Attention Deficit Hyperactivity Disorder

Summary of Practice Parameter for the Assessment and Treatment of Children and Adolescents with ADHD, 2007, American Academy of Child and Adolescent Psychology (AACAP)

Practice Parameter for the Assessment and Treatment of Children and Adolescents with Attention-Deficit/Hyperactivity Disorder

This parameter discusses:

- The clinical evaluation for ADHD
- Comorbid conditions associated with ADHD
- Research on the etiology of the disorder
- Psychopharmacological interventions for ADHD
- Psychosocial interventions for ADHD

Attention-deficit/hyperactivity disorder (ADHD; American Psychiatric Association, 2000) is one of the most common childhood psychiatric conditions. It has been the focus of a great deal of scientific and clinical study during the past century.

Although scientists and clinicians debate the best way to diagnose and treat ADHD, there is no debate among competent and well-informed health care professionals that ADHD is a valid neurobiological condition that causes significant impairment in those whom it afflicts.

These guidelines seek to lay out evidence-based guidelines for the effective diagnosis and treatment of ADHD. (pg. 894)

In this parameter, the term preschoolers refers to children ages 3 through 5 years, the term children refers to children ages 6 through 12 years, and the term adolescents refers to minors ages 13 through 17 years. Parent refers to parent or legal guardian. Patient refers to any minor with ADHD. The terminology in this practice parameter is consistent with that of DSM-IVTR1 (American Psychiatric Association, 2000).

In this parameter, recommendations for best treatment practices are stated in accordance with the strength of the underlying empirical and/or clinical support, as follows: (pg. 898)

- **[MS] Minimal Standard** is applied to recommendations that are based on rigorous empirical evidence (e.g., randomized, controlled trials) and/or overwhelming clinical consensus. Minimal standards apply more than 95% of the time (i.e., in almost all cases).
- **[CG] Clinical Guideline** is applied to recommendations that are based on strong empirical evidence (e.g., nonrandomized, controlled trials) and/or strong clinical consensus. Clinical guidelines apply approximately 75% of the time (i.e., in most cases).
- **[OP] Option** is applied to recommendations that are acceptable based on emerging empirical evidence (e.g., uncontrolled trials or case series/reports) or clinical opinion, but lack strong empirical evidence and/or strong clinical consensus.
• [NE] *Not Endorsed* is applied to practices that are known to be ineffective or contraindicated.
• The strength of the empirical evidence is rated in descending order as follows:
  • [rct] *Randomized, controlled trial* is applied to studies in which subjects are randomly assigned to two or more treatment conditions.
  • [ct] *Controlled trial* is applied to studies in which subjects are non-randomly assigned to two or more treatment conditions.
  • [ut] *Uncontrolled trial* is applied to studies in which subjects are assigned to one treatment condition.
  • [cs] *Case series/report* is applied to a case series or a case report.

**Screening**

**Recommendation 1. Screening for ADHD Should Be Part of Every Patient’s Mental Health Assessment [MS].** (pg. 898)

In any mental health assessment, the clinician should screen for ADHD by specifically asking questions regarding the major symptom domains of ADHD (inattention, impulsivity, and hyperactivity) and asking whether such symptoms cause impairment.

  • These screening questions should be asked regardless of the nature of the chief complaint.
  • Rating scales or specific questionnaires containing the DSM symptoms of ADHD can also be included in clinic/office registration materials to be completed by parents before visits or in the waiting room before the evaluation.
  • If a parent reports that the patient suffers from any symptoms of ADHD that induce impairment or if the patient scores in the clinical range for ADHD symptoms on a rating scale, then a full evaluation for ADHD as set out in the next recommendation is indicated.

**Evaluation**

**Recommendation 2. Evaluation of the Preschooler, Child, or Adolescent for ADHD Should Consist of Clinical Interviews With the Parent and Patient, Obtaining Information About the Patient’s School or Day Care Functioning, Evaluation for Comorbid Psychiatric Disorders, and Review of the Patient’s Medical, Social, and Family Histories [MS].** (pg. 898)

The clinician should perform a detailed interview with the parent about each of the 18 ADHD symptoms listed in DSM-IV.

  • For each symptom, the clinician should determine whether it is present as well as its duration, severity, and frequency.
  • Age at onset of the symptoms should be assessed.
  • The patient must have the required number of symptoms, a chronic course, and onset of symptoms during childhood.
After all of the symptoms are assessed, the clinician should determine in which settings impairment occurs.

- Because most patients with ADHD have academic impairment, it is important to ask specific questions about this area.
- Presence of impairment should be distinguished from presence of symptoms.
- DSM-IV requires impairment in at least two settings (home, school, or job) to meet criteria for the disorder, but clinical consensus agrees that severe impairment in one setting warrants treatment.

After reviewing the ADHD symptoms, the clinician should interview the parent regarding other common psychiatric disorders of childhood.

- In general, it is most logical to next gather data from the parent regarding ODD2 and CD3.
- The clinician should explore whether the patient has symptoms of depression, mania, anxiety disorders, tic disorders, substance abuse, and psychosis, or evidence of a learning disability.
- The parent should complete one of the many standardized behavior rating scales. (Table 1, pg. 899) (See Appendix A)
- It is advisable for the clinician to request a release of information from the parent to obtain a similar rating scale from the patient’s teacher(s).
- Family history/ functioning and social history should be assessed.
- Information regarding any physical or psychological trauma the patient may have experienced should be gathered as well as any current psychosocial stressors.

The clinician should obtain information about the patient’s perinatal history, developmental milestones, medical history, and mental health history (especially any previous psychiatric treatment).

- Delays in reaching developmental milestones or in social/language development suggest language disorders, mental retardation, or pervasive developmental disorders.
- Assessment of developmental milestones is particularly important in the evaluation of the preschooler because many developmental disorders are associated with attention problems and hyperactivity.

The clinician should next interview the child or adolescent.

- For the preschool or young school-age child (5-8 years old), this interview may be done concurrently with the parent interview.
- Older children and adolescents should be interviewed separately from parents, as older children and teenagers may not reveal significant symptoms (depression, suicide, or drug or alcohol abuse) in the presence of a parent.
Clinicians should be prepared to conduct a separate interview even with a younger child in many clinical situations, such as if the patient appears at risk of abuse or there is evidence of significant family dysfunction.

- The clinician should perform a mental status examination, assessing appearance, sensorium, mood, affect, and thought processes.
- Marked disturbances in mood, affect, sensorium, or thought process suggest the presence of psychiatric disorders other than or in addition to ADHD.

**Recommendation 3. If the Patient’s Medical History Is Unremarkable, Laboratory or Neurological Testing Is Not Indicated [NE]. (pg. 900)**

There are few medical conditions that masquerade as ADHD, and the vast majority of patients with ADHD will have an unremarkable medical history.

- Children suffering a severe head injury may develop symptoms of ADHD, usually of the inattentive subtype.
- Hyperthyroidism, which can be associated with hyperactivity and agitation, rarely presents with ADHD symptoms alone but with other signs and symptoms of excessive thyroid hormone levels.
- Exposure to lead, either prenatally or during development, is associated with a number of neurocognitive impairments, including ADHD (Lidsky and Schneider, 2003).
- Children with fetal alcohol syndrome or children exposed in utero to other toxic agents have a higher incidence of ADHD than the general population (O’Malley and Nanson, 2002).

**Recommendation 4. Psychological and Neuropsychological Tests Are Not Mandatory for the Diagnosis for ADHD, but Should Be Performed if the Patient’s History Suggests Low General Cognitive Ability or Low Achievement in Language or Mathematics Relative to the Patient’s Intellectual Ability [OP]. (pg. 901)**

Low scores on standardized testing of academic achievement frequently characterize ADHD patients (Tannock, 2002).

The clinician must determine whether the academic impairment is secondary to the ADHD, if the patient has ADHD and a learning disorder, or if the patient has only a learning disorder and the patient’s inattentiveness is secondary to the learning disorder.

- Academic impairment is commonly due to the ADHD itself. Many months or years of not listening in class, not mastering material in an organized fashion, and not practicing academic skills (not doing homework, etc.) leads to a decline in achievement relative to the patient’s intellectual ability.
- It is more appropriate to treat the ADHD and then determine whether the academic problems begin to resolve as the patient is more attentive in learning situations.
- However, if there is no clear evidence of an improvement in academic performance in 1 to 2 months despite improvement of the ADHD, then psychological testing for learning disorders is indicated.
• In other cases, symptoms of learning/language disorders are present that cannot be accounted for by ADHD.
• It could then be firmly concluded that any deficits identified are clearly the result of a learning disorder and not due to inattention to the test materials.
• Psychological testing of the ADHD patient usually consists of a standardized assessment of intellectual ability (IQ) to determine any contribution of low general cognitive ability to the academic impairment, and academic achievement.

Recommendation 5. The Clinician Must Evaluate the Patient with ADHD for the Presence of Comorbid Psychiatric Disorders [MS]. (pg. 901)

The clinician must integrate the data obtained with regard to comorbid symptoms to determine whether the patient meets criteria for a separate comorbid disorder in addition to ADHD, the comorbid disorder is the primary disorder and the patient’s inattention or hyperactivity/impulsivity is directly caused by it, or the comorbid symptoms do not meet criteria for a separate disorder but represent secondary symptoms stemming from the ADHD.

• When patients with ADHD meet full DSM-IV criteria for a second disorder, the clinician should generally assume the patient has two or more disorders and develop a treatment plan to address each comorbid disorder in addition to the ADHD.
• Patients with ADHD may develop associated symptoms of dysphoria or low self-esteem secondary to the frustrations of living with ADHD. If such dysphoria is a result of the ADHD, then it should respond to successful treatment of the ADHD.
• The distractibility or impulsivity of ADHD patients may often be interpreted as oppositional behavior by caretakers or children. Mild mood lability (shouting out, crying easily, and quick temper) is also common in ADHD.

Treatment

Recommendation 6. A Well-Thought-Out and Comprehensive Treatment Plan Should Be Developed For the Patient with ADHD [MS]. (pg. 902)

Psychopharmalogical Intervention

The patient’s treatment plan should take account of ADHD as a chronic disorder and may consist of psychopharmacological and/or behavior therapy.

• This plan should include parental and child psychoeducation about ADHD and its various treatment options (medication and behavior therapy), linkage with community supports, and additional school resources as appropriate.
• The treatment plan should be reviewed regularly and modified if the patient’s symptoms do not respond.
• Behavior therapy may be recommended as an initial treatment if the patient’s ADHD symptoms are mild with minimal impairment, the diagnosis of ADHD is uncertain, parents reject medication treatment, or there is marked disagreement about the diagnosis between parents or between parents and teachers.
Non-pharmacological Intervention

- The 1997 practice parameter (American Academy of Child and Adolescent Psychiatry, 1997) extensively reviewed a variety of non-pharmacological interventions for ADHD other than behavior therapy, including cognitive-behavioral therapy and dietary modification.
- No evidence was found at that time to support these interventions in patients with ADHD, and no studies have appeared since then that would justify their use.
- Formal social skills training for children with ADHD has not been shown to be effective (Antshel and Remer, 2003).

Recommendation 7. The Initial Psychopharmacological Treatment of ADHD Should Be a Trial with an Agent Approved by the Food and Drug Administration for the Treatment of ADHD [MS]. (pg. 904)

The following medications are approved by the U.S. Food and Drug Administration (FDA) for the treatment of ADHD:

- Dextroamphetamine (DEX)
- D- and D,L-methylphenidate (MPH)
- Mixed salts amphetamine
- Atomoxetine

Stimulants

Many randomized clinical trials of stimulant medications have been performed in patients with ADHD during the past 3 decades.

- Stimulants are highly efficacious in the treatment of ADHD.
- Physicians may use long-acting forms as initial treatment; there is no need to titrate to the appropriate dose on short-acting forms and then transfer children to a long-acting form.
- Short-acting stimulants are often used as initial treatment in small children (<16 kg in weight), for whom there are no long-acting forms in a sufficiently low dose.
- Typical dosing of the stimulant medications is shown in Table 2 (pg. 905). (See appendix B) These doses represent guidelines; with careful clinical monitoring, these doses may be exceeded in individual cases.
- After selecting the starting dose, the physician may titrate upward every 1 to 3 weeks until the maximum dose for the stimulant is reached, symptoms of ADHD remit, or side effects prevent further titration, whichever occurs first.

Treatment of Preschoolers with Stimulants

Stimulants have been widely prescribed by clinicians for this age group, although the number of published controlled trials is limited. The conclusion was that the dose of any stimulant should be titrated more conservatively in preschoolers than in school-age patients, and lower mean doses may be effective.
Atomoxetine

Atomoxetine is a noradrenergic reuptake inhibitor that is superior to placebo in the treatment of ADHD in children, adolescents, and adults (Michelson et al., 2001 [rct], 2002 [rct], 2003 [rct]; Swensen et al., 2001 [rct]).

- Atomoxetine can be given once or twice daily, with the second dose given in the evening;
- Studies (Sumner et al. (2005)) suggest that using atomoxetine for the treatment of ADHD with comorbid anxiety is a viable alternative approach.
- No evidence exists that atomoxetine is effective for the treatment of major depressive disorder, however.

Selection of Agent

The clinician and family face the choice of which agent to use for the initial treatment of the patient with ADHD.

- The American Academy of Pediatrics (2001), an international consensus statement (Kutcher et al., 2004), and the Texas Children’s Medication Project (Pliszka et al., 2006a) have recommended stimulants as the first line of treatment for ADHD, particularly when no comorbidity is present.
- Atomoxetine is preferred if the patient experiences severe side effects to stimulants such as mood lability or tics (Biederman et al., 2004). When dosed twice daily, effects on late evening behavior may be seen.
- It is the sole choice of the family and the clinician as to which agent should be used for the patient’s treatment, and each patient’s treatment must be individualized.

Recommendation 8. If None of the Above Agents Result in Satisfactory Treatment of the Patient With ADHD, the Clinician Should Undertake a Careful Review of the Diagnosis and Then Consider Behavior Therapy and/or the Use of Medications Not Approved by the FDA for the Treatment of ADHD [CG]. (pg.907)

The vast majority of patients with ADHD who do not have significant comorbidity respond satisfactorily to the agents listed in Recommendation 7.

- If a patient fails to respond to trials of all of these agents after an adequate length of time at appropriate doses for the agent as noted in Table 2, then the clinician should undertake a review of the patient’s diagnosis of ADHD.
- Bupropion, tricyclic antidepressants (TCAs), and α-agonists are often used in the treatment of ADHD even though they are not approved by the FDA for this purpose. Their doses for clinical use are shown in Table 3 (pg. 908). (See Appendix C)
- α-agonists (clonidine and guanfacine) have been widely prescribed for patients with ADHD, for the disorder itself, for comorbid aggression, or to combat side effects of tics or insomnia.

Recommendation 9. During a Psychopharmacological Intervention for ADHD, the Patient Should Be Monitored for Treatment-Emergent Side Effects [MS]. (pg. 909)
For stimulant medications, the most common side effects are appetite decrease, weight loss, insomnia, or headache. Less common side effects of stimulants include tics and emotional lability/irritability.

- Strategies for dealing with side effects include monitoring, dose adjustment of the stimulant, switching to another stimulant, and adjunctive pharmacotherapy to treat the side effects.
- If the patient’s ADHD symptoms respond adequately only to a stimulant medication that induces tics, then combined pharmacotherapy of the stimulant and an α-agonist (clonidine or guanfacine) is recommended (Tourette’s Syndrome Study Group, 2002 [rct]).

**Aggression, Mood Lability, and Suicidal Ideation**

Controlled trials of stimulants do not support the widespread belief that stimulant medications induce aggression.

- The physician must distinguish between aggression/emotional lability that is present when the stimulant is active (i.e., during the day) and increased hyperactivity/impulsivity in the evening when the stimulant is no longer effective.
- The physician may deal with this situation by administering a dose of immediate release stimulant in the late afternoon. Such a dose is usually smaller than one of the morning doses.
- If after starting an ADHD medication the patient clearly is more aggressive or emotionally labile or experiences psychotic symptoms, then the physician should discontinue that medication and consider a different agent.
- Adjunctive therapy with neuroleptics or mood stabilizers is not recommended if the aggressive/labile behavior was not present at baseline and is clearly a side effect of the stimulant.

**Cardiovascular Issues**

In March 2006 the Pediatric Advisory Committee also addressed the risk of sudden death occurring with agents used for the treatment of ADHD (Villalaba, 2006).

- The rate of sudden death of children taking ADHD medications does not appear to exceed the base rate of sudden death in the general population.
- No evidence currently indicates a need for routine cardiac evaluation (i.e., electrocardiography, echocardiography) before starting any stimulant treatment in otherwise healthy individuals (Biederman et al., 2006).
- The package insert for stimulants states that these medications should generally not be used in children and adolescents with preexisting heart disease or symptoms suggesting significant cardiovascular disease.
- If stimulants are initiated, then the patient should also be studied by the cardiologists during the course of treatment.
Side Effects of Non-FDA Approved Agents

- Bupropion may cause mild insomnia or loss of appetite. Extremely high single doses (>400 mg) of Bupropion may induce seizures even in patients without epilepsy.
- Tricyclic Antidepressants frequently cause anticholinergic side effects such as dry mouth, sedation, constipation, changes in vision, or tachycardia. Reduction in dose or discontinuation of the TCA is often required if these side effects induce impairment.
- Side effects of α-agonists include sedation, dizziness, and possible hypotension.
- In the previous decade there was controversy over the safety of the use of α-agonists, particularly clonidine, in children.
- There have been no further reports of severe cardiovascular adverse events associated with clonidine use in ADHD patients. Nonetheless, physicians must be cautious.
- The patient’s blood pressure and pulse should be assessed periodically (Gutgesell et al., 1999), and abrupt discontinuations of the α-agonist are to be avoided.
- The patient and family should be advised to report any cardiac symptoms such as dizziness, fainting, or unexplained change in heart rate.

Recommendation 10. If a Patient With ADHD Has a Robust Response to Psychopharmacological Treatment and Subsequently Shows Normative Functioning in Academic, Family, and Social Functioning, Then Psychopharmacological Treatment of the ADHD Alone Is Satisfactory [OP]. (pg. 912)

Whether combined medication and psychosocial treatment of uncomplicated ADHD yields improved outcome relative to medication treatment alone remains a contentious issue.

- Response to medication, adjunctive psychosocial intervention may not provide added benefit.
- Therefore, if a patient with ADHD shows full remission of symptoms and normative functioning, it is not mandatory that behavior therapy be added to the regimen, although parental preferences in this matter should be taken into account.

Recommendation 11. If a Patient With ADHD Has a Less Than Optimal Response to Medication, Has a Comorbid Disorder, or Experiences Stressors in Family Life, Then Psychosocial Treatment in Conjunction With Medication Treatment Is Often Beneficial. (pg. 912)

In contrast to the lack of an additive effect of behavioral and pharmacological treatment in children with ADHD alone, studies provided strong evidence that patients with ADHD and comorbid disorders and/or psychosocial stressors benefit from an adjunctive psychosocial intervention.

- Comorbid anxiety (as reported by the child’s parent) predicted a better response to behavioral treatment (March et al., 2000 [rct]), particularly when the ADHD patient had both an anxiety and a disruptive behavior disorder (ODD or CD; Jensen et al., 2001b [rct]).
The clinician should individualize the psychosocial intervention for each ADHD patient, applying it in those patients who can most benefit because of comorbidity or the presence of psychosocial stress.

**Recommendation 12. Patients Should Be Assessed Periodically to Determine Whether There Is Continued Need for Treatment or If Symptoms Have Remitted. Treatment of ADHD Should Continue as Long as Symptoms Remain Present and Cause Impairment. (pg. 913)**

The patient with ADHD should have regular follow-up for medication adjustments to ensure that the medication is still effective, the dose is optimal, and side effects are clinically insignificant.

- Pharmacological follow-up should occur at least several times per year.
- Psychoeducation should be provided on an ongoing basis.

The history of medication treatment of ADHD now spans nearly 70 years, which is longer than the use of antibiotics (Bradley, 1937).

The clinician must be alert to the fact that some patients with ADHD deteriorate in spite of medication (and these are more likely to have comorbidity at baseline), whereas others do show remission of symptoms and may no longer require medication management (Swanson, 2005 [ut]).

**Recommendation 13. Patients Treated With Medication for ADHD Should Have Their Height and Weight Monitored Throughout Treatment. (pg. 915)**

The effect of stimulant treatment on growth has been a concern for many years.

- In the late 1990s concern about effects on growth abated, particularly because follow-up studies did not show any long-term effect on ultimate adult height (Gittelman-Klein and Mannuzza, 1988; Kramer et al., 2000; Weiss and Hechtman, 2003).
- Recently, however, two major reviews (Faraone et al., unpublished data, 2006; Poulton, 2005) examined all of the available data and concluded that stimulant treatment may be associated with a reduction in expected height gain, at least in the first 1 to 3 years of treatment.

Clinicians may not observe growth deficits in stimulant-treated children because treatment does not slow the height acquisition rate enough to bring them below the mean height for age.

- In assessing for clinically significant growth reduction, it is recommended that serial plotting of height and weight on growth charts labeled with lines showing the major percentiles (5th, 10th, 25th, 50th, 75th, 90th, and 95th) be used (Mei et al., 2004).
- The clinician should also consider switching the patient to another ADHD medication. It is important for the clinician to carefully balance the benefits of medication treatment with the risks of small reductions in height gain.

**Summary (pg. 916)**
The key to effective long-term management of the patient with ADHD is continuity of care with a clinician experienced in the treatment of ADHD.

- The frequency and duration of follow-up sessions should be individualized for each family and patient, depending on the severity of ADHD symptoms; the degree of comorbidity of other psychiatric illness; the response to treatment; and the degree of impairment in home, school, work, or peer-related activities.
- The clinician should establish an effective mechanism for receiving feedback from the family and other important informants in the patient’s environment to be sure symptoms are well controlled and side effects are minimal.
- Although this parameter does not seek to set a formula for the method of follow-up, significant contact with the clinician should typically occur two to four times per year in cases of uncomplicated ADHD and up to weekly sessions at times of severe dysfunction or complications of treatment.

Parameter Limitations (pg. 916)

AACAP practice parameters are developed to assist clinicians in psychiatric decision making.

- These parameters are not intended to define the standard of care, nor should they be deemed inclusive of all proper methods of care or exclusive of other methods of care directed at obtaining the desired results.
- The ultimate judgment regarding the care of a particular patient must be made by the clinician in light of all of the circumstances presented by the patient and his or her family, the diagnostic and treatment options available, and available resources.