Supplemental Information

Implementing the Key Action Statements: An Algorithm and Explanation for Process of Care for the Evaluation, Diagnosis, Treatment, and Monitoring of ADHD in Children and Adolescents

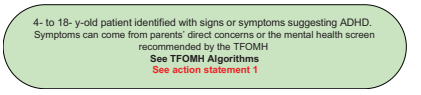
Practice guidelines provide a broad outline of the requirements for high-quality evidence-based care. In support of consistent and comprehensive care for children and adolescents with symptoms of attention and hyperactivity disorders within a typical, busy pediatric practice, the AAP has developed the following suggested process-of-care algorithm (see Supplemental Fig 2) that provides discrete and manageable steps through which a primary care clinician can fulfill the key action statements offered in the guideline. The algorithm is entirely consistent with the practice guideline and is based on the practical experience and advice of clinicians experienced in the diagnosis and management of ADHD in children and adolescents. Because of the detail provided, the process algorithm does not have the same level of evidence base as the key action statements that are provided in the practice guideline. The steps of the algorithm are based primarily on consensus among expert clinicians.

This algorithm and each of its constituent steps is not intended to be completed in any single office visit or any specific number of visits; the experience of the clinician, the volume of the practice, the longevity of the relationship between the clinician and family, the severity of the concerns, the availability of records and school input, the family's schedule, and the reimbursement structure will all play a role in determining the pace at which a family and child/adolescent move through the process of care.

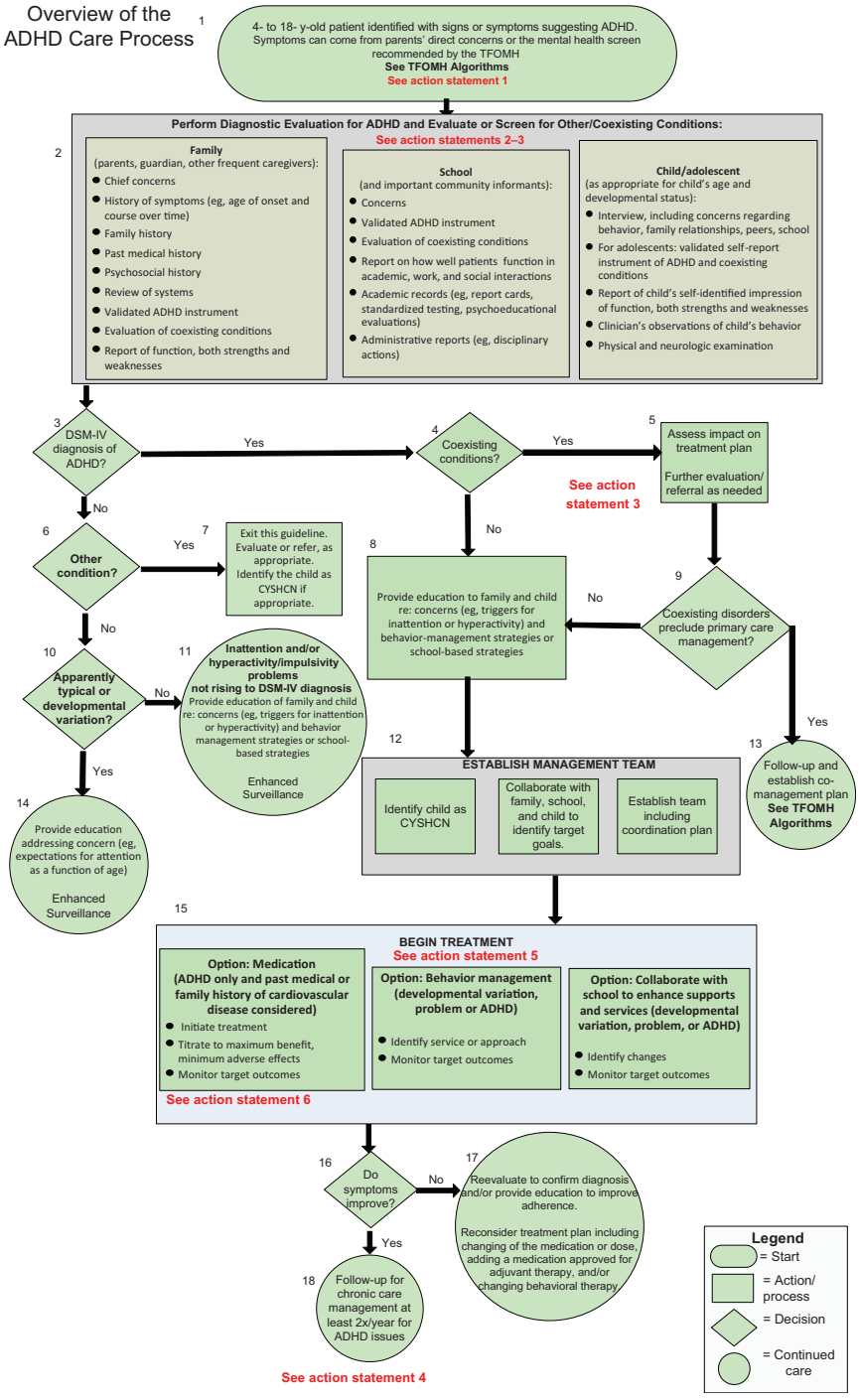
Similarly, continued systematic monitoring (to include reconsideration of the diagnosis if improvements in symptoms are not apparent) is an ongoing process, to be addressed throughout the child's/adolescent's care within the practice, and in transition planning as the adolescent moves into the adult care system.

The algorithm assumes that the primary care practice has adopted mental health surveillance and screening as described by the AAP Task Force on Mental Health.[1] In light of the prevalence of ADHD, the severity of the consequences of untreated ADHD, and the availability of effective treatments for ADHD, the AAP recommends that every child/adolescent identified with signs or symptoms suggestive of ADHD be evaluated for ADHD. It is important to document all aspects of the diagnostic and treatment procedures in patients' records. Use of rating scales for the diagnosis of ADHD, for assessment for comorbid conditions, and as a method for monitoring treatment and providing information provided to parents, such as management plans, can help facilitate a clinician's accurate documentation of the process.

SIGNS AND SYMPTOMS THAT SUGGEST ADHD



Many parents bring their child/adolescent to the primary care clinician with specific concerns about the child's/adolescent's ability to sustain attention, curb activity level, and/or inhibit impulsivity. In these cases, it is clear that the clinician should initiate an evaluation for ADHD. However, in many instances, the chief concern might include behaviors and characteristics associated with ADHD without mention of the core ADHD symptoms. For example, children/adolescents might have difficulty remaining organized, planning activities, or inhibiting their initial thoughts or actions, which are behaviors that fall under the umbrella of executive functions or cognitive control. Problems with executive functions are correlated with ADHD. Moreover, children/adolescents might have difficulty making or keeping friends, following the rules of the classroom, or regulating their behavior. Problems within the realm of social relationships are also correlated with ADHD. In these cases,

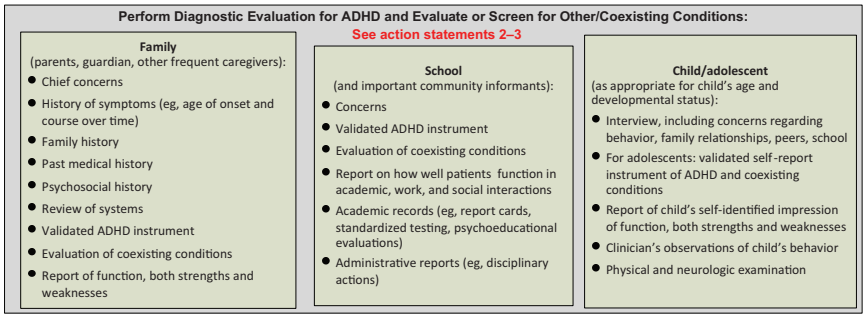


SUPPLEMENTAL APPENDIX FIGURE 2

ADHD process-of-care algorithm. TFOMH indicates Task Force on Mental Health; CYSHCN, child/youth with special health care needs.[1]

initiating the diagnostic evaluation might be appropriate.

Perform Diagnostic Evaluation for ADHD and Evaluate or Screen for



Coexisting Disorders

Ideally, the primary care office staff can ask the assistance of the parent(s) in obtaining information on the purpose of a visit at the time of scheduling. If possible, an extended visit is often desirable for the evaluation of ADHD. As a general approach to the initial evaluation, data on the child's/adolescent's symptoms and functioning (eg, home or school questionnaires) should be gathered from parents, school personnel, and other sources, preferably before the visit. This strategy allows the primary care pediatrician to focus on pertinent issues for that child/adolescent and family at the time of the visit. Parental consent to authorize the release of school data to pediatric providers is important to obtain. The process might be facilitated if the family is given the responsibility to provide other informants with the questionnaires or data-collection forms to be used and to request other records and reports.

To make a diagnosis of ADHD, the clinician needs to establish that at least 6 or more core symptoms per dimension presented in Supplemental Table 2 are present in either or both of the dimensions of inattention and/or hyperactivity/impulsivity.

Diagnostic criteria for ADHD in school-aged children and adolescents include documentation of the following criteria:

- At least 6 of the 9 behaviors described in the inattentive domain occur *often* and to a degree inconsistent with the child's developmental age, and/or
- At least 6 of the 9 behaviors described in the hyperactive/impulsive domain occur *often* and to a degree inconsistent with the child's developmental age.
- Presence of some impairment in 2 or more major settings (eg, home and school) for at least 6 months.
- Presence of some symptoms of ADHD that caused impairment (according to the history) before 7 years of age.
- Symptoms have persisted for at least 6 months.
- Evidence of significant clinical impairment in social, academic, or occupational functioning because of the behaviors.
- Symptoms are not attributable to another physical, situational, or mental health condition.

DSM-IV-TR[2] criteria define 3 subtypes of ADHD:

- ADHD primarily of the inattentive type (ADHD/I, having the inappropriately often occurrence of at least 6 of 9 inattention behaviors and <6 hyperactive-impulsive behaviors);
- ADHD primarily of the hyperactive-impulsive type (ADHD/HI, having the inappropriately often occurrence of at least 6 of 9 hyperactive-impulsive behaviors and <6 inattention behaviors); and
- ADHD combined type (ADHD/C, hav-

SUPPLEMENTAL TABLE 2 Core Symptoms of ADHD (Adapted From the DSM-IV-TR)

Inattention Dimension	Hyperactivity-Impulsivity Dimension	
	Hyperactivity	Impulsivity
Careless mistakes	Fidgety	Blurts answers before questions are completed
Difficulty sustaining attention	Unable to stay seated	Difficulty awaiting turn
Seems not to listen	Moves excessively (restless)	Interrupts/intrudes on others
Fails to finish tasks	Difficulty engaging in leisure activities quietly	
Difficulty organizing	"On the go"	
	Talks excessively	
Avoids tasks that require sustained attention		
Loses things		
Easily distracted		
Forgetful		

ing the inappropriately often occurrence of at least 6 of 9 behaviors in both the inattention and hyperactive-impulsive dimensions).

There is also evidence that the criteria are appropriate for preschool-aged children[3] and adolescents.[4] The use of specific DSM-IV-TR criteria decreases variation among clinicians in how the diagnosis is made and will facilitate communication among professionals and patients.

DSM-IV-TR criteria require evidence of impairing symptoms before 7 years of age. In some cases, the symptoms of ADHD might not be recognized by parents or teachers until the child is older than 7 years, when school tasks become more challenging. In children for whom the problems are identified after 7 years of age, history can often identify an earlier age of onset of some of the symptoms. Delayed recognition might be seen more often in the inattentive subtype of ADHD.[5]

If symptoms arise suddenly, without previous history, primary care clinicians should consider other conditions including head trauma, physical or sexual abuse, neurodegenerative disorders, mood or anxiety disorders, substance abuse, or a major psychological stress in the family or school.

The requirements that a child must have significant impairment in function and some impairment in at least 2 settings are the most challenging aspects of the DSM-IV-TR criteria for the clinician to obtain accurate information. The presence of functional impairments is often the most troubling issue for children, families, and teachers and is a central requirement in making the diagnosis of ADHD[6] (also see Behavior Management").

As was determined in the previous guideline, parent and teacher rating scales that use DSM-IV-TR criteria for ADHD are helpful in obtaining the information required to make a diagnosis on the basis of the DSM-IV-TR criteria. Broad-band rating scales that assess mental health functioning in general do not provide reliable and valid indications of ADHD diagnoses but might help in screening for co-occurring behavioral conditions.[7]

No current instruments routinely used in primary care practice reliably assess the nature or degree of functional impairment in children with ADHD, although parent-report instruments might help. Some measures that are available are limited, because they mostly provide only a global rating (eg, the Strengths and Difficulties Questionnaire [SDQ] Impact Scale[8] and the Children's Global Assessment Scale [CGAS][9]) or have more limited validation (eg, the performance component of the Vanderbilt Scales[10,11]). Review of documents, such as report cards and results of standardized testing, and evidence of detention, suspensions, or expulsions from school can also serve as evidence of functional impairment. With information obtained from the parent and school, the clinician will need to make a clinical judgment about the effect of the core and associated symptoms of ADHD on academic achievement, classroom performance, family and social relationships, independent functioning and safety/accidental injuries, self-perception, leisure activities, and self-care (such as bathing, toileting, dressing, and eating). Additional guidance regarding functional assessment is available through the AAP ADHD toolkit and the Task Force on Mental Health.[15,16]

In the absence of other concerns and findings on medical history, family and social history, and physical examination of the child, no further diagnostic testing will help to reach the diagnosis. Compared with clinical interviews, standardized psychological tests, such as computerized tests of attention, have not been found to reliably differentiate between youth with and without ADHD.[14,15] Appropriate further assessment is indicated if an underlying etiology is suspected. Assessments such as screening for high lead levels, low iron or ferritin levels or abnormal thyroid hormone levels or imaging studies should be pursued only if other historic or physical information suggests their presence. Conditions such as sleep disorders, such as apnea, absence seizures, hyperthyroidism, or mood or anxiety disorders might present with ADHD symptoms and might be relieved when the primary condition is treated.

Current criteria do not describe gender or developmental differences, although numerous studies have found that the frequency of symptomatic behaviors varies significantly across gender and age groups (for a review, see Barkley[16]). Compared with other girls, girls with ADHD experience more depression, anxiety, distress, poor teacher relationships, stress, external locus of control, and impaired academics. Compared with boys with ADHD, girls with ADHD experience more impairment in self-reported anxiety, distress, depression, and external locus of control. Furthermore, the behavioral characteristics specified in the DSM-IV-TR, despite efforts to standardize them, remain subjective, to a great extent, and may be interpreted differently by different observers. Cultural norms and expectations of parents or teachers may influence the perspectives of various informants. The rates of ADHD and its treatment have been found to be different for different racial/ethnic groups.[17,18] The clinician must remain sensitive to cultural differences in the appropriateness of behaviors and perceptions of mental health conditions. Other factors, such as poverty and access to care, likely contribute to the cultural

differences. These complexities in the diagnosis mean that clinicians who use DSM-IV-TR criteria must apply them in the context of sound clinical judgment.

The DSM-IV-TR does include a category of "ADHD not otherwise specified." This category is meant for children who meet many but not the full criteria for ADHD, such as children who meet all the symptom and impairment criteria but whose age of onset is later than 7 years or children who have clinically significant impairment but do not meet all the symptom requirements. Clinically significant impairment is required in diagnosing a child with ADHD. Children with inattentive or hyperactive/impulsive symptoms but less than significant impairment are characterized as having "problems."

FAMILY

A comprehensive diagnostic evaluation typically begins with identifying the **family's chief concerns**. The clinician also needs to have the family members complete a **validated ADHD instrument**. Family members should be asked to provide a **history of signs and symptoms**. This history includes determining the onset, frequency, and duration of problem behaviors, situations in which they increase or decrease, previous treatments and their results, and the family's understanding of the issues. The **family history** should include any medical syndromes, developmental delays, cognitive limitations, learning disorders, or mental illness in family members, including ADHD and mood, anxiety, and bipolar disorders. In addition, parental tobacco and substance use is relevant to risk factors for ADHD.[17] Family members might not have been formally diagnosed with ADHD; asking about family members' school experience and problems similar to those of the patient might suggest undiagnosed cases of ADHD.

Updating the **medical history** can focus on factors associated with ADHD, such as preterm delivery, neonatal problems, congenital infections, and head trauma. The **psychosocial history** should include environmental factors, such as family stress and problematic relationships that might contribute to the child's/adolescent's overall functioning.

It is important to obtain history of conditions that might mimic ADHD symptoms or might co-occur with the condition. Co-occurring conditions are discussed later in the process algorithm. Several available questionnaires also provide a **screen for coexisting conditions** and a **report of function**. It is important to obtain a history that would suggest lead exposure, absence seizures, or other mental illnesses such as anxiety or mood disorders and Tourette disorder. A full **review of systems** might also reveal other symptoms, such as sleep disturbances, that may assist in formulating a differential diagnosis and/or may be considered in the development of management plans. The patient should also be screened for hearing and/or visual problems.

Primary sleep disorders, such as obstructive sleep apnea syndrome and restless-leg syndrome/periodic limb-movement disorder, might present with symptoms of inattention, hyperactivity, and impulsivity or are frequently associated with ADHD.[18–21] All children being evaluated for ADHD should be systematically screened for symptoms of (ie, frequent snoring, observed breathing pauses; restless sleep, urge to move their legs at night; daytime sleepiness) and risk factors for (ie, adenotonsillar hypertrophy, asthma/allergies, obesity; family history of restless-leg syndrome/periodic limb-movement disorder, iron deficiency) primary sleep disorders.[22] Sleep-assessment measures that have been shown to be useful in the pediatric primary care practice setting include brief screening tools[25] and parent-report surveys.[26,27] Overnight polysomnography should be strongly considered for children with symptoms suggestive of and/or risk factors for obstructive sleep apnea syndrome and restless-leg syndrome/periodic limb-movement disorder.[28]

In addition, even in the absence of primary sleep disorders, modest reductions in sleep duration, such as those associated with environmentally related insufficient sleep, might be associated with detectable deterioration in vigilance and attention in children with ADHD and should be evaluated and addressed.[29] Common clinical presentations of insomnia in children with ADHD include bedtime resistance, delayed sleep onset, night wakings, and early-morning awakening. Both a baseline assessment (ie, before initiating treatment) and ongoing periodic screening for sleep problems should be included in the management of all children with ADHD. Sleep diaries are useful adjuncts in quantifying sleep-onset latency and night wakings and assessing variability in sleep patterns.[30] The differential diagnosis of insomnia in children with ADHD includes:

- ADHD medication (stimulant and nonstimulant) effects:
  - Direct effects on sleep architecture (ie, prolonged sleep-onset latency and decreased sleep duration, increased night wakings)[31–33]; and
  - Indirect effects such as inadequate control of ADHD symptoms in the evening and medication withdrawal or rebound symptoms.[23,34]
- Sleep problems associated with coexisting psychiatric conditions (ie,

anxiety and mood disorders, disruptive behavior disorders).[34,35]

- Circadian-based phase delay in sleep-wake patterns, which have been shown to occur in some children with ADHD, which results in both prolonged sleep onset and difficulty waking in the morning.[36]
- Inadequate sleep hygiene (ie, inconsistent bedtimes and wake times, absence of a bedtime routine, electronics in the bedroom, caffeine use).[37]
- Intrinsic deficit associated with ADHD. Numerous studies have found that nonmedicated children with ADHD and no comorbid mood or anxiety disorders have significantly greater bedtime resistance, more sleep-onset difficulties, and more frequent night awakenings when compared with typically developing control children.[38] In addition, some children with ADHD seem to have evidence of increased daytime sleepiness even in the absence of a primary sleep disorder.[39,40]

A sound assessment of functioning in major areas can then be used to construct an educational and behavioral profile including not only concerns but also strengths or talents. The most common areas of functioning affected by ADHD include academic achievement; peer, parent, sibling, and adult authority-figure relationships; participation in recreation such as sports; and behavior and emotional regulation, including risky behavior. One systematic approach to the assessment of function can use the framework of the International Classification of Functioning, Disability, and Health.[6,41]

Suggestions and recommendations for scales such as the modified Patient Health Questionnaire-9 Modified for Adolescents (PHQ-A)[42] and Screen for Child Anxiety Related Emotional Disorders (SCARED)[43] have been developed by the AAP Task Force on Mental Health.[13] The situation might be more complicated when parents disagree, particularly in divorce situations when parents with shared custody perceive the child's problems and strengths differently. Under such circumstances, the clinician must use communication skills to find a consensus on the diagnosis and plan. Eliciting information from extended family members might help clarify some of the differences.

SCHOOL AND/OR OTHER COMMUNITY INFORMANTS

Multiple informants are required for clinicians to determine the nature and severity of symptoms, impact of the symptoms on function in 2 or more settings, and whether the child/adolescent meets DSM-IV-TR criteria for the diagnosis of ADHD. In most cases, the teacher provides those reports. The reports of parents and teachers are often sufficient for the ADHD diagnosis, but information from the patient is essential for identifying the internalizing conditions of mood and anxiety disorders. Rating scales recommended by the Task Force on Mental Health may be helpful. In some circumstances, it might be desirable to solicit information from additional sources. School reports, for example, might be more difficult to obtain—or less comprehensive—in cases that involve preschool-aged children and adolescents. Other adults who are active in the life of an adolescent, such as coaches, pastors, or scout leaders, can be asked to complete rating scales to develop a full profile of the adolescent, although the accuracy of their reporting has not been studied

Teachers might indicate their major **concerns** by using questionnaires or verbal input by telephone or through direct conversation. An appropriate school representative should be asked to complete a **validated ADHD instrument** or behavior scale based on DSM-IV-TR criteria for ADHD and provide observations that might suggest coexisting or alternative conditions, including disruptive behavior disorders, depression and anxiety disorders, tics, or learning disabilities. **Report of function**, both strengths and weaknesses, might be gleaned by questionnaires or **academic records** that can include report cards; standardized testing in reading, mathematics, and written expression; validated functional assessment tools mentioned previously[44]; and previous psychoeducational evaluations. These records can help establish a child's/adolescent's profile of academic and behavioral performance in school, the presence of a learning disability, difficulty in following school rules, the quality of peer interactions, and the extent of school absences.

If the records indicate that the child is having difficulty learning academic skills, the physician should determine if the child has been assessed for a potential learning problem by the school, because there is a high comorbidity between learning disabilities and ADHD. The school assessment might use a response-to-intervention model as part of the diagnostic process in which learning problems are evaluated on the basis of the child's response to evidence-based academic interventions, or a multidisciplinary team evaluation might be conducted by the school. If the child has an Individualized Education Program, this document should be reviewed by the clinician.

If the child continues to struggle despite the school's interventions and treatment for ADHD, further psychoeducational or neuropsychological as-

sessment is necessary. The clinician might want to recommend that the evaluations be performed by an independent psychologist or neuropsychologist. Despite the importance of the psychological assessments, insurance coverage is quite variable, and families should be encouraged to investigate their coverage when pursuing independent psychological evaluations. Financing community-based evaluations has been addressed in a previous AAP statement.[45] Children with intellectual or other developmental disabilities might also have ADHD, but the assessment in these cases is more complicated, because one must ensure that the academic expectations are matched to the child's academic abilities and the level of ADHD symptoms exceeds what would be expected for a child's developmental level. Primary care physicians involved in assessing ADHD in children with intellectual disabilities will need to collaborate closely with a school psychologist or independent psychologist.

In addition to the academic information, information should be requested that characterizes the child's/adolescent's level of functioning with regards to peer, teacher, and other authority figure relationships; ability to follow directions; organizational skills; history of classroom disruption; and assignment completion. **Administrative reports** of disciplinary action, such as suspensions and expulsions, and descriptions of behavior at school reflect social function and behavioral regulation and suggest the possibility of coexisting conditions.

For adolescents who have multiple teachers, it is desirable to obtain behavior and impairment ratings from at least 2 teachers in academic subjects (eg, math and English teachers or, for children/adolescents with learning disabilities, a teacher in the area of strong function and a teacher in the area of weak function). The ADHD toolkit[13] provides materials relevant to this school data collection.

Teacher and parent reports frequently disagree,[46] and there also might be disagreement between parents. These observations might not be inaccurate, because parents and teachers observe the children under different circumstances. When there is disagreement, it is helpful to obtain more information such as the circumstance under which the individuals observed the child, the demands on the child during those observations, the observers' understanding of the behaviors and how to deal with them, and the observers' understanding of ADHD and how it is treated as well as the role they play with the child. As noted previously, obtaining information from additional sources, such as grandparents, coaches, or Sunday school teachers, can be helpful. The clinician's decision about the diagnosis is a clinical judgment made on the basis of all the information that is available.

CHILD/ADOLESCENT

The clinician should conduct an age-appropriate **interview**, including the child's/adolescent's concern regarding his or her own behavior, and regarding family relationships, peers, and school. It is important to include a discussion of his or her strengths, goals, and difficulties. Along with the interview, the use of an appropriate **validated self-report instrument of ADHD and co-existing conditions**, primarily for adolescents, can aid in the assessment of risk of ADHD and anxiety and mood disorders. It is also important to ask about delusional thinking and suicidal thoughts or actions. This evaluation should also provide a baseline of the child's/adolescent's self-identified **report of function** at home, in school, at work, and among peers as well as validated functional assessment tools.[44] Whenever possible, the individual child's or youth's own view of what he or she would like to see changed should be considered primary targets for intervention, because these goals might at times differ widely from parent or school concerns.

The clinician must keep in mind the tendency of many children/adolescents to underreport their ADHD and other disruptive behavior symptoms. However, the baseline impressions of the child/adolescent can then be used as the basis for shaping the patient's understanding of ADHD and coexisting symptoms as well as monitoring function in social, behavioral, and academic domains. Active involvement of the children/adolescents might be useful to empower them to understand and participate in their own diagnostic formulation and, later, to obtain "buy in" to their treatment plan and improve adherence to treatment. Recommendations of the AAP Task Force on Mental Health and the Guidelines for Adolescent Depression in Primary Care (GLAD-PC)[47,48] include using validated diagnostic rating scales for adolescent mood and anxiety disorders for clinicians who wish to use this format. In addition, the CRAFFT (car, relax, alone, forget, friends, trouble) is an available screen for substance abuse.[49]

Clinical **observations** of the patient should be recorded and include his or her level of attention, activity, and impulsivity during the encounter. An important caveat is that the findings seen in other settings, including core symptoms, are often not observed during office visits.[50]

Special attention should be paid to language skills in preschool-aged and young school-aged children, because difficulties with language can be a symptom of a language disorder and

predictor of subsequent reading problems; such language disorders might present as problems with attention and impulsivity. Likewise, social interactions should be noted during the examination, because they are another possible area of deficiency.

The **physical and neurologic examination** must be comprehensive. A physical and neurologic examination should be conducted to determine if further medical or developmental assessments are indicated. Baseline height, weight, blood pressure, and pulse measurements should be taken. Among the signs to note are hearing and visual acuity and cardiovascular status. Dysmorphic features should also be noted, because ADHD might be associated with genetic syndromes (eg, fetal alcohol syndrome and fragile X). The neurologic evaluation should include developmental and mental status observations including affect; communication skills, including speech and language; tics; and gross and fine motor coordination. Many children with ADHD will have poor coordination, which might be severe enough to warrant a diagnosis of developmental coordination disorder. The findings can affect how well the child can perform in competitive sports and can also adversely affect his or her writing skills. Through history and examination of the child's fine and gross motor skills, the clinician can identify these deficits and address them in the management plan.

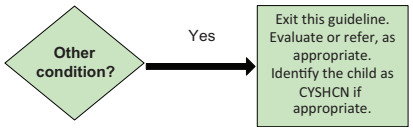
As a result of the diagnostic evaluation, a primary care clinician should be able to answer the following questions:

- How many inattentive and hyperactive/impulsive behavior criteria for ADHD does the child/adolescent meet across the major settings of his or her life?
- Have these criteria been present for 6 months or longer?
- Was the onset of these or similar behaviors present before the age of 7 years?
- What functional impairments, if any, are caused by these behaviors?
- Could any other condition be a better explanation for the behaviors?
- Is there evidence of coexisting problems or disorders?

On the basis of this information, the clinician should be able to arrive at a preliminary diagnosis.

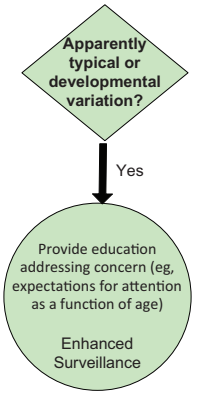
OTHER DISORDERS

If symptoms arise suddenly, without any previous history, primary care clinicians should consider other conditions, including head trauma, physical or sexual abuse, neurodegenerative disorders, mood and anxiety disorders, substance abuse, or a major psychological stress in the family or in school, such as bullying.

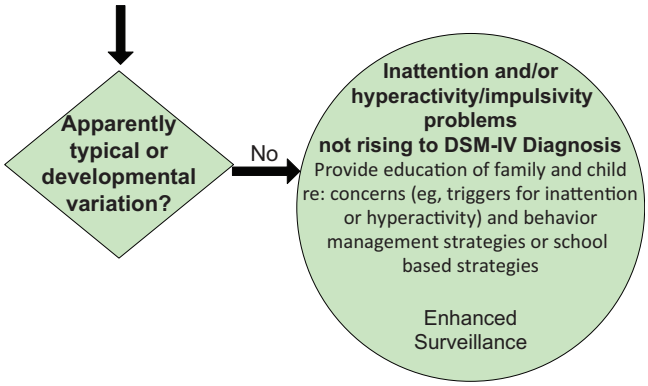


If the evaluation identifies or suggests that another disorder is the cause of the concerning signs and symptoms, then it is appropriate to exit this algorithm. The approach in that case is dictated by the results of the evaluation. If a referral is made, the primary care clinician should frame the referral questions clearly and expect these referral questions to be answered in a manner that will ensure that a comanagement plan that addresses the families' and child's/adolescent's ongoing needs for education and general and specialty health care is established. Resources from the AAP Task Force on Mental Health might be helpful.

TYPICAL OR DEVELOPMENTAL VARIATION:



Evaluation might reveal that the child's/adolescent's inattention, activity level, and impulsivity are within the normal range of development; mildly or inconsistently elevated in comparison to peers; or not associated with any functional impairment in behavior, academics, social skills, or other domains. It is important for the clinician to probe further to determine if the parental concerns regarding the child/adolescent are attributable to other issues in the family, such as parental tension or drug abuse in another family member; whether they are caused by other issues in school, such as social pressures or bullying; or whether they are within the spectrum of typical development. Parent education about contributions to their concerns and to the spectrum of developmental variation might be helpful. Education about the range of typical development and strategies for improving a child's/adolescent's behaviors when they are problematic might be helpful. A schedule of enhanced surveillance absolves the family of the need to reinitiate contact if the situation deteriorates. If a recommendation for continued routine systematic surveillance is made, then assurance that ongoing con-



cerns can be revisited in future primary care visits would be important.

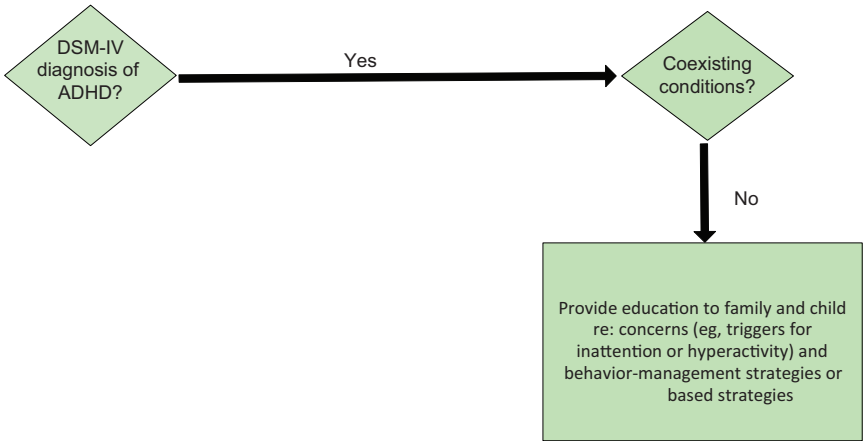
INATTENTION, HYPERACTIVITY, AND/OR IMPULSIVITY (PROBLEM LEVEL):

Children/adolescents whose symptoms do not meet the criteria for diagnosis of ADHD might still encounter difficulties or impairment in some settings, as described in the DSM-PC Child and Adolescent Version.[51]

Professional consensus is that medication is not an appropriate treatment for children/adolescents with inattention, hyperactivity, and/or impulsivity problems that do not meet the DSM-IV-TR criteria for ADHD. Children/adolescents with these problems and their families might benefit from education, including identifying and eliminating triggers that prompt inattention, hyperactivity, or impulsivity; behavior-management options, including a behavior-therapy or parenting program; strategies for improving school performance or behavior; and the recommendations provided in the inattention and hyperactivity/impulsivity cluster guidance in the Task Force on Mental Health ADHD toolkit.[13]

ATTENTION-DEFICIT/HYPERACTIVITY DISORDER:

If the child/adolescent is found to meet the DSM-IV-TR criteria for ADHD, including commensurate functional disabilities, such diagnosis should be made, and progress through the process-of-care algorithm continues as shown.



Provide Education to the Family and Child/Adolescent

Education for the family and child/adolescent about ADHD is an important element in the care plan when ADHD is diagnosed or inattention, hyperactivity, and/or impulsivity (problem level) is identified. Family education continues throughout the course of treatment. It includes anticipatory guidance in such areas as transitions (eg, from elementary to middle and middle to high schools and from high school to college or employment) and working with schools and developmental challenges that might be affected by ADHD, including driving, gender, and drugs.

Family education includes all members of the family, including developmentally age-appropriate information for the affected child/adolescent and any siblings. Topics include the disorder; the symptoms; the assessment process; commonly coexisting disorders; treatment choices and their application, likely effects, and outcomes; long-term implications; impact on school performance; and social participation.

A critical piece of the treatment plan is to empower children/adolescents to understand their condition and the degree of impairment that it has on their daily life, including strategies for addressing symptoms and impairments. At every stage, this education must continue in a manner consistent with the child's/adolescent's own level of understanding. In addition, it is helpful for a child/adolescent with ADHD to know the name of any medication that he or she will be using as well as common adverse effects.

The issue of how the patient thinks of himself or herself is another area to address; it should be clarified that the condition does not mean that he

or she is less smart than other children/adolescents. It can also be helpful to identify and support areas of strength and help the child/adolescent with ADHD to learn how to identify when he or she needs help and how to procure it.

Education for parents should include proactive strategies that can help make the home environment more facilitative for their child/adolescent with ADHD. For example, making adaptations and providing structure that enables the child/adolescent to best use his or her strengths and compensate for deficits can be helpful to parents. Such strategies include providing greater consistency in the parents' behavior toward their child/adolescent with ADHD, forming daily routines and schedules, and displaying house rules in prominent places as visual reminders. It may help parents to communicate about their child's/adolescent's behavior and each parent's response as well as the parental division of labor. It is also important to check on the parents' well-being, because parents of children/adolescents with ADHD frequently are under stress and might not take into consideration their own well-being or that of other family members. These concerns are particularly relevant when a parent also has ADHD or associated conditions.

Parents will likely benefit if they learn about optimal ways to partner with schools such that teachers can become part of the educational and intervention teams. Parents will benefit from being informed about school services that are available to address their child's/adolescent's needs, including the Individuals With Disabilities Education Act (IDEA) and the Rehabilitation Act (504) services provided by their state, and the eligibility requirements for them. With a parent's permission, the clinician can provide the school with information from the evaluation that will help the school determine eligibility for special education services and develop appropriate adaptations. Advocacy and support groups such as CHADD (Children and Adults With Attention-Deficit/Hyperactivity Disorder) can also provide information and support to families.

The ADHD toolkit[13] provides lists of educational resources including Web-based resources, organizations, and books that might be useful to parents and students.

COEXISTING CONDITIONS:

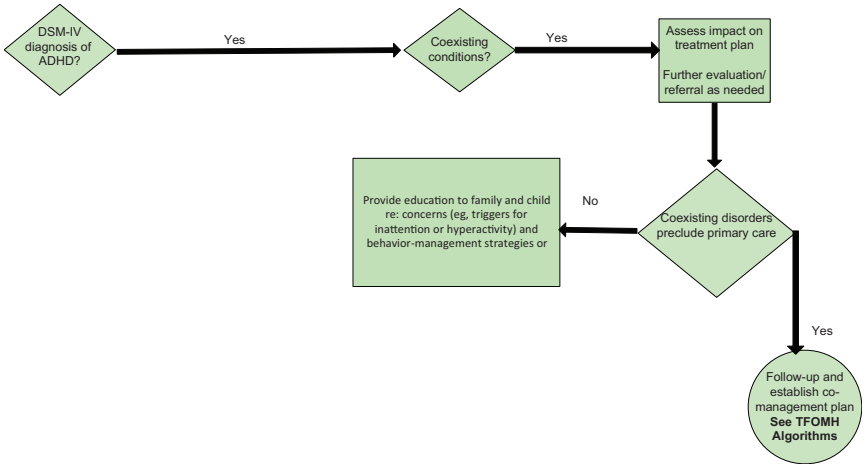
If other disorders are suspected or detected during the diagnostic evaluation, an assessment of the urgency of these conditions and their impact on the ADHD treatment plan needs to be made.

Urgent conditions, such as suicidal thoughts or acts or other behaviors with the potential to severely injure the child/adolescent or other people, such as severe temper outbursts or child abuse, should be addressed immediately with services capable of handling crisis situations.

The evidence shows that coexisting conditions, such as oppositionality and anxiety, might improve with treatment of ADHD.[51] For example, children with ADHD and coexisting anxiety disorders might find that ADHD medications decrease anxiety symptoms as well as ADHD behaviors. In the cases of severe learning disorders or oppositional defiant disorder, a trial of treatment for ADHD might indicate whether the apparent coexisting condition can be modulated with treatment of the ADHD. Other patients might require additional therapeutic treatments, such as cognitive behavioral therapy or a different or additional medication, to adequately treat the ADHD and coexisting condition.

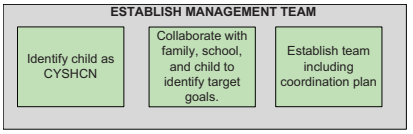
Untreated substance use disorder needs to be addressed first before fully addressing the patient's ADHD treatments.

If the primary care clinician requires the advice of another subspecialist, then the clinician should consider carefully when to initiate treatment for ADHD. In some cases, it might be advisable to delay the start of medication until the role of each member of the treatment team is established. For example, with some coexisting psychiatric disorders, such as severe anxiety, depression, and bipolar disorder, a comanaging developmental behavioral pediatrician or psychiatrist might take



responsibility for treatment of both the ADHD and the coexisting illness.

At other times, such as in the case of a child or adolescent with coexisting mild depression or obsessive-compulsive disorder, a mental health clinician, developmental-behavioral pediatrician, neurodevelopmental disability clinician, or child neurologist may treat the coexisting condition while the primary care clinician oversees the treatment for ADHD, or the consulting physician may advise the primary care physician about the treatment of the coexisting condition to the extent that the primary care physician is comfortable treating both the ADHD and coexisting problems.



IDENTIFY AS A CHILD/YOUTH WITH SPECIAL HEALTH CARE NEEDS:

Any child who meets the criteria for ADHD should be considered a child/youth with special health care needs. The AAP encourages clinicians to develop systems that ensure that the medical home needs of all children/youth with chronic illnesses are met. These needs—and strategies for meeting them—are discussed in further detail elsewhere in this guideline and in other AAP resources such as *The Building Your Medical Home Toolkit* and *Addressing Mental Health Concerns in Primary Care: A Clinician's Toolkit*.[43,53]

Management Issues

Questions that are important to consider in developing a management plan include the following:

- Does the family need further assistance in understanding the core symptoms of ADHD and their child's/adolescent's target symptoms and coexisting conditions?
- Does the family need support in learning how to establish, measure, and monitor target goals?
- Have the family's goals been identified and addressed in the care plan?
- Does the family have an understanding of effective behavior-management techniques for responding to tantrums, oppositional behavior, or poor compliance to requests and commands?
- Is help needed for normalizing peer and family relationships?
- Does the child/adolescent need help in academic areas? If so, has a formal evaluation been performed and reviewed to distinguish work production problems secondary to ADHD from coexisting learning or language disabilities?
- Does the child/adolescent need help in achieving independence in self-help or schoolwork production?
- Does the child/adolescent or family require help with optimizing, organizing, planning, or managing schoolwork flow?
- Does the family need help in recognition, understanding, or management of coexisting conditions?
- Is there a plan in place to systematically educate the child/adolescent about ADHD and its treatment as well as the child's/adolescent's own strengths and weaknesses?
- Is there a plan in place to empower the child/adolescent with the knowledge and understanding that will increase his or her adherence to treatments, and has that begun as early as possible and been addressed at the child's/adolescent's developmental level?
- Does the family have a copy of a care plan that summarizes findings and treatment recommendations that can be updated and used in school settings and other professional settings so that the history and treatment plan does not need to be constantly reinvented?
- Is the follow-up plan sufficient to provide comprehensive, coordinated, family-centered, culturally competent, ongoing care?

COLLABORATE WITH THE FAMILY, SCHOOL, AND CHILD/ADOLESCENT TO IDENTIFY TARGET GOALS:

Whereas an initial stimulant medication trial might focus on normalizing core symptoms of ADHD, a longer-term comprehensive plan should focus on identifying and addressing individualized and specific behavioral, academic, and social target goals and treatments. The clinician should assist parents, teachers, other informants, and the child/adolescent in developing target goals in the areas of function most commonly affected by ADHD: academics; peer, parent, or sibling relationships; and safety in the community. Other goals might be identified by using the International Classification of Function (ICF) analysis conducted in the diagnostic phase of the clinical pathway.[6]

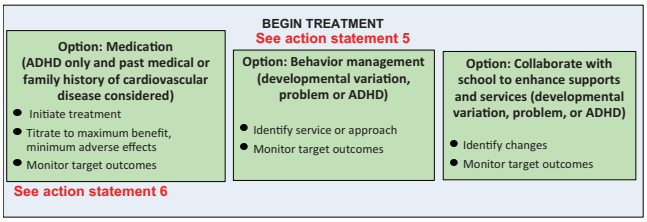
It is not necessary to develop goals in every area all at once. Families might be encouraged to identify up to 3 of the most impairing areas on which they will initially work; parents and the child/adolescent can then add other targets as indicated by their relative importance. Such an exercise will facilitate greater understanding of the effects of the disorder on each member of the family and might lead to an improved collaboration in the development of a few specific and measurable outcomes. It is helpful to incorporate the child's/adolescent's strengths and resilient factors in considering target goals and in generating a treatment plan. Goals for the school require input from the teachers in terms of both identification and measurement.

Establishing measurable goals in interpersonal domains and behavior in unstructured settings might be particularly important. Whenever possible, it is important to make progress "countable." For behaviors such as "frequency of yelling" or frequency of missing assignments, charts may be suggested as strategies for recording the event so that parents, teachers, the child/adolescent, and clinicians can all agree on how much progress has been made. In this way, successes can be built on in a systematic way. Such strategies can help a family accurately assess and see progress of behavior changes. A daily single-page report card can be used to identify and monitor 4 or 5 behaviors that affect function at school, and these reports can be shared with the parents. Other strategies and tools are available to clinicians in the AAP ADHD toolkit[13] and to parents in the book *ADHD: What Every Parent Needs to Know*.[52]

As treatment proceeds, in addition to using a DSM-IV-TR–based ADHD rating scale to monitor core symptom changes, formal and informal queries can be made in the areas of function most commonly affected by ADHD (eg, academic achievement; peer, parent, or sibling relationships; and safety in the community). Progress can also be monitored by determining progress on the target goals. At every visit, it is helpful to gradually empower children/adolescents to become full partners in their treatment plan by adolescence. Information from the school, including ADHD symptoms (rating scale completed by the teacher), grades, and any other formal testing results, are also helpful at these visits.

ESTABLISH TEAM AND COORDINATION PLAN:

It is best for the treatment team to include everyone involved in the care of the child/adolescent: the child/adolescent, parents, teachers, the primary care clinician, therapists, subspecialists, and other adults (such as coaches or religious leaders) who will be actively engaged in supporting and monitoring the treatment of ADHD. It is helpful for the primary care clinician or an assigned "care coordinator" to ensure that each team member is aware of his or her role and that both routine and as-needed communication strategies and expectations for reports (frequency, scope) are clear. Collaboration with the school goes beyond the initial report of diagnosis and is best facilitated by agreement on a standardized, reliable system for exchanging communications.



TREATMENT:

Medication

This treatment option is restricted to children/adolescents who meet the diagnostic criteria for ADHD.

Although it is a rare occurrence[55] and more evidence is required to identify whether it is an increased risk, it is important to obtain a careful history of cardiac symptoms; a cardiac family history, particularly of arrhythmias, sudden death, and death at a young age from cardiac conditions; and vital signs, cardiac physical examination, and further evaluation on the basis of clinical judgment.

Stimulant medications and several nonstimulant medications are now available, as outlined in Supplemental Table 3. The presence of a tic disorder might affect the decision about which medication to initiate for ADHD therapy. With the greater availability of medications approved by the FDA for children/adolescents with ADHD, it has become increasingly unlikely that clinicians need to consider the off-label use of other medications. The choice of formulation depends on factors such as the efficacy of each agent for a given child/adolescent, the preferred length of coverage time, whether a child can swallow pills or capsules, and expense. The extended-release formulations are generally more expensive than the immediate-release formulations but might be preferred by many families and children/adolescents, because they provide the benefits of consistent and sustained coverage with fewer administrations per day. Long-acting formulations usually preclude the need for school-based administration of ADHD medication. Better coverage with fewer administrations leads to greater convenience for the family and, therefore, might also lead to better adherence to the medication management plan. Some patients, particularly some adolescents, might require more than 12 hours of coverage to ensure adequate focus and concentration during evening study time and driving; in these cases, a short-acting preparation might be used in addition to a long-acting preparation.

The ease with which preparations can be administered and the minimization of adverse effects are important for the quality-of-life concerns that children, youth, and parents express around the decision to use medication.

SUPPLEMENTAL TABLE 3 FDA-Approved Medications: Dosing and Pharmacokinetics

Medication	Brand	Initial Titration Dose	Frequency	Time to Initial Effect	Duration, h	Maximum Dose	Available Doses
Mixed amphetamine salts	Adderall[a]	2.5–5.0 mg	QD–BID	20–60 min	6	40 mg	5.0-, 7.5-, 10.0-, 12.5-, 15.0-, 20.0-, and 30.0-mg tablets
	Adderall XR[a]	5 mg	QD	20–60 min	10	40 mg	5-, 10-, 15-, 20-, 25-, and 30-mg capsules
Dextroamphetamine	Dexedrine[a]/ Dextrostat	2.5 mg	BID–TID	20–60 min	4–6	40 mg	5- and 10-mg (Dextrostat only) tablets
	Dexedrine Spansule[a]	5 mg	QD–BID	≥60 min	≥6	40 mg	5-, 10-, and 15-mg capsules
Lisdexamfetamine	Vyvanse	20 mg	QD	60 min	10–12	70 mg	20-, 30-, 40-, 50-, 60-, and 70-mg capsules
Methylphenidate	Concerta	18 mg	QD	20–60 min	12	54 mg (<13 y); 72 mg (≥13 y)	18-, 27-, 36-, and 54-mg capsules
	Methyl ER	10 mg	QD	20–60 min	8	60 mg	10- and 20-mg tablets
	Methylin	5 mg	BID–TID	20–60 min	3–5	60 mg	5-, 10-, and 20-mg tablets and liquid and chewable forms
	Daytrana	10 mg[b]	Apply for 9 h	60 min	11–12	30 mg	10-, 15-, 20-, and 30-mg patches
	Ritalin[a]	5 mg	BID–TID	20–60 min	3–5	60 mg	5-, 10-, and 20-mg tablets
	Ritalin LA	20 mg	QD	20–60 min	6–8	60 mg	20-, 30-, and 40-mg capsules
	Ritalin SR[a]	20 mg	QD–BID	1–3 h	2–6	60 mg	20-mg capsules
	Metadate CD	20 mg	QD	20–60 min	6–8	60 mg	10-, 20-, 30-, 40-, 50-, and 60-mg capsules
Dexmethylphenidate	Focalin[a]	2.5 mg	BID	20–60 min	3–5	20 mg	2.5-, 5.0-, and 10.0-mg tablets
	Focalin XR	5 mg	QD	20–60 min	8–12	30 mg	5-, 10-, 15-, and 20-mg capsules
Atomoxetine	Strattera	0.5 mg/kg per d, then increase to 1.2 mg/kg per d; 40 mg/d for adults and children at >154 lb, up to 100 mg/d	QD–BID	1–2 wk	At least 10–12 h	1.4 mg/kg	10-, 18-, 25-, 40-, 60-, 80-, and 100-mg capsules
Extended-release guanfacine	Intuniv	1 mg/d	QD	1–2 wk	At least 10–12 h	4 mg/d	1-, 2-, 3-, and 4-mg tablets
Extended-release clonidine	Kapvay	0.1 mg/d	QD–BID	1–2 wk	At least 10–12 h	0.4 mg/d	0.1- and 0.2-mg tablets

QD indicates daily; BID, twice daily; TID, three times daily.

[a] Available in a generic form.

[b] Dosages for the dermal patch are not equivalent to those of the oral preparations.

Other context issues that should also be considered in deciding which medication to recommend include the time of day when the targeted symptoms occur, when homework is usually done, whether medication remains active when teenagers are driving, whether medication alters sleep initiation, and risk status for drug use.

All approved stimulant medications are methylphenidate or amphetamine compounds, which have similar effects and adverse effects. Given the extensive evidence of efficacy and safety, they remain the first choice of medication treatment. Thus, the decision regarding which compound a clinician first prescribes should be made on the basis of individual preferences of the clinician and family. Some children/adolescents will respond better to or display more adverse effects with 1 compound group or the other. Because these effects cannot be determined in advance, if a trial with 1 group is unsuccessful (poor efficacy or adverse effects), a trial on a medication from the other group should be undertaken. For cases in which there is concern about possible abuse or diversion of the medication or there is a strong family preference against stimulant medication, an FDA-approved nonstimulant medication may be considered as the first choice of medication. The medications that use a microbead technology can be opened and sprinkled on food for patients who have difficulty swallowing tablets or capsules. Immediate-release methylphenidate, which comes in liquid and chewable forms, and a methylphenidate transdermal patch are also available as alternatives to tablets or capsules.

It is helpful to prepare families for the initial medication (titration) process, including what it will entail and how long it might take. The usual procedure is to begin with a low dose of medication and **titrate** to the dose that provides maximum benefit and minimal adverse effects. Initially, core symptom reduction is more likely to indicate medication effects; the effects of im-

provement in function require a more extended time period. Stimulant medications can be effectively titrated on a 3- to 7-day basis. During the first month of treatment, medication dose may be titrated with a weekly or biweekly telephone call to the family. The increasing doses can be provided either by prescriptions that allow dose adjustments upward or, for some of the medications, by 1 prescription of tablets/capsules of the same strength with instructions to administer progressively higher amounts by doubling or tripling the initial dose. Another approach similar to that used in the MTA study[56] is for parents to be directed to administer different doses of the same preparation, each for 1 week at a time (eg, Saturday through Friday). At the end of each week, teacher and parent feedback and/or DSM-IV-TR–based ADHD rating scales can be completed through a telephone interview, fax, or secure electronic system. In addition to the ADHD rating scale, parents and teachers should be asked to review adverse effects and target goals.

A face-to face follow-up visit is recommended by the fourth week of medication, during which clinicians review the responses to the varying doses and monitor adverse effects, pulse, blood pressure, and weight. To ensure that progress in symptom control is being maintained, clinicians should continue to monitor levels of core symptoms and improvement in specified target goals. A general guide for visits to the primary care clinician is for the face to face visits to occur initially on a monthly basis, until there is a consistent optimal response, and then every 3 months in the first year of treatment. Subsequent visits will depend on the response but should occur at least 2 times per year, until it is clear that target goals are progressing and stable, and then periodically as determined by the family and the clinician. Recent results from the MTA study indicate that there are a number of children/adolescents who, by 3 years after starting medication, continue to improve even if the medication has been discontinued.[57] The findings suggest that children/adolescents who are stable in their improvement of ADHD symptoms may be given a trial off medication after several years to determine if medication is still needed. This process is best undertaken with close monitoring of the child's/adolescent's core symptoms and function at home, in school, and in the community.

Whenever possible, improvements in core symptoms and target goals should be monitored in an objective way (eg, going from 60% to 20% missing assignments per week [see the ADHD toolkit[13]]), and the core symptoms can be monitored by use of one of the DSM-IV-TR–based ADHD rating scales such as the Vanderbilt ADHD follow-up scales. Clinicians are encouraged to educate parents that although medication can be effective in facilitating schoolwork production, it has not been shown to be effective in addressing learning disabilities. A child/adolescent who continues to experience academic underachievement after attaining some control of ADHD behavioral symptoms should be assessed for a coexisting condition, including learning and language disabilities, other mental health disorders, or other psychosocial stressors. Noncompliance with the treatment plan should also be assessed.

If the maximum dose of a stimulant preparation is reached and less-than-satisfactory results have been achieved or intolerable adverse effects occur before adequate efficacy with a medication from one of the stimulant groups (methylphenidate or amphetamine), a medication from the other stimulant group should be recommended with a similar titration plan. At least half of the children/adolescents whose symptoms fail to respond to 1 stimulant medication may have a positive response to the alternative medication.[56]

Families concerned about the use of stimulants or with concerns about abuse or diversion may choose to start with atomoxetine or extended-release guanfacine or extended-release clonidine. In addition, those whose symptoms do not respond to either stimulant group might still respond to atomoxetine or extended-release guanfacine or extended-release clonidine. Extended release guanfacine or extended release clonidine also may be added as an adjunctive therapy in children who partially respond to stimulant medication.

There is a block-box warning on atomoxetine of the possibility of suicidal ideation when initiating medication management. Early symptoms of suicidal ideation might include thinking about self-harm and increasing agitation. If there are any concerns about suicidal ideation in children prescribed atomoxetine, further evaluation, reconsideration about the use of atomoxetine, and more frequent monitoring should be considered, and if necessary, referral to a mental health clinician should be made.

Atomoxetine is a selective norepinephrine-reuptake inhibitor and might result in maximum response only after approximately 4 to 6 weeks. Extended-release guanfacine and extended-release clonidine are α_2A-adrenergic agonists and might result in maximum response in approximately 2 to 4 weeks. Parents may be encouraged to complete weekly symptom and adverse-effect monitoring, as

described previously, as an objective measure to monitor efficacy. Because symptom change is more gradual with atomoxetine and α_2A-adrenergic agonists than with stimulant medications, families who have had previous experience with stimulants should be made aware of this fact. In some patients, a modest effect of atomoxetine might be seen in 1 week. Atomoxetine might cause gastrointestinal tract symptoms and sedation early in treatment, so it is recommended to prescribe half the treatment dose (0.5 mg/kg) for the first week. Appetite suppression can also occur. Both α_2A agonists can cause the adverse effect of somnolence. In addition, it is recommended that the medications be tapered when discontinued to prevent a possible rebound in blood pressure.

Special Circumstances: Preschool-Aged Children

Clinicians should initiate ADHD treatment of preschool-aged children (4–5 years of age) with behavior therapy and should also assess for other developmental problems, especially with language. If children do not experience adequate symptom and functional improvement with behavior therapy (most programs are 10–14 weeks long, but the clinician should check with the therapists about their usual length of intervention), the clinician should first evaluate the adequacy and parental acceptance of the therapy. If the symptoms and/or functioning have not improved and the child is at significant behavioral or developmental risk because of ADHD, medication can be prescribed, as described previously. It must be noted that, currently, the FDA has only approved dextroamphetamine for ADHD in children in this age group, although there is little evidence to support its safety and efficacy. There is, however, evidence that methylphenidate is safe and efficacious for children in this age group.[58] Evidence[58] suggests that the rate of metabolizing methylphenidate is slower in children 4 and 5 years of age, so they should be started at a lower dose that is increased in smaller increments. In addition, the preschool-aged children studied in the multisite study[58] had more severe dysfunction, which should be considered in the decision to try treatment with methylphenidate. The additional criteria for defining moderate-to-severe impairment include symptoms present for at least 9 months and clear impairment in both the home and day care/preschool settings that has not responded to an appropriate behavioral intervention. Limited evidence[59] and no FDA approval for children in this age group are available for atomoxetine, and no evidence or approval for extended-release guanfacine or extended-release clonidine are available.

Special Circumstances: Adolescents

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 for treatment for 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. Techniques of motivational interviewing might be useful in improving adherence.[60]

Special Circumstances: Families and Children/Adolescents Who Decline Medication

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.

Special Circumstances: Inattention or Hyperactivity/Impulsivity (Problem Level)

Medication is **not** appropriate for children/adolescents whose symptoms do not meet DSM-IV-TR criteria for diagnosis of ADHD.

Behavior Management

Evidence-based parent training typically begins with 7 to 12 weekly group sessions with a trained therapist or certified instructor. The focus is on parent education about ADHD, the child's/adolescent's behavior problems, and difficulties in family relationships. A typical program aims to improve the parents'/caregivers' understanding of the child's/adolescent's behavior and to teach them skills to help the child/adolescent to reduce the behavioral difficulties posed by ADHD.

Programs offer specific techniques for reinforcing adaptive and positive behaviors and decreasing or eliminating inappropriate behaviors, both of which alter the motivation of the child/adolescent to control attention, activity, and impulsivity. These programs

emphasize establishing positive interactions between parents and children; learning how to shape children's behaviors through combinations of praising and ignoring; how to give successful commands; how to reinforce positive behaviors; how to extinguish inappropriate behaviors through ignoring; how to identify which behaviors are handled most appropriately through punishment; and determining how to carry punishments out in a responsible way. These programs all emphasize teaching self-control and building positive family relationships. If parents strongly disagree about behavior management or have contentious relationships, parenting programs will likely be unsuccessful.

Other strategies, such as changing the physical environment to reduce stimuli to overactivity, are also effective by changing the stimuli that trigger problem behaviors. Depending on the severity of the child's/adolescent's behaviors and the capabilities of the parents, group or individual training programs will be required. Programs typically include support for maintenance and relapse prevention.

Behavior therapy should be differentiated from psychological interventions directed to the child/adolescent and designed to change the child's/adolescent's emotional status (eg, play therapy) or thought patterns (eg, interpersonal talk therapy). These psychological interventions do not have a demonstrated efficacy for the ADHD core symptoms, and gains achieved in the treatment setting usually do not transfer into the classroom or home. By contrast, parent training in behavior therapy and classroom behavior interventions have successfully changed the behavior of children/adolescents with ADHD.[61] Behavior therapy is also applicable for children/adolescents who have problems in the domains of inattention or hypersensitivity/impulsivity but do not meet the DSM-IV-TR criteria and for those children/adolescents with a developmental variation.

Unless primary care clinicians are specifically trained, have trained staff or a colocated therapist, or dedicate many visits to providing the ongoing treatment, they might not be effective in providing behavior therapy.[62] Clinicians might also have difficulties determining the skills of behavior therapists listed in the behavioral health insurance plan. This determination is important, because many therapists focus on a play or interpersonal-talk therapy that has not been shown to be effective in treating the core symptoms of ADHD. Telephone inquiries of therapists, agencies, and mental health clinicians regarding their approach to behavior therapy might allow clinicians to develop a resource list for parents. Clinicians might also request references from other parents of children/adolescents with ADHD, professional organizations (eg, Association for Behavior and Cognitive Therapies), and ADHD advocacy organizations (eg, CHADD). Parents who have read authoritatively written books about behavior therapy/behavior parent training might be in a better position to know what they are looking for in a therapist and ask the salient questions when seeking appropriate therapists. Some of these resources are available in the ADHD toolkit[13] and the book *ADHD: What Every Parent Needs to Know*.[54]

Classroom behavior management also focuses on shaping the child's/adolescent's behaviors and may be integrated into classroom routines for all students or targeted for a selected child/adolescent in the classroom. Classroom management often begins with increasing the structure of activities. Token economy refers to using points or tokens that are given for positive behaviors, and response cost refers to points or tokens subtracted for inappropriate behaviors. The tokens or points can then be cashed in after a defined period for rewards or privileges. Systematic rewards (eg, use of a token economy) are included to increase appropriate behavior and eliminate inappropriate behavior. A periodic (often daily) behavior report card can record the child's/adolescent's progress or performance with regard to goals and communicate the child's/adolescent's progress to the parents, who then provide reinforcers or consequences based on that day's performance. Such programs are also useful for the purpose of monitoring medication effects.

COLLABORATE WITH THE SCHOOL TO ENHANCE SUPPORTS AND SERVICES

Many teachers and schools have effective strategies for supporting and serving children/adolescents with ADHD. Schools can implement behavior-management programs that directly target ADHD symptoms as well as interventions to enhance academic and social functioning. Schools may also use strategies (eg, daily behavior report cards) to enhance communication with families. All schools should have specialists (eg, school psychologists, counselors, special educators) who observe the child/adolescent, identify triggers and reinforcers, and support teachers in changing the circumstances of the classroom and making accommodations to address ADHD symptoms, such as written-output bypass strategies, untimed testing, testing in less distracting environments, preferential seating, and routine reminders.

Clinicians should be aware of the eligibility criteria for the 504 Rehabilitation Act and the Individuals With Disabilities Education Act supports in their state

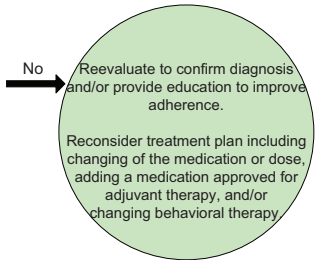
and local school district(s)[63] and should understand the process for referral as well as the individuals with whom the physician or parent should make contact. This information can be provided to parents to support their efforts to request classroom adaptations for their child/adolescent with ADHD, including the use of empirically supported academic interventions to address achievement difficulties associated with ADHD symptoms.

In providing a medical home, primary care clinicians should regularly monitor **all** aspects of ADHD treatment, to include:

- systematic reassessment of **core symptoms and function**;
- regular reassessment of **target goals**;
- assurance that the family is **satisfied with the care** they are receiving from other clinicians and therapists, if applicable;
- provision of **anticipatory guidance**, further **child/adolescent and family education**, and transition planning as needed and appropriate;
- assurance that **care coordination** is occurring and meeting the needs of the child/adolescent and family;
- confirmation of **adherence** to any prescribed medication regimen, with adjustments made as needed;
- heart rate, blood pressure, height, and weight monitoring; and
- continuing to form a therapeutic relationship with the child/adolescent and empower families and children/adolescents to be strong, informed advocates.

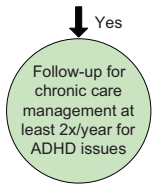
Some treatment monitoring can occur during general health care visits if the clinician inquires about progress toward target goals, adherence to medication and behavior therapy, concerns, or changes.

Monitoring of children/adolescents with inattention or hyperactivity/impulsivity problems can help to ensure prompt treatment, should their symptoms worsen to the extent that a diagnosis of ADHD is warranted.



ADHD treatment failure might be a sign of incorrect or incomplete diagnosis. Clinicians are advised to repeat the full diagnostic evaluation and pay increased attention to the possibility of coexisting conditions that mimic or are associated with ADHD, such as sleep disorders, Asperger syndrome, or epilepsy (eg, absence epilepsy or partial seizures). A coexisting learning disorder might also cause an apparent treatment failure. In the case of a child/adolescent previously diagnosed with problem-level inattention or hyperactivity, repeating the diagnostic evaluation might result in a diagnosis of ADHD, which would allow for increased school supports and the inclusion of medication in the treatment plan.

Treatment failure could also signal poor adherence to the treatment plan. Increased monitoring and education, especially by including the patient early in his or her treatment, might increase treatment adherence. It is helpful to try to identify the issues that restrict adherence.



In the early stages of treatment, after a successful titration period, the frequency of follow-up visits will depend on adherence, coexisting conditions, and persistence of symptoms. As noted previously, a general guide for visits to the primary care clinician is for these visits to occur initially on a monthly basis, then every 3 months in the first year of treatment. More frequent visits might be necessary if comorbid conditions are present. Visits should then be held at least twice each year with additional telephone monitoring at the time of medication-refill requests. Ongoing communication with the school regarding medication and services is also needed.

It should be noted that at this point, there is little evidence to establish the optimal, yet practical, follow-up regimen. It is likely that the regimen will need to be tailored to the individual child/adolescent and family needs on the basis of clinical judgment.

PREPARING THE PRACTICE

Specific office practice procedures that facilitate the optimal and efficient diagnosis and treatment process are critical for successful management of children/adolescents with ADHD. More detail can also be found in the report of the AAP Task Force on Mental Health.[1] The office process can include:

- developing a packet of ADHD questionnaires and rating scales for parents and teachers to complete before a scheduled visit;
- allotting adequate time for ADHD-related visits;
- determining appropriate billing, documentation, and monitoring of insurance payments to ensure that they adequately cover the services rendered;
- implementing methods to track and

follow-up patients (refer to medical home procedures for more detail);

- asking questions during all clinical encounters and placing brochures and posters in the office to alert parents and children/adolescents that behavior and school problems and ADHD are appropriate issues to discuss with the clinician;
- developing an office system for monitoring and titrating medication (a follow-up system should include the clinician's assessment of family organization, telephone access, and parent-teacher communication effectiveness); and
- collaborating with schools and other involved community providers and resources that can enhance the process for ADHD diagnosis and management, which can be achieved on a case-by-case basis through coordination of the diagnosis and treatment plan among school staff, the clinician, parents, and other involved professionals (note that this less-systematic approach carries significant challenges, including ensuring consistent care for all children/adolescents with ADHD).

A community-level system that reflects consensus among district school staff and local primary care clinicians for key elements of diagnosis, interventions, and ongoing communication can help to ensure consistent, well-coordinated, and cost-effective care. A community-based system with schools relieves the individual primary care clinician from negotiating with each school about care and communication regarding each patient. Offices that have incorporated medical home principles are ideal for establishing this kind of community-level system. The key elements for a community-based collaborative system include consensus on:

- a clear and organized process by which an evaluation can be initiated when concerns are identified by either parents or school personnel;
- a packet of information completed by parents and a teacher about each child/adolescent referred to the primary care clinician;
- a contact person at the practice to receive information from parents and teachers at the time of evaluation and during follow-up;
- an assessment process to investigate coexisting conditions;
- a directory of evidence-based interventions available in the community;
- an ongoing process for follow-up visits, telephone calls, teacher reports, and medication refills;
- availability of forms for collecting and exchanging information; and
- a plan for keeping school staff and primary care clinicians up-to-date on the process.

The clinician might face challenges to developing such a collaborative process. As examples, the primary care provider might be caring for children/adolescents from more than 1 school system; a school system might be quite large and not easily accessed; schools might have limited staff and resources to complete assessments; or it might be difficult for the physician and teacher or other school personnel to communicate by telephone because their schedules differ. There are workable strategies for addressing each of these challenges.

In the case of multiple or large school systems in a community, the primary care clinician might want to begin with 1 school psychologist or principal, or several practices can initiate contact collectively with a community school system. Agreement among the clinicians on the components of a good evaluation process facilitates cooperation and communication with the school toward common goals. For example, agreement on the behavior rating scales used can facilitate completion by school personnel. Standard communication forms that monitor progress and specific interventions can be faxed between the school and the pediatric office to share information.

Collaborative systems also extend to other providers who may comanage care with the primary care clinician. Providers may include a mental health professional who sees the child/adolescent for psychosocial interventions or a specialist who addresses difficult cases, such as a developmental-behavioral pediatrician, child psychiatrist, child neurologist, neurodevelopmental disability physician, or psychologist. Agreed-on processes for routine communication can also be used in these relationships. The AAP Task Force on Mental Health provides a full discussion of collaborative relationships with mental health professionals, including colocation and integrated models, in its Chapter Action Kit[64] and Pedialink Module.

It is important to note that good care frequently requires activities that currently are not reimbursed. These activities include contacts with teachers and mental health consultants and non–face-to-face contact with parents and patients. It would be helpful for clinicians to document the nonreimbursed efforts and for the national AAP, state chapters, and clinicians to continue to try to make third-party payers understand the need for these efforts and provide compensation for this appropriate care.

COMPLEMENTARY AND UNPROVEN THERAPIES

Families of children/adolescents with ADHD increasingly ask about comple-

mentary and alternative therapies for ADHD. Such therapies might include large doses of vitamins, essential fatty acids, and other dietary alterations; chelation; and electroencephalographic (EEG) biofeedback.[65] To date, there is insufficient evidence to determine whether these therapies lead to changes in core symptoms of ADHD or function, and for many of them, there is limited information about their safety. For these reasons, these therapies cannot be recommended. Some therapies, chelation, and megavitamins have been proven to cause some adverse effects and are contraindicated.

Physicians can play a constructive role in helping families make thoughtful treatment choices by reviewing the stated goals or effects claimed for a given treatment; the state of evidence to support or discourage use of the treatment; and known or potential adverse effects. Physicians should encourage families that wish to pursue these treatments to try 1 intervention at a time, choose target goals they will use, monitor core symptoms to measure efficacy, and choose a time frame in which they anticipate the changes to occur. Families should also be strongly encouraged to continue to use the more evidence-based interventions at the same time that they are exploring complementary and alternative treatments.

Clinicians should respect families' interests and preferences while they address and answer questions about complementary and unproven therapies to preserve and enhance the clinician/family relationship. In addition, primary care clinicians should know about additional therapies that families might be administering to adequately monitor for drug interactions. Parents and children/adolescents who do not feel that their choices in health care are respected by their primary care clinician might be less likely to communicate about complementary or alternative therapies.

Further information about complementary and other therapies promoted for the treatment of ADHD can be found in a chapter on this topic in *Developmental-Behavioral Pediatrics: Evidence and Practice*[65] or in an article in the *Journal of Developmental and Behavioral Pediatrics*.[52]

CONCLUSION

ADHD is the most common neurobiological disorder of children/adolescents; untreated, ADHD can have far-reaching and serious consequences on their health and well-being. Fortunately, effective treatments are available, as are methods for assessing and diagnosing children/adolescents with ADHD. The AAP is committed to supporting primary care physicians in providing quality care to children/adolescents with ADHD and their families.

The algorithm presented here represents a portion of that commitment. It is an effort to assist primary care clinicians in delivering care that meets the quality standards of the practice guideline. Additional support and guidance can be obtained through the ADHD toolkit[12] and the work and publications of the AAP Task Force on Mental Health.[13]

REFERENCES

1. Foy JM; American Academy of Pediatrics Task Force on Mental Health. Enhancing pediatric mental health care: algorithms for primary care. *Pediatrics*. 2010;125(3 suppl)S109–S125
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, 4th ed, Text Revision (DSM-IV-TR)*. Washington, DC: American Psychiatric Association; 2000:382–397
3. Egger HL, Kondo D, Angold A. The epidemiology and diagnostic issues in preschool attention-deficit/hyperactivity disorder. *Infant Young Child*. 2006;19(2):109–122
4. Wolraich ML, Wibbelsman CJ, Brown TE, et al. Attention-deficit/hyperactivity disorder among adolescents: a review of the diagnosis, treatment, and clinical implications. *Pediatrics*. 2005;115(6):1734–1746
5. Lahey BB, Carlson CL. Attention deficit disorder without hyperactivity: a review of research relevant to DSM-IV. In: Widiger TA, Frances AJ, Pincus HA, Davis W, First M*DSM-IV Sourcebook*. Washington, DC: American Psychiatric Press; 1994:163–188
6. Lollar DJ, Simeonsson RJ. Diagnosis to function: classification for children and youths. *J Dev Behav Pediatr*. 2005;26(4):323–330
7. Brown R, Freeman WS, Perrin JM, et al. Prevalence and assessment of attention-deficit/hyperactivity disorder in primary care settings. *Pediatrics*. 2001;107(3). Available at: www.pediatrics.org/cgi/content/full/107/3/e43
8. Goodman R. The extended version of the Strengths and Difficulties Questionnaire as a guide to child psychiatric caseness and consequent burden. *J Child Psychol Psychiatry*. 1999;40(5):791–801
9. Shaffer D, Gould MS, Brasic J, et al. A children's global assessment scale (CGAS). *Arch Gen Psychiatry*. 1983;40(11):1228–1231
10. Wolraich ML, Feurer ID, Hannah JN, Baumgaertel A, Pinnock TY. Obtaining systematic teacher report of disruptive behavior disorders utilizing DSM-IV. *J Abnorm Child Psychol*. 1998;26(2):141–152
11. Wolraich ML, Lambert EW, Worley KA, Doffing MA, Simmons T, Bickman L. Psychometric properties of the Vanderbilt ADHD Diagnostic Parent Rating Scale in a referred population. *J Pediatr Psychol*. 2003;28(8):559–568
12. American Academy of Pediatrics. Attention Deficit Hyperactivity Disorder ToolkitElk Grove Village, IL: American Academy of Pediatrics; 2011
13. American Academy of Pediatrics, Task Force on Mental Health. *Addressing Mental Health Concerns in Primary Care: A Clinician's Toolkit*Elk Grove Village, IL: American Academy of Pediatrics; 2010
14. Gordon M, Barkley RA, Lovett B. Tests and observational measures. In: Barkley RA*Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment.*

3rd ed. New York, NY: Guilford Press; 2005: 369–388

15. Edwards M, Gardner ES, Chelonis JJ, Schulz EG, Flake RA, Diaz PF. Estimates of the validity and utility of the Conners' Continuous Performance Test in the assessment of inattentive and/or hyperactive-impulsive behaviors in children. *J Abnorm Child Psychol*. 2007;35(3):393–404
16. Barkley R. *Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment*. 3rd ed. New York, NY: Guilford Press; 2006
17. Angold A, Erkanli A, Egger HL, Costello EJ. Stimulant treatment for children: a community perspective. *J Am Acad Child Adolesc Psychiatry*. 2000;39(8):975–998
18. Rowland AS, Lesesne CA, Abramowitz AJ. The epidemiology of attention-deficit/hyperactivity disorder (ADHD): a public health view. *Ment Retard Dev Disabil Res Rev*. 2002;8(3):162–170
19. Chronis AM, Lahey BB, Pelham WE Jr, Kipp HL, Baumann BL, Lee SS. Psychopathology and substance abuse in parents of young children with attention-deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*. 2003;42(12):1424–1432
20. Konofal E, Lecendreux M, Cortese S. Sleep and ADHD ; *Sleep Med*. 2010;11(7):652–658
21. Gozal D, Kheirandish-Gozal L. Neurocognitive and behavioral morbidity in children with sleep disorders. *Curr Opin Pulm Med*. 2007;13(6):505–509
22. Capdevila OS, Kheirandish-Gozal L, Dayyat E, Gozal D. Pediatric obstructive sleep apnea: complications, management, and long-term outcomes. *Proc Am Thorac Soc*. 2008;5(2):274–282
23. Cortese S, Konofal E, Lecendreux M, et al. Restless legs syndrome and attention-deficit/hyperactivity disorder: a review of the literature. *Sleep*. 2005;28(8):1007–1013
24. Owens JA. A clinical overview of sleep and attention-deficit/hyperactivity disorder in children and adolescents. *J Can Acad Child Adolesc Psychiatry*. 2009;18(2):92–102
25. Owens J, Dalzell V. Use of the "BEARS" sleep screening tool in a pediatric residents' continuity clinic: a pilot study. *Sleep Med*. 2005;6(1):63–69
26. Chervin RD, Hedger K, Dillon JE, Pituch KJ. Pediatric Sleep Questionnaire (PSQ): validity and reliability of scales for sleep-disordered breathing, snoring, sleepiness, and behavioral problems. *Sleep Med*. 2000;1(1):21–32
27. Owens J, Nobile C, McGuinn M, Spirito A. The Children's Sleep Habits Questionnaire: construction and validation of a sleep survey for school-aged children. *Sleep*. 2000;23(8):1043–1051
28. Sadeh A, Pergamin L, Bar-Haim Y. Sleep in children with attention-deficit hyperactivity disorder: a meta-analysis of polysomnographic studies. *Sleep Med Rev*. 2006;10(6):381–398
29. Gruber R, Wiebe S, Montecalvo L, Brunetti B, Amsel R, Carrier J. Impact of sleep restriction on neurobehavioral functioning of children with attention-deficit hyperactivity disorder. *Sleep*. 2011;34(3):315–323
30. Gruber R, Sadeh A, Raviv A. Instability of sleep patterns in children with attention-deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*. 2000;39(4):495–501
31. Stein MA, Sarampote CS, Waldman ID, et al. A dose-response study of OROS methylphenidate in children and adolescents with ADHD. *Pediatrics*. 2003;112(5). Available at: www.pediatrics.org/cgi/content/full/112/5/e404
32. Corkum P, Panton R, Ironside S, Macpherson M, Williams T. Acute impact of immediate release methylphenidate administered three times a day on sleep in children with attention-deficit/hyperactivity disorder. *J Pediatr Psychol*. 2008;33(4):368–379
33. O'Brien LM, Ivanenko A, Crabtree VM, et al. The effect of stimulants on sleep characteristics in children with attention deficit/hyperactivity disorder. *Sleep Med*. 2003;4(4):309–316
34. Owens J, Sangal RB, Sutton VK, Bakken R, Allen AJ, Kelsey D. Subjective and objective measures of sleep in children with attention-deficit/hyperactivity disorder. *Sleep Med*. 2009;10(4):446–456
35. Mick E, Biederman J, Jetton J, Faraone SV. Sleep disturbances associated with ADHD: the impact of psychiatric comorbidity and pharmacotherapy. *J Child Adolesc Psychopharmacol*. 2000;10(3):223–231
36. van der Heijden KB, Smits MG, van Someren EJ, Boudewijn Gunning W. Prediction of melatonin efficacy by pretreatment dim light melatonin onset in children with idiopathic chronic sleep onset insomnia. *J Sleep Res*. 2005;14(2):187–194
37. Weiss MD, Wasdell MB, Bomben MM, Rea KJ, Freeman RD. Sleep hygiene and melatonin treatment for children and adolescents with ADHD and initial insomnia. *J Am Acad Child Adolesc Psychiatry*. 2006;45(5):512–519
38. Cortese S, Faraone S, Konofal E, Lecendreux M. Sleep in children with attention-deficit/hyperactivity disorder: meta-analysis of subjective and objective studies. *J Am Acad Child Adolesc Psychiatry*. 2009;48(9):894–908
39. Golan N, Shahar E, Ravid S, Pillar G. Sleep disorders and daytime sleepiness in children with attention-deficit/hyperactive disorder. *Sleep*. 2004;27(2):261–266
40. Lecendreux M, Konofal E, Bouvard M, Falissard B, Mouren-Simeoni MC. Sleep and alertness in children with ADHD. *J Child Psychol Psychiatry*. 2000;41(6):803–812
41. Ustün TB. Using the International Classification of Functioning, Disability and Health in attention-deficit/hyperactivity disorder: separating disease from its epiphenomena. *Ambul Pediatr*. 2007;7(1 suppl):132–139
42. Johnson JG, Harris ES, Spitzer RL, Williams JB. The patient health questionnaire for adolescents: validation of an instrument for the assessment of mental disorders among adolescent primary care patients. *J Adolesc Health*. 2002;30(3):196–204
43. Birmaher B, Khetarpal S, Brent D, et al. The Screen for Child Anxiety Related Emotional Disorders (SCARED): scale construction and psychometric characteristics. *J Am Acad Child Adolesc Psychiatry*. 1997;36(4):545–553
44. Fabiano GA, Pelham WE, Waschbusch DA, et al. A practical measure of impairment: psychometric properties of the impairment rating scale in samples of children with attention deficit hyperactivity disorder and two school-based samples. *J Clin Child Adolesc Psychol*. 2006;35(3):369–385
45. American Academy of Pediatrics, Task Force on Mental Health; American Academy of Child and Adolescent Psychiatry, Committee on Health Care Access and Economics. Improving mental health services in primary care: reducing administrative and financial barriers to access and collaboration [published correction appears in *Pediatrics*. 2009;123(6):1611]. *Pediatrics*. 2009;123(4):1248–1251
46. Wolraich ML, Lambert EW, Bickman L, Simmons T, Doffing MA, Worley KA. Assessing the impact of parent and teacher agreement on diagnosing ADHD. *J Dev Behav Pediatr*. 2004;25(1):41–47
47. Zuckerbrot R, Cheung AH, Jensen PS, Stein RE, Laraque D; GLAD-PC Steering Group. Guidelines for Adolescent Depression in Primary Care (GLAD-PC): I. Identification, assessment, and initial management. *Pediatrics*. 2007;120(5). Available at: www.pediatrics.org/cgi/content/full/120/5/e1299
48. Cheung A, Zuckerbrot RA, Jensen PS, Ghalib K, Laraque D, Stein RE; GLAD-PC Steering Group. Guidelines for Adolescent Depression in Primary Care (GLAD-PC): II. Treat-

ment and ongoing management [published correction appears in *Pediatrics*. 2008; 121(1):227]. *Pediatrics*. 2007;120(5). Available at: www.pediatrics.org/cgi/content/full/120/5/e1313

49. Center for Adolescent Substance Abuse Research, Children's Hospital Boston. *CRAFFT: Screening Adolescents for Alcohol and Drugs*. Boston, MA: Children's Hospital Boston; 2001. Available at: www.childrenshospital.org/views/february09/images/CRAFFT.pdf. Accessed June 29, 2011
50. Sleator EK, Ullman RK. Can the physician diagnose hyperactivity in the office? *Pediatrics*. 1981;67(1):13–17
51. Wolraich ML, Felice ME, Drotar DD. *The Classification of Child and Adolescent Mental Conditions in Primary Care: Diagnostic and Statistical Manual for Primary Care (DSM-PC), Child and Adolescent Version*. Elk Grove, IL: American Academy of Pediatrics; 1996
52. Jensen P, Hinshaw SP, Swanson JM, et al. Findings from the NIMH multimodal treatment study of ADHD (MTA): implications and applications for primary care providers. *J Dev Behav Pediatr*. 2001;22(1):60–73
52. American Academy of Pediatrics, National Center for Medical Home Implementation. Building Your Medical Home [toolkit]. Available at: http://www.pediatricmedhome.org. Accessed September 28, 2011
54. Reiff M. *ADHD: What Every Parent Needs to Know*. 2nd ed. Elk Grove Village, IL: American Academy of Pediatrics; 2011
55. Perrin JM, Friedman RA, Knilans TK, et al; American Academy of Pediatrics, Black Box Working Group, Section on Cardiology and Cardiac Surgery. Cardiovascular monitoring and stimulant drugs for attention-deficit/hyperactivity disorder. *Pediatrics*. 2008;122(2):451–453
56. Greenhill LL, Abikoff HB, Arnold E, et al. Medication treatment strategies in the MTA study: relevance to clinicians and researchers. *J Am Acad Child Adolesc Psychiatry*. 1996;35(10):1304–1313
57. Molina BS, Hinshaw SP, Swanson JM, et al. The MTA at 8 years: prospective follow-up of children treated for combined type ADHD in the multisite study. *J Am Acad Child Adolesc Psychiatry*. 2009;48(5):484–500
58. Greenhill L, Kollins S, Abikoff H, McCracken J, Riddle M, Swanson J. Efficacy and safety of immediate-release methylphenidate treatment for preschoolers with ADHD. *J Am Acad Child Adolesc Psychiatry*. 2006;45(11):1284–1293
59. Kratochvil CJ, Vaughan VS, Stoner JA, et al. A double-blind-placebo controlled study of atomoxetine in young children with ADHD. *Pediatrics*. 2011;127(4). Available at: www.pediatrics.org/cgi/content/full/127/4/e862
60. Charach A, Volpe T, Boydell KM, Gearing RE. A theoretical approach to medication adherence for children and youth with psychiatric disorders. *Harv Rev Psychiatry*. 2008;16(2):126–135
61. Charach A, Dashti B, Carson P*Attention Deficit Hyperactivity Disorder: Effectiveness of Treatment in At-risk Preschoolers; Long-term Effectiveness in All Ages; and Variability in Prevalence, Diagnosis, and Treatment*. Rockville, MD: Agency for Healthcare Research and Quality; 2011.In press
62. Sonuga-Barke E, Thompson M, Daley D, Laver-Bradbury C. Parent training for attention deficit/hyperactivity disorder: is it as effective when delivered as routine rather than as specialist care? *Br J Clin Psychol*. 2004;43(pt 4):449–457
63. Davila RR, Williams ML, MacDonald JT. Memorandum on clarification of policy to address the needs of children with attention deficit disorders within general and/or special education. In: Parker HC*The ADD Hyperactivity Handbook for Schools*. Plantation, FL: Impact Publications Inc; 1991:261–268
64. American Academy of Pediatrics, Task Force on Mental Health. Strategies for System Change in Children's Mental Health: A Chapter Action Kit. Elk Grove Village, IL: American Academy of Pediatrics; 2007. Available at: http://www.aap.org/commpeds/dochs/mentalhealth/cak/finalcak.pdf. Accessed September 28, 2011
65. Chan E. Complementary and alternative medicine in developmental-behavioral pediatrics. In: Wolraich ML, Drotar DD, Dworkin PH, Perrin EC*Developmental-Behavioral Pediatrics: Evidence and Practice*. Philadelphia, PA: Mosby Elsevier; 2008:259–280