared to white children with ADHD who were receiving medication treatment. This suggests barriers to care for specific populations, including less access to medical providers, less health insurance coverage, and less ability to pay for medication. Language and cultural differences may also impact treatment decisions.<sup>5</sup>

#### *Prescribing habits*

- The use of stimulant medications in the United States has risen and as a result there is concern over the potential for over diagnosis of ADHD and the potential for overuse of medications. A study by Sheffler et al. reveal that the United States is the world's largest consumer of ADHD medications. Factors which may influence this finding are direct to consumer advertising and 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.<sup>6</sup>

#### *Physician opinion on treating ADHD*

- A study by Stein, et al aims to evaluate physician opinion on identifying and/or 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% think pediatricians should treat or manage ADHD. In practice few usually inquire about conditions surveyed except for ADHD. Few report they usually treat, except ADHD 54%. Lastly and notably, more recently trained physicians were not more likely to treat mental health conditions.<sup>8</sup>

#### *Variations in Care*

- A cross sectional survey by Froehlich et al evaluates a nationally representative sample of the US population from 2001 to 2004. The participants more specifically included 8 to 15-year-old children in the National Health and Nutrition Examination Survey. The Diagnostic Interview Schedule for Children was used to measure the presence of ADHD in the past year based on The DSM-IV-TR criteria. The results showed that **those lacking The DSM-IV-TR ADHD data were significantly more likely to be younger (mean age, 9.9 years vs 12.1 years), poorer (lowest income quintile, 24.9% vs 18.9%), and African American (17.0% vs 14.7%)**. Additionally, less than half of children who met The DSM-IV-TR criteria for ADHD had reportedly had their conditions diagnosed or been treated with ADHD medications. Thus, it seems the case that even when children are diagnosed with ADHD there is not always the appropriate follow up of treatment. Lastly, the researchers noted a lower likelihood of consistent medication use in the poorest children, suggesting inequity across ADHD diagnosis and treatment.<sup>9</sup>
- A study by Hoagwood et al examines knowledge on treatment services for children and adolescents with ADHD between 1989 to 1996. The researchers found that increases in stimulant prescriptions have taken place since 1989. Particularly, prescriptions now represent three fourths of all visits to physicians by children with ADHD. Between 1989 and 1996, services including health counseling grew 10-fold, and diagnostic services grew 3-fold. By contrast, psychotherapy decreased from 40% of pediatric visits to 25%. Notably, follow-up care diminished from more than 90% of visits to 75%. Family practitioners were more likely than either pediatricians or psychiatrists to prescribe stimulants and less likely to utilize diagnostic services, engage in follow-up care and mental health counseling.<sup>3</sup>
- About 50% of children with ADHD seen in practice settings obtain care that matches guidelines of the American Academy of Child and Adolescent Psychiatry. Physicians identify critical barriers to service provision for these children, namely lack of pediatric specialists, insurance coverage, and waiting lists. The aforementioned trends in treatment and physician variations in service delivery suggest there may be major gaps between the research base and clinical practice.<sup>3</sup>

- A study by Gardner, et al suggests that children treated for ADHD require additional follow-up visits to measure the impact of medication and support ongoing treatment. The survey included families of children 4 to 15 years of age who had been diagnosed with ADHD. In the initial office visit, parents and clinicians completed questionnaires, and six months after the initial visit, parents completed a second questionnaire. Children identified with ADHD, including those prescribed medication, had a median of only one follow-up visit with a health specialist. Researchers noted that this is too few visits to allow for medication adjustment or promote adherence to treatment.<sup>4</sup>
- The MTA or Multimodal Treatment Study of Children With ADHD looks at the longer term outcomes for ADHD treatment of 579 children from age 7-9.9 years. The aforementioned children had a diagnosis of ADHD and for the purpose of the trial were randomly assigned to one of four intervention groups: intensive multicomponent behavior therapy (Beh), intensive medication management (MedMgt), the combination (Comb), and routine community care (CC).
- Results were recorded over several years. According to Jensen, et al, at 24 months, the primary (intent to treat) analyses illustrated modest improvements, and after 36 months there was little difference in comorbid conditions and rates of diagnosis. However, at 36 months 71% of Comb and MedMgt participants were using medication at high levels compared to 62% and 45% of CC and Beh participants, respectively.
- Jensen, et al also point out that both medication and educational services for 24 and 36 months were indicators of poorer outcome at 36 months. This poses the question of whether those who are doing poorly get more treatment yet still do not improve compared to the patients for whom treatment is necessary.<sup>11</sup>

## Clinical Evidence Base

Evidence-based clinical practice guidelines are available for the diagnosis, evaluation and treatment of ADHD. This measurement set is based on guidelines from:

- American Academy of Pediatrics

These guidelines meet all of the required elements and many, if not all, of the preferred elements outlined in a recent PCPI position statement establishing a framework for consistent and objective selection of clinical practice guidelines from which work groups may derive clinical performance measures. Clinical practice guidelines serve as the foundation for the development of performance measures. Performance measures, however, are not clinical practice guidelines and cannot capture the full spectrum of care for all patients with ADHD. The guideline principles with the strongest recommendations and often the highest level of evidence (well-designed randomized controlled trials) served as the basis for measures in this set.

## Intended Audience, Care Setting and Patient Population

These measures should be used on the level of plan or practice, by physicians and other healthcare professionals where appropriate, and healthcare systems, where appropriate, to manage the care for patients aged 18 years and younger with ADHD. These measures are meant to be used to calculate performance and/or reporting primarily at the practitioner level. Performance measurement serves as an important component in a quality improvement strategy but performance measurement alone will not achieve the desired goal of improving patient care. Measures can have their greatest effect when they are used judiciously and linked directly to operational steps that clinicians, patients, and health plans can apply in practice to improve care.

## Other Potential Measures

The Work Group considered several potential measures, which were ultimately not included in the measurement set. The scope was confined to 3 measures because the grant provided by CHIPRA through which this measure development activity is being conducted, gave the Work Group only 1 year to develop and test the measures if they are to be included for review for use by CMS.

We also discussed creating an outcome measure on symptom reduction but the work group was limited to a certain time frame and deadline requirements. Additionally, we discussed forming a measure on prescribing first line therapy for children other than preschool age but chose to limit the measure to reflect the AAP guidelines.

Because measure three was deemed to be complex and lengthy to implement, we have decided to present it but not include it in the testing project as of now. We wanted to show all the hard work invested in developing this measure.

### **Technical Specifications: Overview**

There are several data sources available for collecting performance measures; generally different data sources require different sets of measure specifications, due to the structure of the systems storing the data. The American Medical Association (AMA)-convened Physician Consortium for Performance Improvement® (the PCPI™), recognizes that Electronic Health Records (EHRs) are the state of the art for clinical encounters and is focusing significant resources and expertise toward specifying and testing measures within EHRs, as they hold the promise of providing the relevant clinical data for measures and for providing feedback to physicians and other health care providers that is timely and actionable.

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Another venue for advancing this work in EHR data measurement is the AMA/NCQA/HIMSS Electronic Health Record Association (EHRA) Collaborative (see [www.ama-assn.org/go/collaborative](http://www.ama-assn.org/go/collaborative)).

### **Measure Exclusions and Exceptions**

Exclusions arise when patients who are included in the initial patient or eligible population for a measure do not meet the denominator criteria specific to the intervention required by the numerator. Exclusions are absolute and apply to all patients and therefore are not part of clinical judgment within a measure.

Exceptions are used to remove patients from the denominator of a performance measure when a patient does not receive a therapy or service AND that therapy or service would not be appropriate due to specific reasons for which the patient would otherwise meet the denominator criteria. Exceptions are not absolute, and are based on clinical judgment, individual patient characteristics, or patient preferences.

For *process measures*, the PCPI provides three categories of reasons for which a patient may be excluded from the denominator of an individual measure that were used in this work group:

- **Medical reasons**

Includes:

- not indicated (absence of organ/limb, already received/performed, other)
- contraindicated (patient allergic history, potential adverse drug interaction, other)

- **Patient reasons**

Includes:

- patient declined
- social or religious reasons
- other patient reasons

- **System reasons**

Includes:

- resources to perform the services not available
- insurance coverage/payor-related limitations
- other reasons attributable to health care delivery system

These measure exception categories are not available uniformly across all measures; for each measure, there must be a clear rationale to permit an exception for a medical, patient, or system reason. For some measures, examples have been provided in the measure exception language of instances that would constitute an exception. Examples are intended to guide clinicians and are not all-inclusive lists of all possible reasons why a patient could be excluded from a measure. The exception of a patient may be reported by appending the appropriate modifier to the CPT Category II code designated for the measure:

- **Medical reasons**: modifier 1P
- **Patient reasons**: modifier 2P
- **System reasons**: modifier 3P

Although this methodology does not require the external reporting of more detailed exception data, the PCPI recommends that physicians document the *specific* reasons for exception in patients' medical records for purposes of optimal patient management and audit-readiness. The PCPI also advocates the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exception.

Please refer to documentation for each individual measure for information on the acceptable exception categories and the codes and modifiers to be used for reporting.

# DRAFT Measure #1: Accurate ADHD Diagnosis

## *Attention Deficit Hyperactivity Disorder (ADHD)*

### Measure Description

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

<b>Numerator Statement</b>	<p>Patients whose diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) was based on a clinical exam with a physician or other healthcare professional, as appropriate which includes:</p> <p>Confirmation of functional impairment in two or more settings<sup>2</sup></p> <p>AND</p> <p>Assessment of core symptoms of ADHD including inattention, hyperactivity, and impulsivity, either through use of a validated diagnostic tool<sup>2</sup> based on DSM-IV-TR criteria for ADHD or through direct assessment of the patient</p> <p><u>Definitions:</u></p> <p><sup>1</sup> Settings: Includes home, school and community</p> <p><sup>2</sup> Validated diagnostic tool used 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.</p> <p style="padding-left: 40px;">Conners Rating Scales Barkley ADHD Rating Scale Vanderbilt Parent and Teacher Assessment Scales ADHD Rating Scale-IV (DuPaul) Swanson, Nolan, and Pelham-IV (SNAP IV) Questionnaire</p>
<b>Denominator Statement</b>	All patients aged 4 through 18 years with a diagnosis of ADHD

<b>Denominator Exceptions</b>	This measure has no exceptions
<b>Supporting Guideline &amp; Other References</b>	<p><b>The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure:</b></p> <p>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 (eg anxiety, mood, oppositional defiant, and conduct disorders), and physical (eg tics, sleep apnea) conditions.<sup>13</sup></p> <p>Primary Care Clinicians should evaluate children 4 -18 years of age for ADHD who presents with academic or behavioral problems and symptoms of inattention, hyperactivity or impulsivity.<sup>13</sup></p> <p>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. Broad band 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 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 children are also essential in the diagnostic process.<sup>13</sup></p>

## Measure Importance

<b>Relationship to desired outcome</b>	Accurate ADHD diagnosis requires assessment based on the DSM-IV-TR criteria. Because these criteria are not always used, this measure provides two options for diagnosis of ADHD utilizing DSM-IV criteria, including the use of a validated diagnostic tool and assessment of core symptoms with functional impairment.
<b>Opportunity for Improvement</b>	There is a need for accurate evidence-based diagnosis of ADHD with documentation of all relevant elements assessed and use of evidence-based validated instruments in diagnostic process. A cross sectional survey by Froehlich et al evaluates a nationally representative sample of the US population from 2001 to 2004. The participants more specifically included 8 to 15-year-old children in the National Health and Nutrition Examination Survey. The Diagnostic Interview Schedule for Children was used to measure the presence of ADHD in the past year based on DSM-IV criteria. The results showed that those lacking DSMIV ADHD data were significantly more likely to be younger (mean age, 9.9 years vs 12.1 years), poorer (lowest income quintile, 24.9% vs 18.9%), and African American (17.0% vs 14.7%).
<b>IOM Domains of Health Care Quality Addressed</b>	<ul style="list-style-type: none"> <li>• Effective</li> <li>• Timely</li> <li>• Equitable</li> <li>• Safe</li> <li>• Efficient</li> </ul>



**Harmonization with Existing Measures**      The PMCoE measure development team attempts to harmonize measures with other existing measures to the extent feasible.

**Measure Designation**

<b>Measure purpose</b>	•	Quality improvement
	•	Accountability
<b>Type of measure</b>	•	Process
<b>Level of Measurement</b>	•	Practice/Plan Level
<b>Care setting</b>	•	Any inpatient or outpatient care
<b>Data source</b>	•	Electronic health record (EHR) data

# DRAFT Measure #2: Behavior Therapy as First-Line Treatment for Preschool-Aged Children

## *Attention Deficit Hyperactivity Disorder (ADHD)*

### Measure Description

Percentage of patients aged 4 through 5 years with a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), for whom ADHD-focused evidence-based behavior therapy was prescribed as first line treatment.

### Measure Components

<b>Numerator Statement</b>	<p>Patients for whom ADHD-focused evidence-based behavior therapy* was prescribed as first line treatment**</p> <p>*Evidence-based behavior therapy:</p> <ol style="list-style-type: none"> <li>1. Treatment is directed to parent or caregiver (guardian, teacher, child care worker) AND</li> <li>2. Training is provided in parent or caregiver-administered behavior modification AND</li> <li>3. Treatment does not involve child-directed play therapy</li> </ol> <p>**First line treatment: Prior to any ADHD medication prescribed</p>
<b>Denominator Statement</b>	All patients aged 4 through 5 years with a diagnosis of ADHD
<b>Denominator Exceptions</b>	<p>Documentation of medical reason(s) for not prescribing behavior therapy as first line treatment (e.g., (e.g. patient with multiple psychiatric conditions referred to other provider), or patient determined to be at risk for harming themselves or others)</p> <p>Documentation of system reason(s) for not prescribing behavior therapy as first line treatment (e.g., lack of access to behavior therapy)</p>
<b>Supporting Guideline &amp; Other References</b>	<p><b>The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure:</b></p> <p>For <u>preschool aged children (4 through 5 years of age)</u>, the primary care clinician should prescribe evidence-based parent- and/or teacher-administered behavior therapy as the first line of treatment (Quality of Evidence: A/Strong Recommendation) and may prescribe treatment with methylphenidate if behavior interventions have not provided adequate improvement and there is moderate to severe continuing disturbance in the child’s function. In areas where evidence-based behavioral treatments are not available, the clinician needs to weigh the risks of starting medication at an early age against the harm of delaying diagnosis and treatment (Quality of Evidence: B/Recommendation).<sup>13</sup></p>

## Measure Importance

<b>Relationship to desired outcome</b>	The overall evidence for behavior therapy in preschool-aged children is strong. The multisite study of methylphenidate (Gardner, et al.) supports the recommendation to require behavior therapy as first line treatment in preschool-aged children (ages 4–5 years) because the researchers found that many children experience improvements in symptoms with behavior therapy alone. (Appendix B).
<b>Opportunity for Improvement</b>	<p>There is a need to follow up on adherence to the new AAP ADHD Guideline recommendation for behavior therapy as first-line treatment for 4 and 5 year old patients with an ADHD diagnosis, to reduce the practice of immediately starting 4 and 5 year old patients with an ADHD diagnosis on medications, which is not necessarily supported by guideline recommendations.</p> <p>In a research study by Chai, et al., looking at outpatient prescription drug utilization between 2002–2010, 20% of cases in which a product was used off-label in children, the product was found not to be effective at the dose used when finally studied in children. Additional information showed that children often manifest a new more frequent, or severe form of adverse events described in adults.<sup>14</sup></p>
<b>IOM Domains of Health Care Quality Addressed</b>	<ul style="list-style-type: none"> <li>• Effective</li> <li>• Timely</li> <li>• Equitable</li> <li>• Safe</li> <li>• Efficient</li> </ul>
<b>Harmonization with Existing Measures</b>	The PMCoE measure development team attempts to harmonize measures with other existing measures to the extent feasible.

## Measure Designation

<b>Measure purpose</b>	•	Quality improvement
	•	Accountability
<b>Type of measure</b>	•	Process
<b>Level of Measurement</b>	•	Practice/Plan Level
<b>Care setting</b>	•	Any inpatient or outpatient care
<b>Data source</b>	•	Electronic health record (EHR) data

### American Academy of Pediatrics: Grading of Evidence:

The recommendations contained in the AAP guideline are based on the best available data. For each recommendation, the AAP subcommittee graded the *quality of evidence* on which the recommendation was based and the *strength* of the recommendation. Grades of evidence were grouped into 3 categories—good, fair, or poor. Recommendations were made at 3 levels. Strong recommendations were based on high-quality scientific evidence or, in the absence of high-quality data, strong expert consensus. Fair and weak recommendations were based on lesser quality or limited data and expert consensus. Clinical options are identified as interventions for which the subcommittee could not find compelling evidence for or against. Clinical options are defined as interventions that a reasonable health care provider might or might not wish to implement in his or her practice.

## Appendix A: ADHD Expert Work Group Roster

<i>Name</i>	<i>Specialty</i>	<i>Organization/Affiliation</i>
Abernathy, Ted	Pediatrician	Private Practice of Pediatrics and Adolescent Medicine
Brooks, Betsy	Pediatrician	Holyoke Pediatric Associates
Brown, Lawrence	Pediatric Neurologist	Children's Hospital of Philadelphia
Coleman, Mirean	Social Worker	National Association of Social Workers
Downs, Stephen	Pediatrician	Children's Health Services Research
DuPaul, George	School Psychologist	Lehigh University
Earls, Marian	Developmental-Behavioral Pediatrician	Guilford Child Health
Epstein, Jeff	Clinical Psychologist	Cincinnati Children's Hospital Medical Center
Ganiats, Theodore G.	Family Physician	University of California San Diego
Hannah, Jane	School-based Learning Disability Specialist	Currey Ingram Academy
Hasnain-Wynia, Romana	Healthcare Equity Expert	Northwestern University Institute for Healthcare Studies
Kairys, Steven	Pediatrician	Jersey Shore Medical Center
Kaplanek, Beth	Parent	Children & Adults w/Attention Deficit Disorders (CHADD)
Katerji, M. Ammar	Pediatric Neurologist	Advocate Hope Children's Hospital
Lane, Shelly	Occupational Therapist	Virginia Commonwealth University
Marek, Nancy	Pediatric Nurse	Advocate Hope Children's Hospital
Miles, Paul	Maintenance of Certification Expert	American Board of Pediatrics
Mozee-Russell, Patrice	Teacher	Children & Adults w/Attention Deficit Disorders (CHADD)
Pierce, Karen*	Child and Adolescent Psychiatrist	Children's Memorial Hospital/Northwestern University
Rief, Sandra	School-based Learning Disability Specialist	Children & Adults w/Attention Deficit Disorders (CHADD)
Ross, Clarke	Parent	American Association on Health and Disability
Sandler, Adrian	Developmental-Behavioral Pediatrician	Mission Children's Hospital
Slomowitz, Marcia	Child and Adolescent Psychiatrist	Northwestern Memorial Hospital
Stine, Laurel	Consumer Representative	Bazelon Center for Mental Health Law
Wolraich, Mark*	Developmental-Behavioral Pediatrician	University of Oklahoma Child Study Center
Zima, Bonnie	Child and Adolescent Psychiatrist	UCLA Center for Health Services and Society

\*Co-Chair

## **Non-Material Interest Disclosures:**

None of the members of the Attention Deficit Hyperactivity Disorder (ADHD) Work Group had any disqualifying material interests as defined by applying the AMA-convened Physician Consortium for Performance Improvement® (PCPI™) Conflict of Interest Policy in light of its rigor. The following is a summary of non-disqualifying interests disclosed on Work Group members' Material Interest Disclosure Statements (not including information concerning family member interests). Completed Material Interest Disclosure Statements are available upon request.

<b><u>Work Group Member</u></b>	<b><u>Disclosures</u></b>
Pierce, Karen (Co-chair)	Receipt of Speaking Honoraria: \$250 Service on a Quality Committee: American Psychological Association (no longer active)
Wolraich, Mark (Co-chair)	None
Abernathy, Ted	None
Brooks, Betsy	None
Brown, Lawrence	Researcher whose institution receives research funding but is not involved in the research: University of Pennsylvania  Service on Editorial Board of a Peer Reviewed Journal: Pediatric Neurology
Coleman, Mirean Downs, Stephen	None Consulting Services: Consultant, WellPoint, Inc. – National Medicaid Advisory Panel
DuPaul, George	Board Membership: Board of Directors – Indiana University Medical Group Primary Care Royalties: Guilford Press, American Psychological Association  Research Grant: Shire Pharmaceuticals
Earls, Marian Epstein, Jeff	None Royalties: myadhdportal.com – Physician Improvement Program
Ganiats, Theodore G. Hannah, Jane Hasnain-Wynia, Romana	None None Research/Grant Support: Robert Wood Johnson Foundation, Agency for Healthcare Research and Quality  Oversight of Department/Institution: Board Member, Academy Health (2010-2014 Board of directors), Steering Committee—National Quality Forum (2011–2012 Health care disparities and cultural competency)

	Payment for Consulting Services: Health Affairs, Health Services Research
	Work group member: Academy Health Committee participant: National Quality Forum, Agency for Healthcare Research and Quality
Kairys, Steven	None
Kaplanek, Beth	Service on a Committee: Subcommittee for Attention Deficit Hyperactivity Disorder assessment and treatment – updated guidelines (completed in 2010)
Katerji, M. Ammar	None
Lane, Shelly	None
Marek, Nancy	None
Miles, Paul	Fiduciary Relationship: PCPI Executive Committee
	Prior Work Group Member: Director - PCPI Executive Committee
	Service on a Quality Committee: National Association of Childrens Hospitals and Related Institutions Quality Council
Moze-Russell, Patrice	None
Rief, Sandra	Service on a Quality Committee: National Initiative for Childrens Healthcare Quality
	Consultant services for Shire Pharmaceuticals
Ross, Clarke	2000–2010: worked for , Children and Adults with Attention Deficit/Hyperactivity Disorder as CEO
Sandler, Adrian	None
Slomowitz, Marcia	None
Stine, Laurel	None
Zima, Bonnie	Research/Grant Support: National Institute of Mental Health, Agency for Healthcare Research and Quality
	Other payments: Elaine Schlosser Lewis Fund for Best ADHD Research in Journal of The American Academy of Child and Adolescent Psychiatry - \$4,500
	Work Group Member: Nominated for National Quality Forum Behavioral Health Committee; Past Member of Child Health Steering Committee
	Employment as Physician of a Payor: County of Los Angeles Department of Mental Health

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## Appendix B: Citations

- <sup>1</sup> Centers for Disease Control and Prevention (CDC), *Vital and Health Statistics* (PDF; December 2010; Series 10, Number 247).
- <sup>2</sup> Visser M S, Bitsko R H, Danielson M L, et al. Increasing Prevalence of Parent-Reported Attention Deficit/Hyperactivity Disorder Among Children; United States, 2003 and 2007 November 12, 2010 / 59(44);1439-1443SN.
- <sup>3</sup> Hoagwood K, et al. Changes in ADHD Treatment Services: Treatment Services for Children with ADHD: A National Perspective, *J. Am. Acad. Child Adolesc. Psychiatry* 2000, 39(2):198-206.
- <sup>4</sup> Gardner W, Kelleher K J, Pajer K. Follow-up Care of Children Identified with ADHD by Primary Care Clinicians: A Prospective Cohort Study. *The Journal of Pediatrics* December 2004.
- <sup>5</sup> Rowland, A S, Umbach D M, Stallone L, et al. Prevalence of Medication Treatment for Attention Deficit–Hyperactivity Disorder Among Elementary School Children in Johnston County, North Carolina.
- <sup>6</sup> Scheffler R M, Hinshaw S P, Modrek S, et al. The Global Market for ADHD Medications
- <sup>7</sup> Janet Currie, et al. Policy Interventions to Address Child Health Disparities: Moving Beyond Health Insurance. *Journal of the American Academy of Pediatrics*.
- <sup>8</sup> Stein R E K, McCue Horwitz S, Penfold R B, et al. Do Pediatricians Think They Should Care For Patients with New Morbidity? Results of the AAP Periodic Survey.
- <sup>9</sup> Froehlich T E, Lanphear B P, Epstein J N, et al. Prevalence, Recognition, and Treatment of Attention-Deficit/Hyperactivity Disorder in a National Sample of US Children. *Arch Pediatr Adolesc Med.* 2007;161(9):857-864.
- <sup>11</sup> Jensen PS, Arnold E, Swanson JM, et al. 3-Year Follow-up of the NIMH MTA Study. *J. Am. Acad. Child Adolesc. Psychiatry*, 46:8, August 2007.
- <sup>12</sup> Bruchmüller, K; Margraf, J; Schneider, S. Is ADHD diagnosed in accord with diagnostic criteria? Overdiagnosis and influence of client gender on diagnosis. *Journal of Consulting and Clinical Psychology*, Vol 80(1), Feb 2012, 128-138
- <sup>13</sup> 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):1007-1022.
- <sup>14</sup> Chai G, Governale L, McMahon A W, et al. Trends of Outpatient Prescription Drug Utilization in US Children, 2002-2010. *Journal of the American Academy of Pediatrics*. DOI: 10.1542/peds.2011-2879.