

Clinical Considerations for the Diagnosis and Treatment of ADHD in the Managed Care Setting

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The effective treatment of attention-deficit/hyperactivity disorder (ADHD) in the managed care setting presents a number of challenges for health plan stakeholders. Although frequently characterized as a childhood disorder, ADHD affects patients across a diverse range of ages with a myriad of different age-specific presentations. First described by Dr Heinrich Hoffman in 1845, the disorder currently known as ADHD was initially identified in children.¹ Among the primary research on the topic was a series of lectures by Sir George F. Still in 1902 describing a group of hyperactive children who would today be diagnosed as having ADHD combined type.² It was not until nearly several decades later when some of the first studies of adults with similar disorders would be published.³

Combined with the typical presentation of ADHD in children and adolescents, this extensive history of identifying ADHD as a childhood disorder has led to the underdiagnosis of adults with the condition. However, while the disorder is certainly most visible in childhood, affecting 8% to 10% of school-aged children and accounting for 30% to 50% of all childhood mental health referrals, ADHD persists into adolescence in 40% to 70% of cases, and into adulthood in 50% or more of cases.^{4,9} The prevalence of ADHD in US adults is 4.4%, which represents an estimated 8 million individuals with this underrecognized and untreated condition.^{9,10}

Beyond the varying age-specific clinical presentations of ADHD, accurate recognition and diagnosis of the disorder is further clouded by the frequent presence of psychiatric comorbidities, many of which in some cases are more prevalent than ADHD.¹⁰ Contributing to these challenges is the fact that managed care providers in the primary care setting are often ill-equipped to diagnose and identify ADHD and its many comorbid psychiatric conditions due to a lack of formalized training in behavioral health.¹¹

The burden of illness arising from the persistence of ADHD throughout all stages of life and the difficulties associated with the accurate diagnosis and treatment of the disorder are varied and significant. Challenges experienced by patients of different ages with ADHD include lower academic and occupational achievement, lower rates of high school graduation, a higher incidence of sexually transmitted diseases, a greater number of altercations with law enforcement, higher rates of alcohol and drug abuse, and an increased prevalence of anxiety and depression.¹²

Abstract

Although symptoms of attention-deficit/hyperactivity disorder (ADHD) are certainly most visible in children, the syndrome persists into adolescence in 40% to 70% of cases and into adulthood in 50% or more of cases. Accurate recognition of the disorder is clouded by the frequent presence of psychiatric comorbidities. Contributing to these challenges, managed care providers in primary care are often inexperienced in identifying and treating ADHD in adults because of a lack of formalized training. As such, special consideration must be given to each individual age group and includes identifying common clinical presentations, characterizing the disorder and its comorbidities, applying validated rating scales as screening and treatment outcome measures, and individually assessing patients' optimal response to determine the best course of therapy. Pharmacotherapy is often initiated to target ADHD symptoms with either a stimulant medication or nonstimulants. In addition, behavioral interventions are often applied to treat comorbidities and associated impairments of ADHD.

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For author information and disclosures, see end of text.

To provide adequate care for this broad spectrum of patients with ADHD and to overcome the significant burden of illness associated with the disorder, special consideration must be given to each individual age group in terms of diagnosis and treatment. This comprehensive approach includes identifying common clinical presentations, characterizing the disorder and its comorbidities, applying consensus-based diagnostic scales, and individually assessing patients for treatment with pharmacotherapy and/or psychotherapy/behavioral therapy.

The benefits of a comprehensive treatment approach go beyond merely improving the quality of care for patients with ADHD. Health economic and pharmacoeconomic analyses have demonstrated that effective management of patients with ADHD can yield cost savings for health plans and employers in terms of reduced injuries, motor vehicle accidents, incidence of substance abuse disorders, and emergency department visits.¹³⁻¹⁵ Improved management of patients with ADHD has also been shown to result in improved academic achievement by children and adolescents and higher workplace productivity by adults, demonstrating the value of effective ADHD therapy among the entire population of patients with this burdensome disorder.¹⁶

Disorder Characterization

ADHD is a disorder that is usually characterized by serious and persistent difficulties, resulting in inattentiveness or distractibility, impulsivity, and hyperactivity, typically becoming apparent and sometimes resolving in childhood, but with the potential to extend indefinitely into adult life. The potential for ADHD to span different patient age groups contributes to the complexity of diagnosing the disorder, with varying clinical presentations based on the patients' developmental stage. The lack of a simple clinical standard or test for ADHD further complicates the diagnosis of the disorder; however, the advent of the American Psychiatric Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* ADHD criteria and a number of proven, age-specific assessment scales have served to alleviate some of the challenges that managed care organizations are facing.^{9,17} The application of these assessment scales to different age groups of

patients with ADHD is subsequently reviewed in the discussion of diagnosis and assessment.

According to the *DSM-IV-TR*, ADHD is defined as being present in patients with 6 or more of the following symptoms of inattention or hyperactivity-impulsivity for at least 6 months to an extent that is disruptive and inappropriate for his or her developmental level¹⁷:

Inattention

1. Often does not pay close attention to details or makes careless mistakes in schoolwork, work, or other activities
2. Often has trouble keeping attention on tasks or play activities
3. Often does not seem to listen when spoken to directly
4. Often does not follow instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
5. Often has trouble organizing activities
6. Often avoids, dislikes, or does not want to perform tasks that take a lot of mental effort for a long period of time (such as schoolwork or homework)
7. Often loses items needed for tasks and activities (eg, toys, school assignments, pencils, books, or tools)
8. Is often easily distracted
9. Is often forgetful in daily activities

Hyperactivity

1. Often fidgets with hands or feet or squirms in seat
2. Often gets up from seat when remaining in seat is expected
3. Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless)
4. Often has trouble playing or enjoying leisure activities quietly
5. Is often "on the go" or often acts as if "driven by a motor"
6. Often talks excessively

Impulsivity

1. Often blurts out answers before questions have been finished
2. Often has trouble waiting one's turn
3. Often interrupts or intrudes on others (eg, butts into conversations or games)

In addition to meeting the symptom criteria, the *DSM-IV* criteria specify that in patients with ADHD, some of the symptoms that cause impairment were present before age 7 years, some of the impairment from the symptoms is present in 2 or more settings (eg, at school/work and at home), and there is clear evidence of significant impairment in social, school, or work functioning; the symptoms do not occur only during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder; and the symptoms are not better accounted for by another mental disorder (eg, mood disorder, anxiety disorder, dissociative disorder, or a personality disorder).¹⁷ Recent studies of adults with ADHD are challenging the *DSM-IV* and *DSM-IV-TR*'s age-of-onset criteria, suggesting little difference in functional impairment and response to methylphenidate in adults who meet the full criteria for ADHD including onset before age 7 and those who meet all the criteria except age of onset.¹⁸ It should also be noted that many adults with and without ADHD cannot reliably identify when their symptoms first began.

According to the *DSM-IV* definition, 3 types of ADHD have been identified: (1) predominantly inattentive, (2) predominantly hyperactive-impulsive, and (3) combined. The primarily inattentive type of ADHD, in which the criteria is met for inattention but not for hyperactivity-impulsivity, is present in 20% to 30% of clinic-referred cases and the prevalence of this subtype appears to increase with age. In the primarily hyperactive-impulsive type, which has a prevalence of less than 15% of clinic-referred children and is almost nonexistent in adults, the criteria are met for hyperactivity-impulsivity but not inattention. Finally, in the most common type of ADHD in children—the combined type, present in 50% to 75% of cases—the criteria are met for both inattention and hyperactivity-impulsivity.¹⁷ This is the most studied subtype and the only one for which we have data on longitudinal course.

The *DSM-IV-TR* defines ADHD according to the extent that the symptoms are disruptive and inappropriate for a patient's developmental level because of the different age-specific clinical presentations across patient groups.¹⁷ Generally speaking, hyperactivity and impulsivity are most obvious in childhood, and tend to decline somewhat with age. In preschool children (aged 3-5 years), ADHD is char-

acterized by a range of associated behavioral and developmental problems, such as difficulty completing developmental tasks (eg, toilet training), decreased and/or restless sleep, insatiable curiosity, family difficulties (eg, obtaining and keeping babysitters), vigorous and often destructive play, the demanding of parental attention (which is sometimes argumentative), delays in motor or language development, excessive temper tantrums (becoming more severe and frequent), and low levels of compliance (especially in boys).^{19,20} The presentation of ADHD in school-aged children (aged 6-12 years) is characterized by incomplete homework with careless errors; the blurting out of answers before questions have been completely asked (ie, disruptiveness in class); interrupting or intruding on others; an inability to stay in one's seat and acting like the "class clown"; and a perception of "immaturity" (eg, unwillingness or inability to complete chores at home).²⁰

Once a patient with ADHD has reached adolescence (aged 13-18 years), the excessive motor activity tends to decrease, and he or she may have a sense of inner restlessness rather than hyperactivity.²⁰ Schoolwork is still often disorganized in this age group, and the patient may show poor follow-through and/or fail to work independently, but now the patient may engage in "risky" behaviors, exemplified by speeding and driving mishaps. ADHD in adolescents may also be characterized by difficulty with authority figures, poor self-esteem, poor peer relationships, and anger or emotional lability.²⁰ The characteristics and presentation of ADHD in adults is similar but at a more advanced developmental level and may include vocational underachievement/failure, risk taking/fatal accidents, substance abuse disorders, antisocial personality disorder/criminal activity, unplanned pregnancy, the acquisition of sexually transmitted diseases, hopelessness, frustration, and apathy.²¹ Basically, as the disorder progresses over the course of a patient's lifetime, childhood symptoms decline while functional impairment persists or worsens into adulthood.^{17,22} For example, although more than 60% of adults (aged 18-20 years) from a cohort of 128 male patients followed over 4 years achieved full syndromic remission (<8 of 14 possible *DSM-IV-TR* symptoms), less than 30% achieved symptomatic remission (<5 *DSM-IV-TR* symptoms), and only approximately 10% achieved functional remission

(<5 DSM-IV-TR symptoms and a score >60 on the Global Assessment of Functioning Scale) (Figure 1).^{17,22}

In addition to the various presentations of ADHD across the different developmental stages of patient groups affected by the disorder, several potential psychiatric comorbidities exist with the disorder.^{10,17} These may include oppositional defiant disorder (ODD), conduct disorder, anxiety disorders (ie, generalized anxiety disorder, obsessive-compulsive disorder, and posttraumatic stress disorder), depression, bipolar disorder, tic disorders, and learning disabilities.¹⁰ In children, ODD and conduct disorder are the most common comorbid psychiatric disorders observed with ADHD in clinic samples, occurring in about 50% of cases, followed by mood, anxiety, and learning disorders, respectively (Figure 2).^{23,24} For adults, anxiety disorders are the most prevalent comorbidity, being observed in 47.1% of ADHD cases (Figure 3).¹⁰ Combined with the different presentations of ADHD in different age groups, these comorbidities can often make acknowledgment of the condition more difficult and further cloud diagnosis.

Diagnosis and Assessment

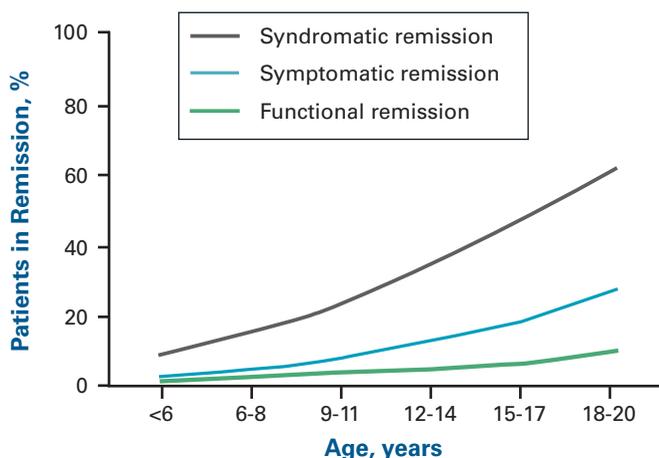
The DSM-IV-TR criteria are used to diagnose ADHD in all age groups, although some have questioned whether more specific criteria should be

developed for ADHD in adults (ie, Wender Utah Criteria).²⁵ In addition, several age-specific assessment scales, based on the DSM-IV-TR criteria, exist for diagnosing ADHD in children, adolescents, and adults (Tables 1A-C).^{4,10,26,27}

These scales are based on items that correspond to the DSM-IV symptoms. Parents and teachers typically complete these scales for children; parents, teachers, and the patients themselves being the informant for the adolescent scales; and the patients themselves being the informant in the adult scales. There is typically only modest agreement among different informants. Most scales have different norms for different age groups and for different sexes, which can help the clinician determine if a child's behavior is truly developmentally inappropriate.

In applying these assessment scales, it is important for providers in a managed care setting to consider the common comorbid conditions with ADHD discussed previously, as the presence of other disorders may impact ADHD treatment, especially when a more serious disorder is present that requires a different treatment, such as bipolar disorder or major depression. Furthermore, providers must also consider a differential diagnosis in light of normal but active behavior that seemingly overlaps somewhat with ADHD. Among the most common differential diagnoses for ADHD-like behavior are age-appropriate activities, the reaction of a child to a disorganized or chaotic environment, oppositional behavior without ADHD, other psychiatric disorders, and sleep deprivation.¹⁷

■ **Figure 1.** Levels of Attention-Deficit/Hyperactivity Disorder Remission in Relation to Patient Age (n = 128)



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Therapeutic Considerations

Taking into account the different ages, presentations, comorbidities, and environmental factors affecting the diverse population of patients with ADHD, therapy for the disorder must be tailored to meet the needs of each individual patient. Pharmacotherapy—primarily stimulants—has long been a common treatment method for patients with ADHD and is backed by robust safety and efficacy data.²⁸ Behavioral therapy and/or psychotherapy represent other options for the treatment of ADHD, which can be performed either alone or in combination with pharmacotherapy. Either method of therapy or combination of therapies can be applied to children, adolescents, and adults.

■ **Table 1A.** Childhood ADHD Rating Scales

Rating Scale	Patient Age, years	Sex
NICHQ Vanderbilt Assessment Scales—PARENT and TEACHER Information and Follow Up	6-12	Male/female
Attention Deficit Hyperactivity Disorder Rating Scale (ADHD-RS)	5-18	Male/female
CPRS-R:L ADHD Index [Conners' Parent Rating Scale (1997) Revised Version: Long Form, ADHD Index Scale]	6-17	Male/female
CTRS-R:L ADHD Index [Conners' Teacher Rating Scale (1997) Revised Version: Long Form, ADHD Index Scale]	6-17	Male/female
CPRS-R:L DSM-IV Symptoms [Conners' Parent Rating Scale (1997) Revised Version: Long Form, <i>DSM-IV</i> Symptoms Scale]	6-17	Male/female
CTRS-R:L DSM-IV Symptoms [Conners' Teacher Rating Scale (1997) Revised Version: Long Form, <i>DSM-IV</i> Symptoms Scale]	6-17	Male/female
SSQ-O-I [Barkley's School Situations Questionnaire-Original Version (1989) Number of Problems Settings Scale]	6-11	Female
SSQ-O-II [Barkley's School Situations Questionnaire-Original Version (1989) Mean Severity Scale]	6-11	Female

ADHD indicates attention-deficit/hyperactivity disorder; *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. American Academy of Pediatrics. *Pediatrics*. 2000;105(5):1158-1170.

■ **Table 1B.** Adolescent ADHD Rating Scales

Rating Scale	Symptoms Assessed	Informant
Attention Deficit Hyperactivity Disorder Rating Scale (ADHD-RS)	ADHD	Adolescent
Brown Attention Deficit Disorder Scales	ADHD (attention problems)	Adolescent
Child Attention Profile	ADHD	Teacher
Conners' Parent Rating Scale (revised)	ADHD	Parent
<i>DSM-IV</i> Behavior Checklists	ADHD	Parent, adolescent
Attention Problems Scale-Teacher Report Form	ADHD	Teacher
Behavior Assessment System for Children (BASC) Parent Rating Scale	Psychopathology	Parent
Children and Adolescent Service Center (CASC) Teacher Rating Scale	Psychopathology	Teacher
Child Behavior Checklist	Psychopathology	Parent
Conners-Wells' Adolescent Self-Report Scale	Psychopathology	Adolescent

ADHD indicates attention-deficit/hyperactivity disorder; *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Pliszka S, et al. *J Am Acad Child Adolesc Psychiatry*. 2007;46(7):894-921.

In looking at the most common form of treatment for patients with ADHD—pharmacotherapy—a number of options exist. Specifically, stimulant medications, such as methylphenidate, dexamethylphenidate, mixed amphetamine salts, dextroamphetamine, and lisdexamfetamine, are the most common form of pharmacotherapy for the treatment of ADHD. In 2006, more than 80% of the medications prescribed to children for the

management of ADHD were stimulants, with non-stimulants such as atomoxetine being prescribed in less than 20% of cases.²⁹

Stimulant medications inhibit the reuptake of norepinephrine and dopamine; in addition, amphetamines increase catecholamine release. For this reason, stimulants are typically divided into 2 main classes: methylphenidate/dexamethylphenidate and dextroamphetamine/mixed amphetamine salts. Re-

Table 1C. Adult ADHD Rating Scales

Rating Scale	Description
Brown Attention Deficit Disorder Scale	Rates inattention/executive dysfunction; includes items that extend beyond <i>DSM-IV</i> criteria
Conners' Adult ADHD Rating Scale	Large item set of developmentally relevant items; <i>DSM-IV</i> subscale maps onto diagnosis; self- and other report assessments
Wender-Reimherr Adult Attention Deficit Disorder Scale	Retrospective symptom scales provide age-of-onset data; not as closely tied to <i>DSM-IV</i> criteria; provides additional information on broader range of symptoms than the <i>DSM-IV</i> , in line with the Wender Utah Criteria
Barkley's Current Symptoms Scale	Dimensional scale using actual <i>DSM-IV</i> items but not adapted for adults; rates frequency of behaviors in past 6 months; self- and other report assessments
Adult Self-Report Scale V1.1	18-Item symptom assessment and 6-item screener; <i>DSM-IV</i> criteria made developmentally relevant for adults; rates frequency but not severity of symptoms on a 0-4 scale
Adult Investigator Symptom Report Scale	Interviewer-administered scale; 18 items based on <i>DSM-IV-TR</i> ADHD criteria adapted for adults; integrates age-appropriate prompts to ensure adequate probing about breadth of adult symptoms

ADHD indicates attention-deficit/hyperactivity disorder; *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*.

Table 2. Comparison of Stimulants for the Treatment of ADHD

Drug	Onset, hour	Duration, hour	Dosing Range
Methylphenidate IR	0.5	2-4	5-20 mg 3 times daily
Methylphenidate SODAS	0.5-1	6-8	10-30 mg twice daily
Methylphenidate OROS	1-3	8-12	18-72 mg once daily in morning
Methylphenidate transdermal	0.5-1	12	10-30 mg once daily in morning
Dexmethylphenidate IR	0.5	4-6	2.5-10 mg twice daily
Dexmethylphenidate XR	0.5-1	8-12	5-20 mg once daily in morning
Mixed amphetamine salts IR	0.5	3-5	2.5-20 mg twice daily
Mixed amphetamine salts XR	0.5-1	8-12	10-30 mg once daily in morning
Lisdexamfetamine	2-4	12	10-70 mg once daily in morning

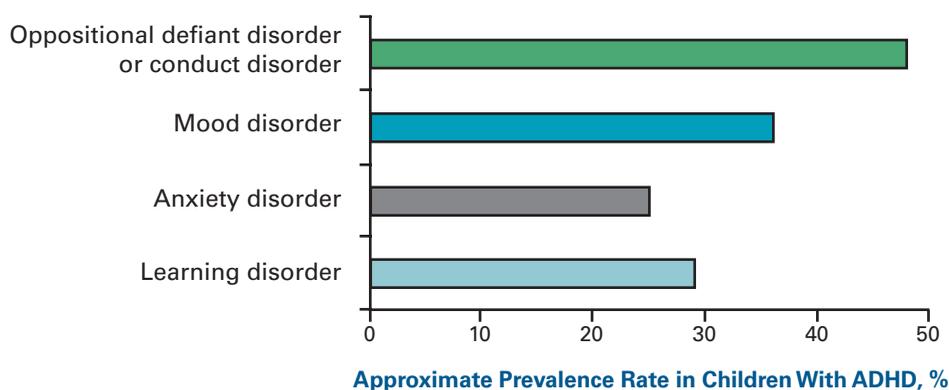
IR indicates immediate release; OROS, osmotic-release oral system; SODAS, spheroidal oral drug absorption system; XR, extended release.

cently, a number of extended-release formulations of existing stimulant medications have been developed to prolong the duration of action and provide more convenient once-daily dosing. These agents may offer improvements in medication adherence versus multiple-daily-dosed agents. A comparison of commercially available stimulants, including onset, duration, and dosing range, is presented in [Table 2](#).³⁰⁻³²

In children and adolescents without a predominating psychiatric comorbidity, practice guidelines for ADHD, such as those from the American Academy of Pediatrics and the American Academy of

Child and Adolescent Psychiatry, recommend prescribing a stimulant medication first, followed by another stimulant medication trial before switching to a nonstimulant, such as atomoxetine, bupropion, or a tricyclic antidepressant.^{4,33} This general course of treatment with pharmacotherapy holds true for adults, based on years of clinical experience and sound safety and efficacy data reported with stimulant use in all 3 age groups.²⁷ Furthermore, these guidelines have been applied in the construction of published treatment algorithms, which may be used by providers to assist in making therapeutic decisions ([Figure 4](#)).^{4,33}

■ **Figure 2.** Common Comorbid *DSM-IV* Disorders in Children With ADHD



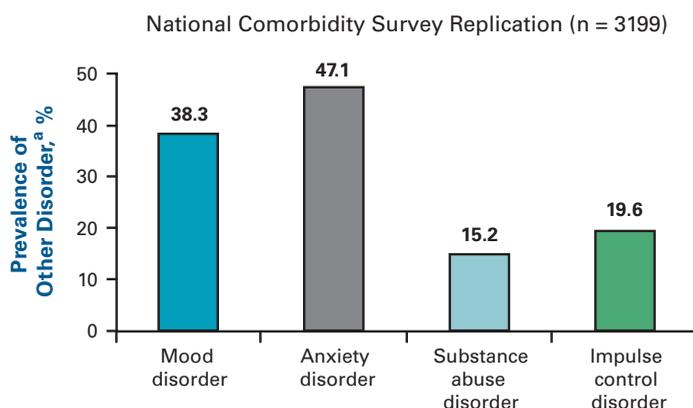
ADHD indicates attention-deficit/hyperactivity disorder; *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*.
 Sources: Pliszka SR. *J Clin Psychiatry*. 1998;59(suppl):50-58. Spencer T, et al. *Pediatric Clin North Am*. 1999;46(5):915-927.

Despite the obvious clinical benefits of stimulant medications in children, adolescents, and adults with ADHD, the relative risk of a number of adverse events associated with these agents should be considered before prescribing. Common (10%-50%) adverse effects associated with stimulant medications include decreased appetite, insomnia, headache, stomachache, and irritability.^{23,32} Not life-threatening, these adverse events are more of a nuisance, and can usually be managed by adjusting the dose or dosing schedule of the drug, switching medications, or adding medications to treat the adverse events. Uncommon (1%-10%) and rare (<1%) adverse effects associated with stimulant medication treatment for patients with ADHD include tics, dysphoria, extreme overfocus, and hallucinations.^{23,32} One serious adverse event, sudden cardiac death, has been associated with ADHD medication use in patients at risk for cardiovascular events or those with a cardiovascular defect. Among others without such risk factors, the risk has not been found to be greater than the general population of children and adolescents not receiving ADHD medication.^{34,35} The American Heart Association recommends electrocardiogram monitoring for patients receiving either stimulant or nonstimulant medications who are at risk of sudden death due to a strong family history of heart disease.³⁶

In addition to the adverse events associated with stimulants, consideration should be given to the fact that most stimulant medications prescribed for patients with ADHD are Schedule II controlled substances. The Schedule II designation indicates

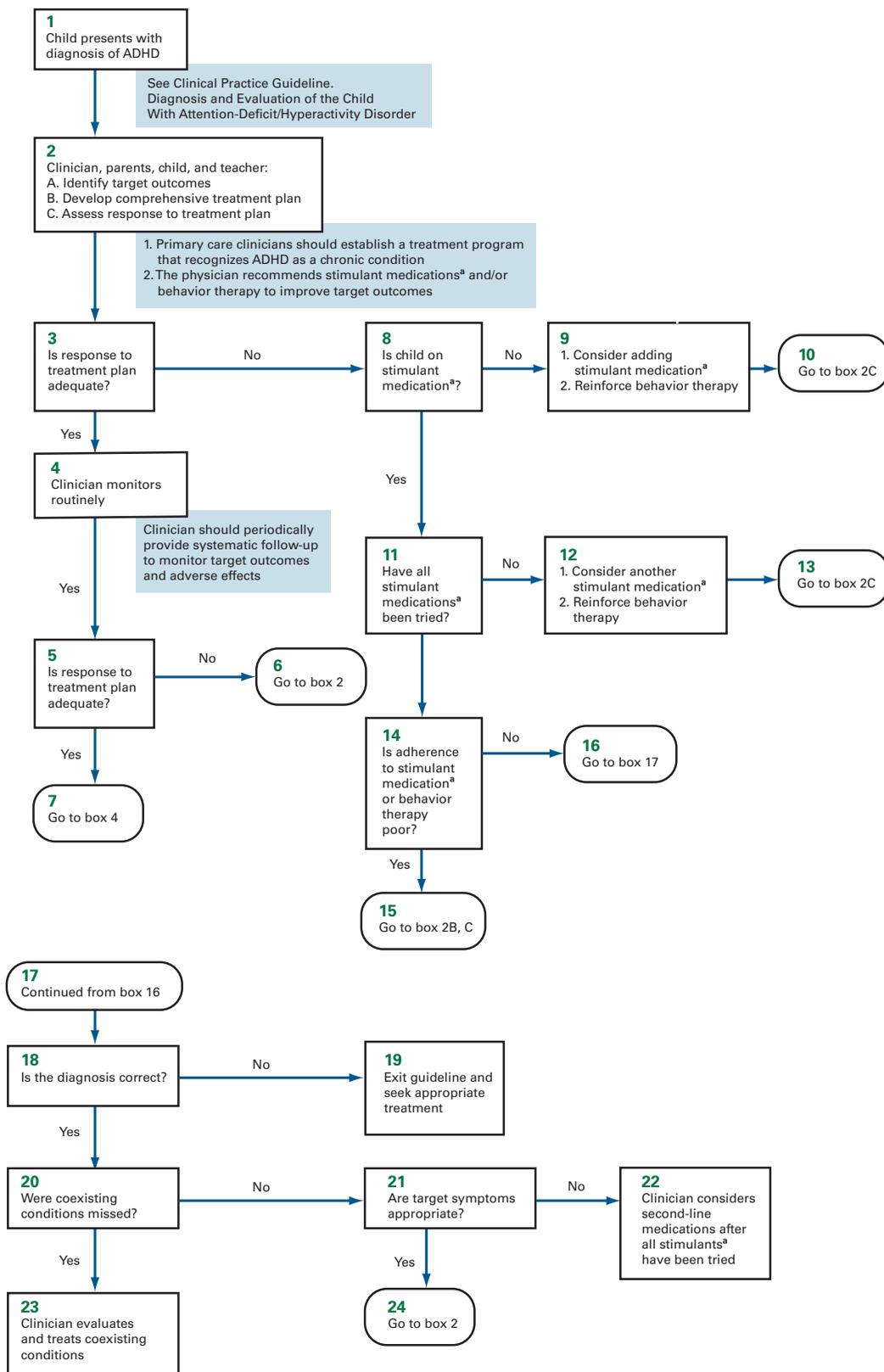
a legitimate medical use for a particular drug with a high probability of abuse. Since a diagnosis of ADHD already confers a higher risk of substance abuse, the prescribing of stimulants to adult and adolescent patients with ADHD may seem counterintuitive.³⁷⁻⁴⁰ However, many prescribing safeguards are built into the Schedule II designation, such as no refills and mandatory “hard copy” prescriptions, which reduce the likelihood of abuse. Furthermore, while some studies indicate that patients receiving treatment for ADHD demonstrate a reduced risk for substance abuse,³⁷ recent findings from the largest multicenter trial evaluating therapy for ADHD—the Multimodal Treatment

■ **Figure 3.** Common Comorbid *DSM-IV* Disorders in Adults With ADHD



ADHD indicates attention-deficit/hyperactivity disorder; *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*.
^aAmong respondents with ADHD, reported comorbid disorder within the previous 12 months.

■ **Figure 4.** American Academy of Pediatrics Treatment Algorithm for School-Aged Children With ADHD



^aExcluding pemoline.

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Study of Children with ADHD (MTA)—indicate that the actual risk for substance abuse neither increased nor decreased as a function of having been prescribed stimulants.^{41,42} Nevertheless, in patients diagnosed with ADHD who have an existing substance abuse problem, nonstimulant medications, such as atomoxetine or bupropion, should be considered.⁴⁰

Prior to initiating an ADHD medication, a number of key issues should be considered. First, a baseline assessment of ADHD symptoms and treatment targets, as well as sleeping and eating patterns should be established. Importantly, a thorough physical examination and medical history, including family history of illness, should be conducted to determine if there are any medical contraindications or concerns.^{43,44} Likewise, the baseline assessment ADHD symptoms and treatment targets should be performed in a comprehensive manner across different settings with different people (eg, home, school, day care, work) to capture the effects of therapy in the patient's real-world setting.⁴³ For children with ADHD, this assessment can be achieved by talking to parents and children while self-assessment scales are more appropriate for adolescents and adults.⁴⁵ Furthermore, careful consideration should be given to the dose and dosing schedule of the medication prescribed. Starting a patient at too low a dose and/or on a dosing schedule spaced too far apart are common reasons for medication failure, highlighting the importance of prescribing the recommended therapeutic doses of medications and employing extended-release formulations when appropriate.⁴³ Collectively, these measures can assist in choosing or switching to the optimal form of pharmacotherapy or in making the determination as to whether behavioral interventions are appropriate.⁴⁵

As mentioned previously, behavioral interventions likewise play an important role in the treatment of ADHD, both alone and in combination with pharmacotherapy. The aforementioned MTA demonstrated the role of behavioral interventions with respect to pharmacotherapy for ADHD in children.⁵ In the MTA, 579 elementary school children (aged 7-10 years) with *DSM-IV* ADHD combined type were randomized to 1 of 4 treatment groups⁵:

1. Medication alone (85% of children treated with stimulants)

2. Psychosocial/behavioral treatment alone
3. Combination of medication and psychosocial behavioral treatment
4. Routine community care

The outcome measure of interest in the trial was assessed at 14 months, and the separate and combined effects of medication and psychosocial/behavioral therapy were included in this assessment.⁵ Although medication alone was superior to behavioral intervention alone in patients with ADHD and no predominating psychological comorbidities, both interventions were equally effective in treating patients with ADHD plus anxiety or depressive disorders.⁵ Based on these findings, the researchers concluded that both courses of therapy serve separate but equally important roles in the treatment of ADHD. Pharmacotherapy effectively reduces the core symptoms of ADHD and makes it easier to implement a successful behavioral program, whereas behavioral interventions may lower the dose of medication required and target behaviors that may not be addressed as well by medication.⁵

Several different types of behavioral interventions exist for children, adolescents, and adults with ADHD. In children and sometimes adolescents, these interventions are typically directed at both the child or adolescent and the parent or primary caregiver.¹ Intensive behavioral therapy for the child or adolescent has been shown to decrease substance abuse and delinquency, lower medication dose, and reduce parental stress by changing the child or adolescent's thinking and coping habits and improving his or her organizational skills.^{46,47} Behavioral therapy may also be administered to the child or adolescent to improve his or her self-image and explore self-defeating patterns of behavior.¹ An important part of any management strategy for children or adolescents with ADHD, parent training and education is based on giving parents the tools to manage their child's behavior and encourage medication adherence.¹ These interventions have been shown to be highly effective for assisting parents in fostering regular medication habits, identifying target behaviors, providing positive reinforcement, and encouraging skill development.⁴⁶

Behavioral interventions for adults with ADHD typically consist of educational initiatives. Since

there is no caregiver (ie, no parent or guardian) in these cases, the interventions are focused directly on the patient in order to inform and assist in managing his or her ADHD. Educational interventions provide patients with information about their disorder and how to manage it most effectively, through the use of organization “props” (eg, calendars, personal digital assistants) and other organization techniques.¹ Other behavioral interventions likewise assist in organization, by creating a routine schedule for patients to keep with their therapist, and can improve patient self-image by helping them recognize that they have a disorder that must be managed effectively.¹

Conclusion

ADHD has a significant impact on patient quality of life and the managed care bottom line as well. This effect is not only realized among children, but adolescents and adults alike, where the disorder is often underrecognized and undertreated. Contributing to the burden of managing patients with ADHD is the myriad of presentations and comorbidities observed among the broad spectrum of patients with the disorder. These complexities associated with ADHD often present problems in diagnosis and treatment for managed care providers, who may already be overburdened or lack significant formalized training in behavioral health.

While pharmacotherapy, particularly with stimulants, is the most commonly employed and widely effective form of therapy for the treatment of ADHD, a comprehensive ADHD treatment plan should include behavioral and educational interventions when appropriate. However, implementation of this type of treatment plan often requires a multidisciplinary team approach of healthcare professionals, teachers, and parents to be truly effective. Beyond initiating a comprehensive treatment plan, regular feedback and monitoring is essential to maximize the effectiveness of the interventions and evaluate responses to interventions.

After laying the foundation of a comprehensive ADHD management approach for plan members with the disorder, providers can maximize its effectiveness by using evidence-based diagnostic scales and treatment algorithms. With such proven tools

readily available, a comprehensive treatment approach for ADHD is within reach, after which improved outcomes for the diverse range of patients with ADHD will likely follow in the managed care setting.

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