



LEND Brief

Attention Deficit Hyperactivity Disorder • Fall 2013

INTRODUCTION

By Michael I. Reiff, MD, FAPP & Martin T. Stein, MD, FAPP

Overactive children were described in the medical literature over a century ago. Research in neuropsychology coupled with clinical observations has led to progressive advances in the understanding and treatment of what is now called **Attention-Deficit/ Hyperactivity Disorder (ADHD)**. The core symptoms of ADHD are inattention, hyperactivity and impulsivity. ADHD is the most common and most extensively studied neurodevelopmental problem in school aged children. It is a chronic condition, and persists into adolescence and adulthood in 60% to 80% of individuals diagnosed with it during childhood.

Demographics/ epidemiology

The prevalence of ADHD varies depending on the criteria that are used for diagnosis, the population

studied and the number of sources used to establish a diagnosis (home, school, clinics, etc.). The absence of laboratory tests or neuroimaging

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to establish a diagnosis of ADHD is a barrier to understanding the true prevalence of ADHD, but best estimates are around 7% of children. In clinical settings boys are more likely than girls to receive a diagnosis of ADHD on the order of 3:1.

Etiology

A diverse set of pathways can lead to the core symptoms of ADHD which include the inattention, hyperactivity and impulsivity. Genetic, epigenetic (factors in whether or not our genes get expressed in our behavior) and environmental factors all interact to

give rise to ADHD and its subtypes. Recent evidence suggests that the development of the brain cortex of children with ADHD follows a typical

developmental sequence but lags behind typically developing children by up to 2 years suggesting that ADHD represents a delay rather than abnormal brain development. ADHD tends to run in families. Parents and siblings of a child with ADHD carry a 2- to 8-fold increase in the risk for ADHD. Biological and psychosocial factors including prenatal exposure to alcohol, cocaine, nicotine also contribute to ADHD.

The diagnosis

Unlike most medical conditions, but similar to other behavioral and emo-

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tional disorders, there are no medical tests or neuro-imaging studies that can be used to diagnose ADHD. Instead, the most used criteria for ADHD have been developed by the American Psychiatric Association², an empirically-based classification system of behavior disorders recommended as the framework for clinical assessment of ADHD. The Diagnostic and Statistical Manual of Mental Disorder, 5th Edition (DSM-V) facilitates communication among professionals and patients, provides information relevant to treatment and prevention, and encourages research in understanding behavioral problems that impact development – but does not make a biologically based diagnosis (one that can be confirmed by laboratory tests).

In the most recent version of the manual, DSM-V, released in May 2013, the criteria have not changed from DM-IV, but examples have been

included to illustrate the presenting types of behavior children, older adolescents and adults may exhibit in each category. The examples represent a more developmentally appropriate lifespan approach and highlight the experience of affected adults. While children must still display at least six of nine symptoms from either (or both) the inattentive and hyperactive/impulsive criteria, older adolescents and adults must present with at least 5. In the DSM-V approach, several symptoms must be present prior to age 12 years, as opposed to prior to age 7 years onset in the DSM –IV. The DSM-V allows the diagnosis of ADHD to be made concurrently in individuals also diagnosed with autism spectrum disorder (DSM-IV excluded this).

Use of these criteria with children and adolescents includes the

documentation of the following considerations —

- Several inattentive or hyperactive-impulsive symptoms were present prior to age 12
- Several inattentive or hyperactive-impulsive symptoms are present in 2 or more settings
- There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic or occupational functioning
- The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder

Using these criteria, three presentations of ADHD can be diagnosed. (1) Combined presentation: if both Criterion A1 (Inattention) and Criterion A2 (hyperactivity-impulsivity) are

met for the past 6 months (2) Predominantly inattentive presentation: If Criterion A1 (inattention) is met but Criterion A2 (hyperactivity-impulsivity) is not met for the past 6 months. (3) Predominantly hyperactive/impulsive presentation: If Criterion A2 (hyperactivity-impulsivity) is met and Criterion A1 (Inattention) is not met for the last 6 months.

Impairment in functioning

Most of us exhibit some behaviors compatible with ADHD. The central issue for diagnosing ADHD as a disorder is that these behaviors have been determined to be causing significant problems in daily functioning. The diagnosis of ADHD and subsequent treatment requires evidence of impairment in functioning. Children with ADHD have been found to display significant “functional impairment” in the areas of academic achievement, family relationships, peer relationships, self-esteem and self-perception, accidental injuries and overall adaptive functioning³. A child with ADHD is likely to underachieve in school regardless of whether or not they have learning disabilities. They are also more likely to qualify for special education, repeat a grade, to receive more suspensions and drop out of school. Families who have a child with ADHD are more likely to experience difficulties in parental harmony, parenting distress, perceived incompetence in parenting, and parent-child interaction problems. The peers of children with ADHD often give them high levels of negative peer rankings of social standing. The self-esteem of children with ADHD is often lower than their peers, although they may initially report inflated levels of self-regard.

Core symptoms of ADHD make school related activities and tasks as well as relationships at home and school challenging. Brain-related impairments associated with ADHD

include lack of impulse control, deficits in attention and memory, organization, time management, and judgment. The behaviors associated with ADHD can also cause difficulties

predictions of how well a child or adolescent may do in the future and influence the targets for treatment. For example, children with ADHD and coexisting oppositional defiant

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in learning and applying knowledge (reading, writing, mathematics), problems with carrying out single or multiple step tasks, studying, and self-managing behavior. ADHD can impact interpersonal interactions, communication and self care, adjusting to and succeeding in educational programs, leaving school to enter work, establishing a community, social and civic life. It is these broad functional disabilities that should become the targets for intervention in individuals with ADHD rather than the core symptoms themselves^{4,5}.

Coexisting conditions

A majority of children and adolescents with ADHD have additional concerns such as a coexisting condi-

tion. The most prevalent conditions include other disruptive behavior disorders (oppositional defiant disorder and conduct disorder), anxiety disorder, depressive disorders, and learning disabilities. Each of these conditions adds its own elements to the functional impairment of individuals with ADHD. The presence of a coexisting condition can substantially change predictions of how well a child or adolescent may do in the future and influence the targets for treatment. For example, children with ADHD and coexisting oppositional defiant disorder are at risk for developing conduct disorder which may then lead to adolescent substance abuse. Children with ADHD and coexisting mood disorders may have a poorer outcome during adolescence than children with ADHD alone. Children with coexisting anxiety disorders may differ in their response to stimulant medication, and, in some cases, may respond just as well to behavioral treatments as to medication management. Children and adolescents with coexisting academic problems may benefit from services under section 504 of the Rehabilitation Act, whereas those with co-existing learning disabilities qualify for more intensive services under the Individuals with Disabilities Education Act (IDEA).

Prevalence of conditions in community samples with and without ADHD

Coexisting condition	With ADHD	Without ADHD**
Oppositional defiant disorder	35%	2-16% (males)
Conduct disorder	25%	6-16% (males); 2-9% (females)
Anxiety disorder	25%	5-10%
Depressive disorder	18%	2% (children); 5% (adolescents)
Learning disorder	15%	7%

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The presence of a coexisting condition can substantially change

Treatment

Medication and behavioral therapy techniques based on applied behavior analysis are the two treatments that have been shown to be effective for the treatment of children and adolescents with ADHD in the most well conducted scientific studies⁶. Stimulant medications (medications

based on methylphenidate and amphetamines) remain the first-line psychopharmacologic treatment for ADHD. It is estimated that at least 80% of children will respond to one of the stimulants if they are used in a systematic way. Examples of these medications include methylphenidate-based preparations (Ritalin®, Ritalin LA®, Concerta®, Daytrana®, Quilavent®) and amphetamine based preparations (Dexedrine, Dextrostat®, Adderall®, Adderall XR®, Vyvanse®). Non-stimulant medications remain an option for children and adolescents for whom stimulants are not effective, cause significant adverse side effects or exacerbation of other coexisting disorders, or where non-stimulants are a preferred option for treating ADHD and a coexisting disorder with a single medication. Although less effective, non-stimulant medications have been approved for use with ADHD include atomoxetine (Strattera®), guanfacine (Tenex® and Intuniv®, clonidine (Catapres®). In general, non-stimulant medications have been found to be less effective than stimulants.

Behavioral therapy for parents and teachers is the other evidence-based treatment for ADHD. Effective psychosocial treatment for ADHD employs the principles of applied behavior analysis. They emphasize contingency management and shaping children's behaviors through observing and modeling appropriate behaviors, attitudes, and emotional reactions of others. Applied behavior analysis principles have been used to train both parents and teachers in behavior management with good evidence for effectiveness among children with ADHD⁷.

The goals of parent training are to help parents learn to achieve consistent and positive interactions with their children, gain a better understanding of what behaviors are developmentally normal, help them

cut down on negative interactions with their children (such as arguing or constantly having to repeat commands), teach parents to provide appropriate consequences for their child's behaviors, become more empathic to their child's viewpoint, and help children to improve their abilities to manage their own behaviors. Many parents have fallen into the trap of almost solely responding to negative behaviors. Through behavioral therapy parents learn to conceptualize "discipline" as teaching self-control rather than as punishing negative behaviors. They are taught what behaviors can be reinforced by praise, and extinguished by active ignoring, using appropriate punishments only for intolerable or dangerous behaviors⁸.

Effective treatment takes advantage of a targeted combination of these evidence based treatments individualized to a child's and family's needs, priorities, supports, cultural beliefs, and ability to carry out different treatment plans.

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Advances in evaluation and treatment of ADHD: Revised guidelines for evaluation and treatment of ADHD

By Michael I. Reiff, MD, FAPP

This LEND BRIEF addresses recent advances in recommendations for the evaluation and treatment of ADHD and the implications of these changes for clinicians and schools, as well as parents, children, preschoolers and adolescents. It focuses on changes in practice guidelines from the American Academy of Pediatrics from 2000 and a recent update in 2011. The purpose of this LEND article is to make a summary of this information and its implications available to a wider audience including health and mental health care providers, schools, community agencies, advocacy groups parents and individuals with ADHD.

Attention-deficit/hyperactivity disorder (ADHD) is the most common neurodevelopmental disorder of childhood and can profoundly affect the academic achievement, well-being, and social interactions of children. The American Academy of Pediatrics (AAP) first published clinical recommendations for the ADHD evaluation in 2000 and



publications³. The new guideline provides 6 key action statements for the evaluation, diagnosis, and treatment of ADHD in children 4 through 18 years of age. Guidance is also provided on the diagnosis and treatment of symptoms and dysfunctions that are less severe than ADHD. The updated action statements include³.

recommendation for preschoolers as well as adolescents.

2. To make a diagnosis of ADHD, the primary care clinician should determine that Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition criteria (see introduction) have been met. This includes documentation of an 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 clinician should also rule out any alternative cause.
3. In the evaluation of a child for ADHD, the clinician should include assessments for other conditions that might coexist with ADHD, including emotional or behavioral (e.g., anxiety, depressive, oppositional

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recommendations for treatment in 2001^{1,2}. New information and evidence regarding the diagnosis and treatment of ADHD as well as increased understanding of ADHD and the challenges it raises for clinicians seeking to evaluate, diagnose, and treat ADHD evolved into the current guideline, which updates and replaces the previous

1. The primary care clinician should initiate an evaluation for ADHD for any child 4 through 18 years of age with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity. The previous guidelines had made this recommendation for children 7-12. New evidence supports this

defiant, and conduct disorders), developmental (e.g. learning and language disorders or other neurodevelopmental disorders), and physical conditions (eg, tics, sleep apnea). The 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.

4. Recommendations for treatment of children and youth with ADHD vary depending on the patient's age —

- » *For preschool-aged children (4 through 5 years of age),* the clinician should prescribe evidence-based parent and/or teacher-administered behavioral intervention as the first line of treatment and may prescribe methylphenidate (stimulant medication). If behavior interventions above do not provide significant improvement, and there is moderate to severe continuing disturbance in the child's function then medication management should be considered. 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.
- » *For elementary school-aged children (6 through 11 years of age),* the clinician should prescribe FDA-approved medications for ADHD and/or recommend evidence-based parent- and/or teacher-administered behavior

therapy as treatment for ADHD, preferably both. The evidence is particularly strong for stimulant medications and sufficient but less strong for atomoxetine, extended-release guanfacine, and extended-release clonidine (in that order). The school environment, program, or placement is a part of any treatment plan.

- » *For adolescents (12 through 18 years of age),* the clinician should prescribe FDA-approved medications for ADHD with the assent of the adolescent, and may prescribe behavioral intervention as treatment for ADHD preferably both.

5. The primary care clinician should titrate doses of medication for ADHD to achieve maximum benefit with minimum adverse effects.

This LEND article summarizes these recommendations for the evidence-based current practices around ADHD and make them available for health, school, and other community professionals as well as community advocates, families and individuals with ADHD so that they can be as informed as possible about best current practices. The remainder of this LEND Brief will focus on remarks from the Chair of the American Academy of Pediatrics (AAP) ADHD Guidelines Committee, a commentary by school psychologists on the implications of the new guidelines for teachers and psychologist, discussions on the new areas introduced into these guidelines of ADHD in preschoolers and adolescents, and a commentary from a parent of an individual with ADHD who is also a strong advocate in this area.

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ADHD in DSM-V: Few changes in diagnostic criteria

Martin T. Stein, MD, FAPP

The recently published DSM-V by the American Psychiatric Association includes several changes that are important to pediatricians and their patients. (1) Modifications in Autism Spectrum Disorders and Anxiety Disorders are the major changes that affect the diagnosis of conditions in childhood and adolescents. Although the changes in Attention-Deficit/Hyperactivity Disorder (ADHD) are modest in comparison, there are a few changes that merit comment.

The conceptual framework for the diagnosis of ADHD has maintained stability in comparison to the DSM IV. The 3 subtypes of ADHD remain the same: 1) Predominantly inattentive presentation, 2) Predominantly hyperactive/impulsive presentation, and 3) Combined presentation. The 9 symptoms in both the hyperactive/impulsive and inattentive domain and the requirement for at least 6 symptoms in either or both domains are stable diagnostic criteria.

The DSM-V criteria for ADHD recognize that, although ADHD begins in childhood, it persists into adolescence and adult life in a significant number of individuals. Based on studies that have shown that a lower threshold of symptoms in adults was sufficient for a reliable diagnosis, the DSM-V criteria for ADHD requires only 5 symptoms in either the hyperactive/impulsive or inattentive domain for individuals over 17 years of age. The authors of the DSM-V concluded that research supports the idea that DSM-IV criteria are applicable to adults as well as children.

A major addition to the DSM-V is the inclusion of *clinical examples of behaviors* for each symptom. Examples of specific behaviors for selected core symptoms are:

- **Often difficulty organizing tasks and activities** (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines)
- **Often forgetful in daily activities** (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments)
- **Often “on the go,” acting as if “driven by a motor”** (e.g., is uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with)
- **Often interrupts or intrudes on others** (e.g., butts into conversations, games, or activities; may start using other people’s things without asking or receiving permission for adolescents and adults, may intrude into or take over what others are doing)

I suspect that these descriptors will be useful for pediatric residents and primary care clinicians beginning their practice as a way to define with greater clarity the meaning of each symptom. As seen in the examples above, descriptions of core behaviors as they emerge in older age groups are included as clinical guides. In addition, the key word “often” introduces each behavior. This important modifier was also in the DSM-IV as it recognizes that many individuals without ADHD have some of these behaviors occasionally. Not all hyperactive and inattentive children,

adolescents, and adults have ADHD!

Several criteria from past iterations of the DSM persist with some changes:

- The *age of onset of symptoms* was raised from 7 years to 12 years for two reasons: some behaviors of ADHD are not prominent until educational and social demands are greater; and research shows that children identified at 7 years or later had a similar course, severity, outcome and treatment response.
- Symptoms that define ADHD must be *present in two or more settings*. This criterion was strengthened by requiring *several* symptoms and extending the examples to include home, work, school, with friends or relatives, in other activities.
- The requirement for documentation of *impairment* (a critical part of the diagnosis) took on a new language: from clear evidence of clinically significant impairment in social, academic or occupational functioning to clear evidence that *symptoms interfere with or reduce the quality of* social, academic or occupational functioning. A new section on *functional consequences of ADHD* clarifies potential areas of impairment. Another added section on *risk and prognostic factors* emphasizes the role of temperament, environment and genetics when considering a diagnosis of ADHD.
- The DSM-IV listed *severity* as only mild, moderate or severe without clear definitions. The DSM-V provides guidance in defining severity: **Mild:** few, if any symptoms in excess of those required to make the diagnosis are present and symptoms result in no more than minor impairments in social or occupational functioning.

Moderate: Symptoms of functional impairment between “mild” and “severe” are present. **Severe:** Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

The sections on *Differential Diagnosis* and *Comorbidity* are written with greater clarity. More attention to the importance of *screening* for common co-existing conditions would have been important for pediatricians. A new childhood diagnosis, disruptive mood dysregulation disorder (DMDD), is included in the differential diagnosis section. Anxiety, oppositional behaviors, depression, learning disabilities, environmental stressors and DMDD should be a part of every ADHD evaluation. The sections on culture-related and gender-related diagnostic issues are important considerations.

ADHD is now included in the classification of *Neurodevelopmental Disorders*. This large category also comprises Intellectual Disabilities, Communication Disorders, Autism Spectrum Disorder, Specific Learning Disorder and Motor Disorders. An important change in the DSM-V is recognition that ADHD may co-occur in patients with Autism Spectrum Disorder.

Since the publication of the Preschool ADHD Treatment Study (PATS), (1) ADHD in younger children has received greater attention. (2) It is also addressed in the 2nd edition of the American Academy of Pediatrics' *Clinical Practice Guideline for the Diagnosis, Evaluation and Treatment of ADHD*. (3) I was surprised that the discussion of ADHD in preschool children in the DSM-V is limited to, “Many parents first observe excessive motor activity when the child is a toddler, but *symptoms are difficult*

to distinguish from highly variable normative behaviors before age 4 years.” (Italics not in DSM-IV). The recognition that ADHD behaviors in preschool-age children are challenging to differentiate when they are observed in a developmentally normal, high energy child with impulsivity and a limited attention span is important. The new iteration of DSM would have been strengthened with more guidance for clinicians who see preschool-age children.

COMMENT

When ADHD is a consideration in a child or teenager, the interview with the patient and parent (as well as parent and teacher questionnaires) must be attentive to *impairments* that are the result of ADHD behaviors. The new section on Functional Consequences is an improvement. However, considering the importance of functional impairment when making an accurate diagnosis of ADHD, a guide to assist clinicians in documenting impairment would have been useful — e.g., key questions to ask in the patient interview, parent interview and from teacher reports. I believe that this is important because inadequate documentation of impairment is among the most frequently seen omission when ADHD is over-diagnosed.

Some clinicians and researchers have proposed splitting the predominantly inattentive type of ADHD from the predominantly hyperactive/impulsive and combined types. (4) They point out that separating the inattentive type (perhaps naming it ADD) may be helpful to clinicians and be more effective in research. The DSM-V has maintained the 3 presentation subtypes found in prior editions.

In the Introduction section of DSM-V, the authors point out that “The current edition...builds on the goal of its predecessors of providing guidelines for diagnoses that can

inform treatment and management decisions.” (1) It is not a manual that provides instruction in the process of obtaining a patient history, in general, or specific behavior characteristics of a diagnostic category. The section on ADHD illustrates this limitation of the manual.

There are scarce comments about effective ways to use a clinical interview and parent/teacher questionnaires in order to acquire information. There is no guidance on the integration of these two methods of documentation. One example is the application of a parent's responses on a questionnaire as a way to guide the interview with the parent and the child. Another example is to request a teacher narrative that describes classroom behaviors and educational performance as a supplement to a teacher questionnaire. For many years, I have asked a parent to request from the teacher “a paragraph or two” about their child (“Tell me about ____'s behavior in the classroom.” “Tell me about his/her learning style.”) Other questions may yield different information, but I have found these questions to be useful as a way to understand a child's world beyond individual symptoms. In addition, most teachers appreciate being asked to document their impressions of the child. It seems to reflect a heightened level of respect for their work as teachers compared to a check list.

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Revised ADHD guidelines

By Mark Wolraich, M.D. FAAP, Chairperson, AAP Guideline Committee

The AAP clinical practice guideline for the diagnosis and treatment of ADHD has been revised in 2011. The previous guideline was in two parts; the first part addressing the diagnostic aspects published in 2000¹ and the second part with the treatment published in 2001². While the new guideline is to a large extent similar to the previous guideline, there are some notable changes. The diagnostic and treatment guidelines now have been combined into one guideline. However, to provide more detailed advice on implementing the action statements, a companion process of care algorithm to guide

(DSM-V) of the American Psychiatric Association⁴, and include input from the parents and teachers. The primary care clinicians are also encouraged to rule out other conditions causing the symptoms and identify co-morbid conditions including emotional or behavioral (e.g. anxiety, mood, oppositional defiant, and conduct disorders), developmental (e.g. learning and language disorders or other neurodevelopmental disorders), and physical (e.g. tics, sleep apnea) conditions. Similar to the initial guidelines, the clinicians are encouraged to treat

Through 6 key action statements for the evaluation, diagnosis and treatment of ADHD, the guideline has expanded its recommendations to include children and youth age 4-18 years and provide guidance on the diagnosis and treatment of children with symptoms and dysfunction that are less severe than those with ADHD.

clinicians through discrete and manageable steps through which they may fulfill all the clinical recommendations and prepare their practice for the undertaking is provided as an appendix. Through 6 key action statements for the evaluation, diagnosis and treatment of ADHD, the guideline has expanded its recommendations to include children and youth age 4-18 years and provide guidance on the diagnosis and treatment of children with symptoms and dysfunction that are less severe than those with ADHD, or what is referred to in the Diagnostic and Statistical Manual of Mental Disorders for Primary Care Child and Adolescent Version (DSM-PC)³ as a problem-level inattention or hyperactivity/impulsivity.

The guidelines still recommend that the diagnosis be based on the latest version of the Diagnostic and Statistical Manual, 5th Edition

ADHD as a chronic condition. This recommendation is further emphasized in the revised guidelines discussing it within the context of the Medical Home and including in the process algorithm advice on how to modify ones practice to accomplish this goal.

The primary treatment recommendations are still psychotropic medications and behavioral therapy, but the list of medications has expanded to include the non-stimulant medications that are now approved by the Food and Drug Administration for treating children and youth with ADHD and expanded to include all the extended release preparations of stimulant medications. The recommendations are divided into the three age groups of preschool age (4-6 years), children 6-12 years and adolescents (13-18 years) since there are differences in

the recommendations and level of evidence. The titration process for determining the appropriate dose of medication is more clearly defined with encouragement to achieve the maximum effective dose with the fewest side effects.

The guidelines are coordinated with those of the AAP Task Force on Mental Health. In addition, the Quality Improvement Innovation Network in collaboration with the National Initiative for Children's Healthcare Quality revised the AAP ADHD toolkit to reflect the new guidelines and update the previous tools. The initial guidelines had a considerable impact on how primary care clinicians diagnose and treat children with ADHD⁵. It is the hope that the revised guidelines can have a similar effect and can further improve the quality of services we provide to these children and their families.

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American Academy of Pediatrics (AAP) guidelines for assessment and treatment of ADHD: Recommendations from a school-based practice perspective

By Thomas J. Power, Ph.D., Steven W. Evans, Ph.D., & George J. DuPaul, Ph.D.

From a school-based perspective, the revised AAP guidelines for the assessment and treatment of ADHD are outstanding and represent a substantial improvement over the previous version. We particularly appreciate the inclusion of psychologists and school professionals in the revision process. The guidelines are not only useful to pediatric providers, but also to professionals from other disciplines who collaborate in caring for children and families coping with ADHD. The expansion of the scope of the Guidelines to include children between the ages of 4 and 18 years is an important contribution. Other strong features of the Guidelines are: (a) presenting ADHD as a special health care condition such that the Medical Home model is appropriate in providing care for these children, (b) emphasizing the coordination of care across systems, (c) stressing the importance of assessing coexisting (comorbid) conditions, and (d) focusing on obtaining information from youth and families about the acceptability of treatments, especially with respect to medication.

We have several recommendations for clinicians using these revised Guidelines. First, pediatric providers, school, health, and mental health professionals (e.g., school psychologists, school nurses, school counselors, school social workers, and teachers) should collaborate regularly when assessing and treating children and adolescents with ADHD. School mental health professionals, including school psychologists, routinely collect

information (e.g., direct observations, ongoing teacher reports, direct assessment, attendance data, discipline referral information, school grades) about children suspected of having ADHD that is invaluable in assessing ADHD. School-based data also are indispensable for

“front line” treatment for ADHD across age groups. Although the revised Guidelines state that behavior therapy is effective with preschool and elementary-age children when used separately or in combination with medication, it is asserted that this treatment “may

Pediatric providers, school, health, and mental health professionals (e.g., school psychologists, school nurses, school counselors, and school social workers) should collaborate regularly when assessing and treating children and adolescents with ADHD.

assessing medication response and determining optimal dosage. In addition, school mental health professionals are in an excellent position to provide interventions to children primarily through teacher consultation and parent training. Finally, coordination of care is particularly critical for evaluation and treatment of youth with comorbid disorders.

Second, assessment and treatment of ADHD must go beyond a singular focus on reduction of symptomatic behaviors. Longitudinal studies consistently indicate that ADHD is associated with substantial academic and social impairment across the lifespan. Thus, all those involved in the care of children and youth with ADHD should routinely assess functional impairment when evaluating and treating youth with this disorder.

Third, we recommend that strong consideration be given to using behavioral interventions as a

be prescribed” for adolescents. It is true that the science base related to behavior therapy for adolescents is underdeveloped, but developmental theory and emerging evidence from intervention studies strongly support a position that educating adolescents about the disorder and providing interventions to help them improve their academic and interpersonal functioning are critical for healthy development through these difficult years. In addition to interventions that may be provided in the community, school mental health professionals and educators in secondary schools are well situated to provide many of these interventions and we encourage health care professionals to help parents obtain these services at their child’s school.

Fourth, the Guidelines appropriately suggest that at least two teachers provide behavior ratings



for students at the secondary school level. Because agreement between secondary school teachers is poor, we recommend that assessments for ADHD go beyond the guideline and obtain ratings from teachers in the primary subject areas (e.g., math, English, social studies, and science) in order to obtain a representative sample of the adolescent's behavior across the school day.

that can inform intervention planning for students with ADHD. A related recommendation is for pediatric providers to advocate for use of evidence-based strategies in schools. Although the Guideline highlights accommodations (e.g., extra time on tests) that have face validity, such accommodations do not provide direct intervention to students nor have they been found to be effective

delivery may be particularly helpful in building partnerships with schools and mental health providers.

Finally, clinicians and others involved with the care and support of children with ADHD are in an excellent position to highlight for parents the importance of promoting strong parent-child relationships, positive parenting, and child self-management strategies across the developing years. Also, research in educational psychology clearly highlights the importance of family involvement in education and strong family-school partnerships. We strongly recommend that parents be educated about the importance of their involvement in education and the need to form strong parent-child relationships.

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Assessment and treatment of ADHD must go beyond a singular focus on reduction of symptomatic behaviors.

Fifth, we recommend that everyone involved in the care of children and youth with ADHD advocate for them to receive effective instructional interventions in the school setting. Given the current state of research, the Guidelines appropriately focus on medication and behavior therapy as primary treatments. Although there is limited research on academic interventions for youth with ADHD, there is substantial evidence about effective instructional interventions

with the ADHD population.

Next, clinicians should collaborate with parents in designing treatment plans to enhance treatment acceptability and ensure consideration of family cultural beliefs and practices. This recommendation is consistent with the Medical Home model in emphasizing the development of strong relationships with families and the ongoing coordination of care across providers and systems of care. Co-located models of service

Evidence-based assessment and treatment of ADHD in the preschool child

Carla C. Allan, Ph.D., & Edward R. Christophersen, Ph.D., FAAP (Hon)

Early identification and intervention of children with ADHD is critical in preventing negative outcomes because research has demonstrated that preschool children are already exhibiting psychosocial impairment in the home and school settings that is similar to the impairment exhibited by older children with ADHD^{1,2,3}.

Given that ADHD is a life-persistent disorder that is chronic in nature, the new ADHD guidelines from the American Academy of Pediatrics expand the scope and age range from the previous guidelines and suggest that clinicians should treat ADHD as a chronic condition for children and adolescents ages 4-18 years-old^{4,5}. The previous guidelines were updated for many reasons, one of which is newer research examining the assessment and treatment of preschool children with ADHD.

The Preschool ADHD Treatment Study (PATS) was a large-scale, six-site, longitudinal study that was recently conducted by the National Institute of Mental Health⁵. Several issues related to the assessment and treatment of preschool ADHD were examined in the PATS and the results have influenced the new AAP's guidelines.

With regards to assessment, results from the PATS revealed that ADHD symptoms can be reliably assessed and diagnosed in children as young as three-years-old using the criteria from The Diagnostic and Statistical Manual-IV^{5,6,7}; this is positive news, given that the prevalence rates range from 3-12% for preschool ADHD^{8,9}. In addition, children that were diagnosed with ADHD in preschool continued to exhibit significant impairment during

re-evaluations over the course of elementary and middle school years, suggesting that preschool ADHD symptoms continue to be associated with risk across development¹⁰.

The new AAP guidelines indicate that evidence-based behavioral therapies are the first-line treatment for preschool children with ADHD and that behavioral interventions should be prescribed first.

A comprehensive, but focused evaluation is critical when assessing for ADHD in preschool children. Similarly to school-aged children, the clinician should initiate an ADHD evaluation whenever concerns are raised about the child's attention, activity-level, impulse control or behavior. Evidence-based assessment procedures for preschool ADHD include: 1) The use of an empirically validated ADHD measure that has demonstrated its utility in preschool children, such as the ADHD Rating Scale or the Conners Rating Scales, completed by the child's parents and preschool teachers (or other caregivers, as appropriate), 2) Assessment of impairment, which

The new guidelines recommend that parents complete a parent training program first.

must occur in two or more settings, and 3) Screening for other mental and physical health conditions and significant family stressors. A review of the child's behavioral history is also helpful (i.e., frequency of preschool suspensions, number of trips to time-out in the preschool classroom, etc.).

Another issue relates to the first-line treatment of choice for preschool children with ADHD. While

stimulant medications have been shown to be effective in children ages 6 and older, efficacy appears to be more mixed for preschoolers. The methylphenidate effect sizes

from the PATS⁸ were smaller than those observed for older children in the Multimodal Treatment of ADHD Study¹¹. Moreover, there has been some research to suggest that side effects are more common for preschool children, relative to school-aged children^{12,13}. In the Wigal et al. (2006)¹² study, approximately 30% of the preschool sample experienced significant side effects including appetite suppression, emotional outbursts, irritability, repetitive thoughts or behaviors, and sleep disturbances; 11% of the sample discontinued treatment because they were unable to tolerate these side effects. Results from the Swanson et al. (2006)¹³ study indicated that

preschool children that were treated with methylphenidate demonstrated growth deceleration relative to their non-medicated peers: annual growth rates were 20% and 55% less than expected for height and weight, respectively.

The new AAP guidelines indicate that evidence-based behavioral interventions are the first-line



treatment for preschool children with ADHD and that behavioral interventions should be prescribed first; the addition of stimulant medications should occur only when the behavioral therapy has failed to provide an increase in adaptive functioning and when the child is exhibiting moderate to severe dysfunction^{4,5}.

This recommendation was based on a number of research studies examining the effectiveness of behavioral therapy for preschool children with ADHD. For example, Sonuga-Barke¹⁴ and colleagues (2001) conducted a study examining the effectiveness of parent management training and the results revealed that parent management training is effective in normalizing ADHD symptoms in preschoolers as a stand alone treatment; moreover, mothers reported significant increases in their well-being following the intervention. Often times, however, families of preschool children do not gain access to this kind of therapy¹⁵. For school-

age and adolescent children with ADHD, the new guidelines continue to recommend that the physician prescribe stimulant medications and/or evidence-based behavioral interventions, preferably both.

Regardless of whether the preschool child exceeds diagnostic criteria for ADHD, the AAP's recommended frontline treatment is behavioral parent training and/or behaviorally-based academic

The single most important hallmark of effective parent training procedures is the emphasis on teaching the parent and the child/adolescent specific strategies.

interventions^{4,5}. In instances in which it is unclear whether a child meets criteria for ADHD (i.e., if the child does not attend preschool and the physician has to rely solely on parental report of ADHD symptoms), the new guidelines recommend that parents complete a parent training program first; if the child continues to meet diagnostic criteria for ADHD once the parents have

learned new skills for conceptualizing and responding to their child's problem behaviors, an ADHD diagnosis is warranted. Overall, the new guidelines stress that, if a pediatrician encounters a child with "problem-level" ADHD symptoms, it is critical that a referral be provided to a behavioral specialist. Otherwise, parents will have to navigate mental health treatments on their own, which places them at risk for

entering into a therapy that has no empirical support such as horse therapy, chiropractic interventions, elimination diets, biofeedback, or sensory integration therapy, among others¹⁶.

In conclusion, with the newly increased emphasis on behavior therapy, the primary care physician or nurse practitioner will be under more pressure than ever before to

be familiar with the resources in the community since behavior therapy is admittedly beyond the practice parameters of the vast majority of primary care clinicians (and many developmental pediatricians). For this reason, we refer the reader to the AAP's Mental Health Toolkit or the Spring 2011 issue of the American Academy of Pediatrics Section on Developmental Behavioral Pediatrics (SODBP) Newsletter, wherein the present authors reviewed the evidence-based parent training programs. The major common elements of the programs reviewed, beyond being based on evidence based outcome studies, was the emphasis on teaching parents behavior management strategies in the office by modeling these procedures, encouraging the parents to practice those procedures, and providing them with immediate feedback in order to raise the parent's skill level with the use of these procedures¹⁷.

Similarly, when choosing a practitioner in the community for referral for parent training, the physicians and parents need to be mindful of the strategies employed by those practitioners. Probably the single most important hallmark of effective parent training procedures is the emphasis on teaching the parent and the child/adolescent specific strategies such as clearly defining homework and chores, providing appropriate consequences for compliance with these activities, and refraining from corporal punishment and verbal confrontation.

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AAP Guidelines for assessment and treatment of ADHD: Considerations for adolescents

By Michael I. Reiff, MD, FAPP

Many features of ADHD change with adolescence with the accelerating developmental demands. In addition, hyperactivity, a prime feature of ADHD in preschoolers and school age children tends to decrease significantly. Because of the demands for higher level thinking, for doing things independently, and for accomplishing greater work production; academic school life can become

predominantly inattentive ADHD can present for the first time in their teenage years. These students have been able to cope with the academic school demands in the past, but find the present increasing attention, organizational and cognitive school demands extremely challenging. Because more girls than boys present with inattentive type ADHD, they would be expected to predominate

as frustration and sudden anger outbursts.

Sleep can be a problem with adolescents in general, and particularly with teenagers with ADHD. Adolescents with ADHD can have increased sleep disorders: sleep walking and involuntary movements during sleep². If teenagers are prescribed stimulant medications for ADHD it is important to know their baseline sleep habits, as taking stimulant medication can make it harder to fall asleep.

The new Guidelines have addressed many of these issues. Obtaining teacher reports for adolescents might be more challenging, because many will have multiple teachers. Likewise, parents might have less opportunity to observe their adolescent's behaviors than they had when their children were younger. Adolescents' reports of their own behaviors often differ from those of other observers, because they tend to minimize their own problematic behaviors^{3,4,5}.

Adolescents are less likely to exhibit overt hyperactive behavior. Despite the difficulties, clinicians need to try to obtain (with agreement from the adolescent) information from at least 2 teachers as well as information from other sources such as coaches, school guidance counselors, or leaders of community activities in which the adolescent participates. In addition, it is unusual for adolescents with behavioral/attention problems not to have been previously given a diagnosis of ADHD. Therefore, it is important to establish the younger manifestations of the condition that

High school years are also a time where social life becomes more and more important, but many students with ADHD can still lag 2 to 3 years behind their peers in maturity, leaving them with significant social disadvantages.

more challenging. In addition to this, students have multiple teachers. This also increases the demands for independence and makes it likely that teachers do not know students as well as in earlier years. High school years are also a time where social life becomes more and more important, but many students with ADHD can still lag 2 to 3 years behind their

teenagers newly diagnosed with ADHD. As in earlier years, children diagnosed with different ADHD subtypes can have problems in different areas of functioning. Teenagers with predominantly inattentive ADHD are more prone to social impairment, depression and anxiety. Whereas the ratio of children with ADHD also diagnosed

Adolescents with ADHD, especially when untreated, are at greater risk of substance abuse. In addition, the risks of mood and anxiety disorders and risky sexual behaviors increase during adolescence.

peers in maturity, leaving them with significant social disadvantages. All of these changes are of major importance in considering the care of adolescents with ADHD. Adolescents with ADHD often procrastinate, and have difficulty staying organized with long-term projects and assignments.

Clinicians need to be cautious when newly diagnosing an adolescent with ADHD, although some bright adolescents with

with depressive disorders in girls and boys is 1:1 in earlier years, it is between 2-3:1 in teenagers. In general, adolescents with ADHD, although less disruptive, suffer significantly from problems such as disorganization, inability to follow through on academic tasks, and difficulty sustaining attention for extended academic projects¹. Disruptive behavior can persist in teenagers with ADHD showing up



were missed and to strongly consider substance use, depression, and anxiety as alternative or co-occurring diagnoses. Adolescents with ADHD, especially when untreated, are at greater risk of substance abuse⁶. In addition, the risks of mood and anxiety disorders and risky sexual behaviors increase during adolescence⁷.

As noted previously, before beginning medication treatment for adolescents with newly diagnosed ADHD, clinicians should assess for symptoms of substance abuse. Diversion of ADHD medication (use for other than its intended medical purposes) is also a special concern among adolescents⁸; clinicians should monitor symptoms and prescription-refill requests for signs of misuse or diversion of ADHD medication and consider prescribing medications with low or no abuse potential, such as atomoxetine (Strattera [Ely Lilly Co, Indianapolis, IN]) and extended-release guanfacine (Intuniv [Shire US Inc, Wayne, PA]) or extended-release clonidine (Kapvay [Shionogi Inc, Florham Park, NJ]) (which are not stimulants) or stimulant medications with less abuse potential, such as lisdexamfetamine (Vyvanse [Shire US Inc]), dermal methylphenidate (Daytrana [Noven Therapeutics, LLC, Miami, FL]), or OROS methylphenidate (Concerta [Janssen Pharmaceuticals, Inc, Titusville, NJ]). Lisdexamfetamine is an example of a medication with low abuse potential. It is dextroamphetamine, which contains an additional lysine molecule, and is only activated after taken orally and passing through the intestinal track. The other preparations make extraction of the stimulant medication more difficult.

The new guidelines suggest that clinicians should assess adolescent patients with ADHD for symptoms of substance use or abuse before

beginning medication treatment. If substance abuse is revealed, they should have the patient stop the use, and they should provide treatment or refer them to treatment for

greater risk of significant problems if they discontinue treatment. Because a number of parents of children with ADHD also have ADHD, extra support might be necessary to help

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The new guidelines suggest that clinicians should assess adolescent patients with ADHD for symptoms of substance use or abuse before beginning medication treatment.

substance abuse before beginning treatment for ADHD. Clinicians are also encouraged to monitor symptoms and prescription refills for signs of misuse or diversion of ADHD medication. Special concern should be taken to provide medication coverage for ADHD symptom control while driving. Longer-acting or late-afternoon/ short-acting medications might be helpful in this regard. Counseling for adolescents around medication issues should include dealing with resistance to treatment and empowering children/ adolescents to take charge of and own their medication management as much as possible.

Some adolescents and parents will decline the recommendation for treatment with psychoactive medications. The decision about what is the most acceptable treatment for their child/adolescent rests with the family, and the clinician must respect that decision. The clinician should, however, address any misinformation or concerns about medication shared by the family, encourage all other dimensions of treatment, and provide appropriate monitoring.

Frequently, treatment adherence is a challenge. By the time children become adolescents, medication treatment has been discontinued — at the very time that school demands for attention, organization, planning and higher level thinking are major considerations. Studies of long-term outcomes for children with ADHD indicate that they are at

those parents provide medication on a consistent basis and institute a consistent behavioral program. By adolescence, it becomes more difficult for parents to get direct feedback from teachers. It is important to establish a bidirectional communication with parents, teens, teachers and other school and mental health clinicians involved in the adolescent's care.

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A parent's perspective: What do the newly revised Guidelines for assessment and treatment of ADHD mean to parents? What are the implications for children, teens and families?

By Beth Kaplanek, Parent, RN, Advocate

ADHD is the most common neurobehavioral disorder in children and occurs in up to 8% of children and teens. The number of children diagnosed with ADHD far exceeds what can be managed by the mental health care system; therefore, the clinician plays a key role in assessment and diagnosis. Having guidelines to follow ensures that youth with ADHD will be identified and properly

process of care for ADHD in the pediatric setting and allowed for an increased understanding of some the challenges families faced when their child had ADHD. The initial set of guidelines was written for the diagnosis and treatment of children 6-12 years of age.

The updated guidelines, published in 2011, bring clarity and expansion to the original guidelines and

struggled with our varied parenting styles. If we had understood that our bright, beautiful son was struggling with managing his behaviors because he did not have the ability to inhibit his actions we would have parented differently.

The process of care requires that the primary care physician and office spend more quality time with patients and families including developing contacts with school and other personnel to provide continuity of care for the child or teen. If a referral is made to a mental health care provider, the Primary care doctor remains the key coordinator of the management team. This management team includes the parent, child, school and any other personnel providing direct care to the child or teen. The team identifies target goals from the top impairing areas of the child and/or teen's daily life. These target goals are used to develop a plan with measureable outcomes to change behavior, improve management systems and improve communication within the home and school. The parent works with the health care provider providing important information, data and feedback so that the best possible approach towards the care plan can be achieved based upon the individual needs of the child or teen. In order for this to take place, parents need to have the knowledge base and be empowered to understand ADHD and advocate

When my husband and I were going through the process of trying to find out what was going on with our son there were no guidelines for our son's Pediatrician to follow.

assessed. When my husband and I were going through the process of trying to find out what was going on with our son there were no guidelines for our son's Pediatrician to follow. This created a delay in identifying him as a child with special health care needs for four years. As parents, it was four long years of doubting our selves as parents capable of handling a child that was always on the go and highly emotional.

The first ever set of guidelines for the assessment and treatment of ADHD was published by the American Academy of Pediatrics in 2000 and 2001. This began a new process for the recognition and identification of children that were struggling with the core symptoms of ADHD at home, school and in social settings. These initial guidelines changed the

expanded the age group to include 4-18 year olds. ADHD is a chronic condition that requires continuous monitoring and follow up to ensure resiliency for the child and family. The new guidelines consider children and adolescents with ADHD as children and youth with special health care needs and the management of these youth now follows the principals of the chronic care model and the medical home. The guidelines and supplemental information with algorithm provide strategies and recommendations to facilitate the development of alliances with families to identify issues and concerns early on in order to intervene and limit the impact on the family. This step in the identification of our family's issues would have saved several years of stress and blame for Chuck and I as we



for their child or teen. The Academy's guidelines and ADHD toolkit provides numerous strategies and tools for pediatricians to offer parents to help them with educational information and resources to meet those needs.

Treatment for ADHD is multimodal including education about the disorder and its manifestations. As parents of a child with ADHD we found this process to be quite laborious yet the key to the beginning of treatment. The current recommendation is for parents to have support, educational materials and parent training programs. For pre-school children with ADHD or those that present with symptoms

co-existing conditions, treatment choices and their application and likely effects. Attention is given to including information on developing proactive strategies that can help make the home environment more supportive for the child or teen with ADHD. Strategies include providing greater consistency in parents' behavior toward the child or teen, establishment of scheduling and routines, and the implementation of posted house rules. In addition, special emphasis is given on forming a working partnership with schools so that the teacher can be part of the intervention team for the child and or teen.

If we had understood that our bright, beautiful son was struggling with managing his behaviors because he did not have the ability to inhibit his actions we would have parented differently.

of inattention, hyperactive and impulsivity, evidence- based parent or teacher administered behavioral intervention is the recommended first line treatment.

Education includes all members of the family and is on-going throughout the course of treatment. Education is an important element in the care plan and includes education about the disorder,

A critical new addition to the new guidelines is the importance of empowering children and teens to understand their condition, identify their strengths and understand the degree of impairment ADHD has on their daily lives, including strategies for addressing symptoms and impairments. Left unrecognized adolescents with ADHD are at greater risk for substance abuse,

risky sexual behaviors and mood and anxiety disorders.

The guidelines recommend the primary care clinician to prescribe FDA approved medications for ADHD and or evidence-based parent and/or teacher administered behavior therapy -preferably both. Expanded emphasis has been placed on assisting primary care clinicians to titrate medications to find the optimum dosage. Established follow-up visits and reporting strategies are put in place to measure the performance of the target goals and ensure that they are progressing towards a measurable, positive outcome. Treatment and the implementation of treatment is not complete without proper follow-up and data reporting by parents and teachers. The key to the continuity of care of a child with ADHD is consistent and ongoing monitoring. It requires the input and management of the team approach utilizing the principals of the chronic care model and the medical home. Once my husband and I understood that our son needed on-going management and interventions with our regular input on the issues and concerns, we were better equipped to help our son become successful in school, at home and in social settings.

The new guidelines have brought improved clarity to a very complex and comprehensive disorder. With many children and teens also experiencing coexisting conditions, the identification, treatment and monitoring is even more difficult. With this new holistic approach to the care of a child or teen with ADHD, the parents' voice will be heard and nurtured. The hopes and dreams are that more children will be recognized as youth with special health care needs so that early intervention is put in place to lessen the impact upon the daily life of the child and their family.

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