



Attention Deficit Hyperactivity Disorder (ADHD) Guideline

<http://www.guideline.gov/content.aspx?id=36881>

Guideline History

Date Approved	1/02
Date Revised	1/04, 12/05, 1/06, 9/06, 1/08, 3/08, 1/10, 1/12
Date Reviewed	1/16
Next Review Date	1/18

These Guidelines are promulgated by Sentara Healthcare (SHC) as recommendations for the clinical management of specific conditions. Clinical data in a particular case may necessitate or permit deviation from these Guidelines. The SHC Guidelines are institutionally endorsed recommendations and are not intended as a substitute for clinical judgment.

Key Points


- Any child age 4 through 18 who presents with academic or behavioral problems and symptoms of inattention, hyperactivity or impulsivity should be evaluated for ADHD.
- Determine whether *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) criteria for ADHD have been met, through administration of standardized questionnaires in more than one setting.
- Evaluation should include assessment for other conditions that might coexist with ADHD including behavioral, developmental and physical conditions.
- Treatment recommendations vary depending on the patient's age:
 - Preschool-aged children (4-5 yo):* Evidence-based parent- and/or teacher administered behavior therapy as first line of treatment. May prescribe methylphenidate if the behavior interventions do not provide significant improvement and there is moderate –to-severe continuing disturbance in the child's function.
 - Elementary school-aged children (6-11 yo):* Prescribe FDA-approved medications for ADHD and/or evidence-based parent- and/or teacher administered behavior therapy, preferably both.
 - Adolescents (12-18 yo):* Prescribe FDA-approved medications for ADHD with the assent of the adolescent and may prescribe behavior therapy as treatment for ADHD, preferably both.
- Titrate doses of medication for ADHD to achieve maximum benefit with minimum adverse effects.
- Upon initiation of medication treatment, patients should be seen at least once within 30 days, and for at least 2 additional visits within the following 9 months.
- ADHD is a chronic condition. Management of children and adolescents with ADHD should follow the principles of the chronic care model and the medical home.

Guideline Summary NGC-9071

Guideline Title

ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents.

Bibliographic Source(s)

Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management, Wolraich M, Brown L, Brown RT, DuPaul G, Earls M, Feldman HM, Ganiats TG, Kaplanek B, Meyer B, Perrin J, Pierce K, Reiff M, Stein MT, Visser S. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*. 2011 Nov;128(5):1007-22. [70 references] [PubMed](#) 

Guideline Status


This is the current release of the guideline.

This guideline updates a previous version: American Academy of Pediatrics. Clinical practice guideline: diagnosis and evaluation of the child with attention-deficit/hyperactivity disorder. *Pediatrics* 2000 May;105(5):1158-70. [60 references]

All clinical practice guidelines from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- [June 24, 2015 – Daytrana Patch \(methylphenidate transdermal system\)](#) : The U.S. Food and Drug Administration (FDA) is warning that permanent loss of skin color may occur with use of the Daytrana patch (methylphenidate transdermal system) for Attention Deficit Hyperactivity Disorder (ADHD). FDA added a new warning to the drug label to describe this skin condition, which is known as chemical leukoderma.

Scope

Disease/Condition(s)

Attention-deficit/hyperactivity disorder (ADHD)

Guideline Category

Diagnosis
Evaluation
Management
Treatment

Clinical Specialty

Family Practice
Neurology
Nursing
Pediatrics
Psychiatry
Psychology

Intended Users

Advanced Practice Nurses
Allied Health Personnel
Nurses
Physician Assistants
Physicians
Psychologists/Non-physician Behavioral Health Clinicians

Guideline Objective(s)

To provide recommendations for the assessment, diagnosis, and treatment of children and adolescents with attention-deficit/hyperactivity disorder (ADHD)

Target Population

Children and adolescents 4 to 18 years old who present with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity

Interventions and Practices Considered

1. Initiation of evaluation for attention-deficit/hyperactivity disorder (ADHD) by primary care clinician

2. Use of *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR)* criteria to establish diagnosis
3. Assessment for conditions that might coexist with ADHD
4. Management of child/youth with ADHD following principles of the chronic care model and the medical home
5. Treatment of ADHD based on age of patient, including:
 - Evidence-based parent- and/or teacher-administered behavior therapy
 - Pharmacologic therapy (stimulant medications [e.g., methylphenidate], atomoxetine, extended-release guanfacine, extended-release clonidine)
6. Titrating of medications for maximum benefit with minimum adverse effects

Major Outcomes Considered

- Rate of undiagnosed and untreated attention-deficit/hyperactivity disorder (ADHD)
- Sensitivity and specificity of diagnostic criteria
- Efficacy of medications and behavioral therapies
- Adverse effects of therapy

Methodology

Methods Used to Collect/Select the Evidence

- Hand-searches of Published Literature (Primary Sources)
- Hand-searches of Published Literature (Secondary Sources)
- Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Evidence-Review Process for Diagnosis

A multilevel, systematic approach was taken to identify the literature that built the evidence base for both diagnosis and treatment. To increase the likelihood that relevant articles were included in the final evidence base, the reviewers first conducted a scoping review of the literature by systematically searching literature using relevant key words and then summarized the primary findings of articles that met standard inclusion criteria. The reviewers then created evidence tables that were reviewed by content-area experts who were best able to identify articles that might have been missed through the scoping review. Articles that were missed were reviewed carefully to determine where the abstraction methodology failed, and adjustments to the search strategy were made as required (see technical report to be published). Finally, although published literature reviews did not contribute directly to the evidence base, the articles included in review articles were cross-referenced with the final evidence tables to ensure that all relevant articles were included in the final evidence tables.

For the scoping review, articles were abstracted in a stratified fashion from 3 article-retrieval systems that provided access to articles in the domains of medicine, psychology, and education: PubMed [\[link\]](#), PsycINFO [\[link\]](#), and ERIC [\[link\]](#). English language, peer-reviewed articles published between 1998 and 2009 were queried in the 3 search engines. Key words were selected with the intent of including all possible articles that might have been relevant to 1 or more of the questions of interest (see the technical report to be published). The primary abstraction included the following terms: "attention deficit hyperactivity disorder" or "attention deficit disorder" or "hyperkinesis" and "child." A second, independent abstraction was conducted to identify articles related to medical screening tests for attention-deficit/hyperactivity disorder (ADHD). For this abstraction, the same search terms were used as in the previous procedure along with the additional condition term "behavioral problems" to allow for the inclusion of studies of youth that sought to diagnose ADHD by using medical screening tests. Abstractions were conducted in parallel fashion across each of the 3 databases; the results from each abstraction (complete reference, abstract, and key words) were exported and compiled into a common reference database using EndNote 10.0.4. References were subsequently and systematically deduplicated by using the software's deduplication procedure. References for books, chapters, and theses were also deleted from the library. Once a deduplicated library was developed, the semifinal database of 8267 references was reviewed for inclusion on the basis of inclusion criteria listed in the technical report.

Evidence-Review Process for Treatment

In addition to this systematic review, for treatment the committee used the review from the Agency for Healthcare Research and Quality (AHRQ) Effective Healthcare Program "Attention Deficit Hyperactivity Disorder: Effectiveness of Treatment in At-Risk Preschoolers; Long-term Effectiveness in All Ages; and Variability in Prevalence, Diagnosis, and Treatment." This review addressed a number of key questions for the committee, including the efficacy of medications and behavioral interventions for preschoolers, children, and adolescents. Evidence identified through the systematic evidence review for diagnosis was also used as a secondary data source to supplement the evidence presented in the AHRQ report.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Evidence Quality

A	Well-designed randomized controlled trials (RCTs) or diagnostic studies on relevant populations
B	RCTs or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies
C	Observational studies (case-controlled and cohort design)
D	Expert opinion, case reports; reasoning from first principles
X	Exceptional situations in which validating studies cannot be performed and there is a clear preponderance of benefit or harm

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Included articles were then pulled in their entirety, the inclusion criteria were reconfirmed, and then the study findings were summarized in evidence tables. The articles included in relevant review articles were revisited to ensure their inclusion in the final evidence base. The evidence tables were then presented to the committee for expert review.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

As with the 2 previously published clinical guidelines, the American Academy of Pediatrics (AAP) collaborated with several organizations to develop a working subcommittee that represented a wide range of primary care and subspecialty groups. The subcommittee included primary care pediatricians, developmental-behavioral pediatricians, and representatives from the American Academy of Child and Adolescent Psychiatry, the Child Neurology Society, the Society for Pediatric Psychology, the National Association of School Psychologists, the Society for Developmental and Behavioral Pediatrics, the American Academy of Family Physicians, and Children and Adults With Attention-Deficit/Hyperactivity Disorder (CHADD), as well as an epidemiologist from the Centers for Disease Control and Prevention (CDC).

This group met over a 2-year period, during which it reviewed the changes in practice that have occurred and issues that have been identified since the previous guidelines were published. Delay in completing the process led to further conference calls and extended the years of literature reviewed in order to remain as current as possible. The AAP funded the development of this guideline; potential financial conflicts of the participants were identified and taken into consideration in the deliberations. The guideline will be reviewed and/or revised in 5 years unless new evidence emerges that warrants revision sooner.

The subcommittee developed a series of research questions to direct an extensive evidence-based review in partnership with the CDC and the University of Oklahoma Health Sciences Center. The diagnostic review was conducted by the CDC, and the evidence was evaluated in a combined effort of the AAP, CDC, and University of Oklahoma Health Sciences Center staff. The treatment-related evidence relied on a recent evidence review by the Agency for Healthcare Research and Quality and was supplemented by evidence identified through the CDC review.

The diagnostic issues were focused on 5 areas:

1. Attention-deficit/hyperactivity disorder (ADHD) prevalence—specifically: (a) What percentage of the general US population aged 21 years or younger has ADHD? (b) What percentage of patients presenting at pediatricians' or family physicians' offices in the United States meet diagnostic criteria for ADHD?
2. Co-occurring mental disorders—of people with ADHD, what percentage has 1 or more of the following co-occurring conditions: sleep disorders, learning disabilities, depression, anxiety, conduct disorder, and oppositional defiant disorder?
3. What are the functional impairments of children and youth diagnosed with ADHD? Specifically, in what domains and to what degree do youth with ADHD demonstrate impairments in functional domains, including peer relations, academic performance, adaptive skills, and family functioning?
4. Do behavior rating scales remain the standard of care in assessing the diagnostic criteria for ADHD?
5. What is the prevalence of abnormal findings on selected medical screening tests commonly recommended as standard components of an evaluation of a child with suspected ADHD? How accurate are these tests in the diagnosis of ADHD compared with a reference standard (i.e., what are the psychometric properties of these tests)?

The treatment issues were focused on 3 areas:

1. What new information is available regarding the long-term efficacy and safety of medications approved by the US Food and Drug Administration (FDA) for the treatment of ADHD (stimulants and nonstimulants), and specifically, what information is available about the efficacy and safety of these medications in preschool-aged and adolescent patients?
2. What evidence is available about the long-term efficacy and safety of psychosocial interventions (behavioral modification) for the treatment of ADHD for children, and specifically, what information is available about the efficacy and safety of these interventions in preschool-aged and adolescent patients?
3. Are there any additional therapies that reach the level of consideration as evidence based?

The draft practice guidelines were developed by consensus of the committee regarding the evidence. It was decided to create 2 separate components. The guideline recommendations were based on clear characterization of the evidence. The second component is a practice-of-care algorithm (see Supplemental Figure 2 [see the "Availability of Companion Documents" field]) that provides considerably more detail about how to implement the guidelines but is, necessarily, based less on available evidence and more on consensus of the committee members. When data were lacking, particularly in the process-of-care algorithmic portion of the guidelines, a combination of evidence and expert consensus was used. Action statements labeled "strong recommendation" or "recommendation" were based on high- to moderate-quality scientific evidence and a preponderance of benefit over harm. Option-level action statements were based on lesser-quality or limited data and expert consensus or high-quality evidence with a balance between benefits and harms. These clinical options are interventions that a reasonable health care provider might or might not wish to implement in his or her practice. The quality of evidence supporting each recommendation and the strength of each recommendation were assessed by the committee member most experienced in epidemiology and graded according to AAP policy (see the "Rating Scheme for the Strength of the Recommendations" field).

Rating Scheme for the Strength of the Recommendations

Strength of the Recommendations

A **strong recommendation** means that the committee believes that the benefits of the recommended approach clearly exceed the harms of that approach (or, in the case of a strong negative recommendation, that the harms clearly exceed the benefits) and that the quality of the evidence supporting this approach is either excellent or impossible to obtain. Clinicians should follow such guidance unless a clear and compelling rationale for acting in a contrary manner is present.

A **recommendation** means that the committee believes that the benefits exceed the harms (or, in the case of a negative recommendation, that the harms exceed the benefits), but the quality of the evidence on which this recommendation is based is not as strong. Clinicians also generally should follow such guidance but also should be alert to new information and sensitive to patient preferences.

An **option** means either that the evidence quality that exists is suspect or that well-designed, well-conducted studies have demonstrated little clear advantage to one approach versus another. Options offer clinicians flexibility in their decision-making regarding appropriate practice, although they may set boundaries on alternatives. Patient preference should have a substantial role in influencing clinical decision-making, particularly when policies are expressed as options.

No recommendation is made when there is both a lack of pertinent evidence and an unclear balance between benefits and harms. Clinicians should feel little constraint in their decision-making when addressing areas with insufficient evidence. Patient preference should have a substantial role in influencing clinical decision-making.

Source: American Academy of Pediatrics Steering Committee on Quality Improvement and Management. Classifying recommendations for clinical practice guidelines. *Pediatrics*. 2004 Sep;114(3):874-7.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The guidelines and process-of-care algorithm underwent extensive peer review by committees, sections, councils, and task forces within the American Academy of Pediatrics (AAP); numerous outside organizations; and other individuals identified by the subcommittee. Liaisons to the subcommittee also were invited to distribute the draft to entities within their organizations. The resulting comments were compiled and reviewed by the chairperson, and relevant changes were incorporated into the draft, which was then reviewed by the full committee.

Recommendations

Major Recommendations

Definitions for the quality of the evidence (**A-D, X**) and the strength of the recommendation (strong **recommendation, recommendation, option**) are provided at the end of the "Major Recommendations" field.

Action Statement 1: The primary care clinician should initiate an evaluation for attention-deficit/hyperactivity disorder (ADHD) for any child 4 through 18 years of age who presents with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity (**quality of evidence B/strong recommendation**).

Evidence Profile

- Aggregate evidence quality: **B**.
- Benefits: In a considerable number of children, ADHD goes undiagnosed. Primary care clinicians' systematic identification of children with these problems will likely decrease the rate of undiagnosed and untreated ADHD in children.
- Harms/risks/costs: Children in whom ADHD is inappropriately diagnosed might be labeled inappropriately, or another condition might be missed, and they might receive treatments that will not benefit them.
- Benefits-harms assessment: The high prevalence of ADHD and limited mental health resources require primary care pediatricians to play a significant role in the care of their patients with ADHD so that children with this condition receive the appropriate diagnosis and treatment. Treatments available have shown good evidence of efficacy, and lack of treatment results in a risk for impaired outcomes.
- Value judgments: The committee considered the requirements for establishing the diagnosis, the prevalence of ADHD, and the efficacy and adverse effects of treatment as well as the long term outcomes.
- Role of patient preferences: Success with treatment depends on patient and family preference, which has to be taken into account.
- Exclusions: None.
- Intentional vagueness: The limits between what can be handled by a primary care clinician and what should be referred to a subspecialist because of the varying degrees of skills among primary care clinicians.
- Strength: **strong recommendation**. The basis for this recommendation is essentially unchanged from that in the previous guideline. ADHD is the most common neurobehavioral disorder in children and occurs in approximately 8% of children and youth; the number of children with this condition is far greater than can be managed by the mental health system. There is now increased evidence that appropriate diagnosis can be provided for preschool-aged children (4 –5 years of age) and for adolescents.

Action Statement 2: To make a diagnosis of ADHD, the primary care clinician should determine that *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV-TR) criteria have been met (including documentation of impairment in more than 1 major setting), and information should be obtained primarily from reports from parents or guardians, teachers, and other school and mental health clinicians involved in the child's care. The primary care clinician should also rule out any alternative cause (**quality of evidence B/strong recommendation**).

Evidence Profile

- Aggregate evidence quality: **B**.
- Benefits: The use of DSM-IV criteria has led to more uniform categorization of the condition across professional disciplines.
- Harms/risks/costs: The DSM-IV system does not specifically provide for developmental-level differences and might lead to some misdiagnoses.
- Benefits-harms assessment: The benefits far outweigh the harm.
- Value judgments: The committee took into consideration the importance of coordination between pediatric and mental health services.
- Role of patient preferences: Although there is some stigma associated with mental disorder diagnoses resulting in some families preferring other diagnoses, the need for better clarity in diagnoses was felt to outweigh this preference.
- Exclusions: None.
- Intentional vagueness: None.
- Strength: **strong recommendation**.

Action Statement 3: In the evaluation of a child for ADHD, the primary care clinician should include assessment for other conditions that might coexist with ADHD, including emotional or behavioral (e.g., anxiety, depressive, oppositional defiant, and conduct disorders), developmental (e.g., learning and language disorders or other neurodevelopmental disorders), and physical (e.g., tics, sleep apnea) conditions (**quality of evidence B/strong recommendation**).

Evidence Profile

- Aggregate evidence quality: **B**.
- Benefits: Identifying coexisting conditions is important for developing the most appropriate treatment plan.
- Harms/risks/costs: The major risk is misdiagnosing the conditions and providing inappropriate care.
- Benefits-harms assessment: There is a preponderance of benefit over harm.
- Value judgments: The committee members took into consideration the common occurrence of coexisting conditions and the importance of addressing them in making this recommendation.
- Role of patient preferences: None.
- Exclusions: None.
- Intentional vagueness: None.
- Strength: **strong recommendation**.

Action Statement 4: The primary care clinician should recognize ADHD as a chronic condition and, therefore, consider children and adolescents with ADHD as children and youth with special health care needs. Management of children and youth with special health care needs should follow the principles of the chronic care model and the medical home (**quality of evidence B/strong recommendation**).

Evidence Profile

- Aggregate evidence quality: **B**.
- Benefits: The recommendation describes the coordinated services most appropriate for managing the condition.
- Harms/risks/costs: Providing the services might be more costly.
- Benefits-harms assessment: There is a preponderance of benefit over harm.
- Value judgments: The committee members considered the value of medical home services when deciding to make this recommendation.
- Role of patient preferences: Family preference in how these services are provided is an important consideration.
- Exclusions: None.
- Intentional vagueness: None.

- Strength: **strong recommendation**.

Action Statement 5: Recommendations for treatment of children and youth with ADHD vary depending on the patient's age.

Action Statement 5a: For preschool-aged children (4–5 years of age), the primary care clinician should prescribe evidence-based parent and/ or teacher-administered behavior therapy as the first line of treatment (**quality of evidence A/strong recommendation**) and may prescribe methylphenidate if the behavior interventions do not provide significant improvement and there is moderate-to-severe continuing disturbance in the child's function. In areas in which evidence-based behavioral treatments are not available, the clinician needs to weigh the risks of starting medication at an early age against the harm of delaying diagnosis and treatment (**quality of evidence B/recommendation**).

Evidence Profile

- Aggregate evidence quality: **A** for behavior; **B** for methylphenidate.
- Benefits: Both behavior therapy and methylphenidate have been demonstrated to reduce behaviors associated with ADHD and improve function.
- Harms/risks/costs: Both therapies increase the cost of care, and behavior therapy requires a higher level of family involvement, whereas methylphenidate has some potential adverse effects.
- Benefits-harms assessment: Given the risks of untreated ADHD, the benefits outweigh the risks.
- Value judgments: The committee members included the effects of untreated ADHD when deciding to make this recommendation.
- Role of patient preferences: Family preference is essential in determining the treatment plan.
- Exclusions: None.
- Intentional vagueness: None.
- Strength: **strong recommendation**.

Action Statement 5b: For elementary school-aged children (6–11 years of age), the primary care clinician should prescribe Federal Drug Administration (FDA) approved medications for ADHD (**quality of evidence A/strong recommendation**) and/or evidence based parent- and/or teacher administered behavior therapy as treatment for ADHD, preferably both (**quality of evidence B/strong recommendation**). The evidence is particularly strong for stimulant medications and sufficient but less strong for atomoxetine, extended-release guanfacine, and extended-release clonidine (in that order) (**quality of evidence A/strong recommendation**). The school environment, program, or placement is a part of any treatment plan.

Evidence Profile

- Aggregate evidence quality: **A** for treatment with FDA-approved medications; **B** for behavior therapy.
- Benefits: Both behavior therapy and FDA-approved medications have been demonstrated to reduce behaviors associated with ADHD and improve function.
- Harms/risks/costs: Both therapies increase the cost of care, and behavior therapy requires a higher level of family involvement, whereas FDA-approved medications have some potential adverse effects.
- Benefits-harms assessment: Given the risks of untreated ADHD, the benefits outweigh the risks.
- Value judgments: The committee members included the effects of untreated ADHD when deciding to make this recommendation.
- Role of patient preferences: Family preference, including patient preference, is essential in determining the treatment plan.
- Exclusions: None.
- Intentional vagueness: None.
- Strength: **strong recommendation**.

Action Statement 5c: For adolescents (12–18 years of age), the primary care clinician should prescribe FDA-approved medication for ADHD with the assent of the adolescent (**quality of evidence A/strong recommendation**) and may prescribe behavior therapy as treatment for ADHD (**quality of evidence C/recommendation**), preferably both.

Evidence Profile

- Aggregate evidence quality: **A** for medications; **C** for behavior therapy.
- Benefits: Both behavior therapy and FDA-approved medications have been demonstrated to reduce behaviors associated with ADHD and improve function.
- Harms/risks/costs: Both therapies increase the cost of care, and behavior therapy requires a higher level of family involvement, whereas FDA-approved medications have some potential adverse effects.
- Benefits-harms assessment: Given the risks of untreated ADHD, the benefits outweigh the risks.
- Value judgments: The committee members included the effects of untreated ADHD when deciding to make this recommendation.
- Role of patient preferences: Family preference, including patient preference, is essential in determining the treatment plan.
- Exclusions: None.
- Intentional vagueness: None.
- Strength: **strong recommendation/recommendation**.

Action statement 6: Primary care clinicians should titrate doses of medication for ADHD to achieve maximum benefit with minimum adverse effects (**quality of evidence B/strong recommendation**).

Evidence Profile

- Aggregate evidence quality: **B**.
- Benefits: The optimal dose of medication is required to reduce core symptoms to or as close to the levels of children without ADHD.
- Harms/risks/costs: Higher levels of medication increase the chances of adverse effects.
- Benefits-harms assessment: The importance of adequately treating ADHD outweighs the risk of adverse effects.
- Value judgments: The committee members included the effects of untreated ADHD when deciding to make this recommendation.
- Role of patient preferences: The families' preferences and comfort need to be taken into consideration in developing a titration plan.
- Exclusions: None.
- Intentional vagueness: None.
- Strength: **strong recommendation**.

Conclusion

Evidence continues to be fairly clear with regard to the legitimacy of the diagnosis of ADHD and the appropriate diagnostic criteria and procedures required to establish a

diagnosis, identify co-occurring conditions, and treat effectively with both behavioral and pharmacologic interventions. However, the steps required to sustain appropriate treatments and achieve successful long-term outcomes still remain a challenge. To provide more detailed information about how the recommendations of this guideline can be accomplished, a more detailed but less strongly evidence-based algorithm is provided as a companion article (see the "Availability of Companion Documents" field).

Definitions:

Strength of the Recommendations

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An **option** means either that the evidence quality that exists is suspect or that well-designed, well-conducted studies have demonstrated little clear advantage to one approach versus another. Options offer clinicians flexibility in their decision-making regarding appropriate practice, although they may set boundaries on alternatives. Patient preference should have a substantial role in influencing clinical decision-making, particularly when policies are expressed as options.

A **no recommendation** is made when there is both a lack of pertinent evidence and an unclear balance between benefits and harms. Clinicians should feel little constraint in their decision-making when addressing areas with insufficient evidence. Patient preference should have a substantial role in influencing clinical decision-making.

Source: American Academy of Pediatrics Steering Committee on Quality Improvement and Management. Classifying recommendations for clinical practice guidelines. *Pediatrics*. 2004 Sep;114(3):874-7.

Evidence Quality

A	Well-designed randomized controlled trials (RCTs) or diagnostic studies on relevant populations
B	RCTs or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies
C	Observational studies (case-controlled and cohort design)
D	Expert opinion, case reports; reasoning from first principles
X	Exceptional situations in which validating studies cannot be performed and there is a clear preponderance of benefit or harm

Clinical Algorithm(s)

An attention-deficit/hyperactivity disorder (ADHD) process-of-care algorithm is available in the supplement to the guideline (see the "Availability of Companion Documents" field).

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Accurate diagnosis and evaluation and appropriate treatment of attention-deficit/hyperactivity disorder (ADHD)

For benefits of specific interventions considered in the guideline, see the "Major Recommendations" field.

Potential Harms

- Children in whom attention-deficit/hyperactivity disorder (ADHD) is inappropriately diagnosed might be labeled inappropriately, or another condition might be missed, and they might receive treatments that will not benefit them.
- The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* system does not specifically provide for developmental-level differences and might lead to some misdiagnoses.
- The major risk is misdiagnosing the conditions and providing inappropriate care.
- Adverse effects of medication
- Higher levels of medication increase the chances of adverse effects.

Qualifying Statements

Qualifying Statements

The recommendations in this report do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Implementation of the Guideline

Description of Implementation Strategy

Implementation: A Process-of-Care Algorithm

The American Academy of Pediatrics (AAP) recognizes the challenge of instituting practice changes and adopting new recommendations for care. To address the need, a process-of-care algorithm (see the "Availability of Companion Documents" field) has been developed and has been used in the revision of the AAP attention-deficit/hyperactivity disorder (ADHD) toolkit.

Implementation: Preparing the Practice

Full implementation of the action statements described in this guideline and the process-of-care algorithm might require changes in office procedures and/or preparatory efforts to identify community resources. The section titled "Preparing the Practice" in the process-of-care algorithm and further information can be found in the supplement to the Task Force on Mental Health report. It is important to document all aspects of the diagnostic and treatment procedures in the patients' records. Use of rating scales for the diagnosis of ADHD and assessment for comorbid conditions and as a method for monitoring treatment as described in the process algorithm, as well as information provided to parents such as management plans, can help facilitate a clinician's accurate documentation of his or her process.

Implementation Tools

Clinical Algorithm

Patient Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness


IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management, Wolraich M, Brown L, Brown RT, DuPaul G, Earls M, Feldman HM, Ganiats TG, Kaplanek B, Meyer B, Perrin J, Pierce K, Reiff M, Stein MT, Visser S. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*. 2011 Nov;128(5):1007-22. [70 references] [PubMed](#) 

Adaptation

Not applicable: This guideline was not adapted from another source.

Date Released

2000 May (revised 2011 Nov)

Guideline Developer(s)

American Academy of Pediatrics - Medical Specialty Society

Source(s) of Funding

American Academy of Pediatrics (AAP)

Guideline Committee

Subcommittee on Attention-Deficit/Hyperactivity Disorder (Oversight by the Steering Committee On Quality Improvement and Management, 2005-2011)

Composition of Group That Authored the Guideline

Writing Committee: Mark Wolraich, MD, Chair; Lawrence Brown, MD (neurologist; AAP Section on Neurology; Child Neurology Society); Ronald T. Brown, PhD (child psychologist; Society for Pediatric Psychology); George DuPaul, PhD (school psychologist; National Association of School Psychologists); Marian Earls, MD (general pediatrician with QI expertise, developmental and behavioral pediatrician); Heidi M. Feldman, MD, PhD (developmental and behavioral pediatrician; Society for Developmental and Behavioral Pediatrics); Theodore G. Ganiats, MD (family physician; American Academy of Family Physicians); Beth Kaplanek, RN, BSN (parent advocate, Children and Adults With Attention Deficit Hyperactivity Disorder [CHADD]); Bruce Meyer, MD (general pediatrician); James Perrin, MD (general pediatrician; AAP Mental Health Task Force, AAP Council on Children With Disabilities); Karen Pierce, MD (child psychiatrist; American Academy of Child and Adolescent Psychiatry); Michael Reiff, MD (developmental and behavioral pediatrician; AAP Section on Developmental and Behavioral Pediatrics); Martin T. Stein, MD (developmental and behavioral pediatrician; AAP Section on Developmental and Behavioral Pediatrics); Susanna Visser, MS (epidemiologist)

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Financial Disclosures/Conflicts of Interest

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Guideline Status

This is the current release of the guideline.

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All clinical practice guidelines from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

Guideline Availability

Electronic copies: Available from the [American Academy of Pediatrics \(AAP\) Policy Web site](#).

Print copies: Available from the American Academy of Pediatrics, 141 Northwest Point Blvd., P.O. Box 927, Elk Grove Village, IL 60009-0927.

Availability of Companion Documents

The following is available:

- 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. Supplemental information. Pediatrics 2011 Nov; 128(5). Available in Portable Document Format (PDF) from the [American Academy of Pediatrics Policy Web site](#).

Patient Resources

A variety of patient resources on attention-deficit/hyperactivity disorder (ADHD) are available from the [American Academy of Pediatrics Healthy Children Web site](#).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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Diagnostic Criteria for ADHD

Inattention, hyperactivity, and impulsivity are the key behaviors of ADHD. To be diagnosed with the disorder, a child must have symptoms for 6 or more months and to a degree that is greater than other children of the same age. **Children must have at least 6 symptoms** from either the inattention list or the hyperactivity and impulsivity lists below (or both). **Older adolescents and adults (over age 17 years) must have at least 5 symptoms**. Symptoms must be present before age 12 years.

Children who have symptoms of **inattention** may:

- Be easily distracted, miss details, forget things, and frequently switch from one activity to another
- Have difficulty focusing on one thing
- Become bored with a task after only a few minutes, unless they are doing something enjoyable
- Have difficulty focusing attention on organizing and completing a task or learning something new
- Have trouble completing or turning in homework assignments, often losing things (e.g., pencils, toys, assignments) needed to complete tasks or activities
- Not seem to listen when spoken to
- Daydream, become easily confused, and move slowly
- Have difficulty processing information as quickly and accurately as others
- Struggle to follow instructions.

Children who have symptoms of **hyperactivity** may:

- Fidget and squirm in their seats
- Talk nonstop
- Dash around, touching or playing with anything and everything in sight
- Have trouble sitting still during dinner, school, and story time
- Be constantly in motion
- Have difficulty doing quiet tasks or activities.

Children who have symptoms of **impulsivity** may:

- Be very impatient
- Blur out inappropriate comments, show their emotions without restraint, and act without regard for consequences
- Have difficulty waiting for things they want or waiting their turns in games
- Often interrupt conversations or others' activities.

Medications Used to Treat ADHD (alphabetical by class)

NOTE: Some of the medications included on this chart may require prior authorization. Please check optimahealth.com for the most current information, as requirements may change.

Generic/ Brand Name	Typical Starting Dose	FDA Max/day	Titration & Timing of Doses	Predominant Adverse Effects	Comments	
Amphetamine Preparations						
Short-acting						
Adderall	2.5-5 mg qd	60 mg	Increase by 2.5mg increments	Decreased appetite, insomnia, headaches, increased heart rate	<ul style="list-style-type: none"> Short-acting stimulants often used as initial treatment in small children but have disadvantage of B.I.D. to T.I.D. dosing to control symptoms throughout the day. Longer-acting stimulants offer greater convenience, confidentiality, and compliance with single daily dosing but may have greater problematic effects on evening appetite and sleep Adderall XR cap may be opened and sprinkled on soft food Check BP at each visit due to potential for cardiovascular effects, including hypertension. 	
Dexedrine dextroamphetamine	4-5 yo: 2.5mg qd 6+: 5mg qd-bid		Increase weekly with 2.5-5 mg tab/dose; am & noon; add 4pm dose as needed			
DextroStat						
Long-acting						
Adderall XR	6+: 10mg qd	Ages 6-12: 30 mg Ages 13+: 20 mg	May be increased 10 mg daily at weekly intervals.	Decreased appetite, insomnia, headaches, increased heart rate		
Dexedrine Spansule	6+: 5-10mg qd-bid	40 mg	Increased by 5 mg spansule in am only or add 5mg tablets to am dose	Decreased appetite, insomnia, headaches, increased heart rate		
Vyvanse lisdexamphetamine	6+: 30 mg qd	70 mg	May be increased by 10-20mg/day at weekly intervals	Upper abdominal pain, decreased appetite, dizziness, dry mouth		
Methylphenidate Preparations						
Short-acting						
Focalin dexmethylphenidate	6+: 2.5mg bid	20 mg	Adjust in increments of 2.5-5 mg weekly	Headache, decreased appetite, restlessness, abdominal pain, increased heart rate	<ul style="list-style-type: none"> Short-acting stimulants often used as initial treatment in small children but have disadvantage of B.I.D. to T.I.D. dosing to control symptoms throughout the day. Methylin is available in chewable tablets and oral solutions. Longer-acting stimulants offer greater convenience, confidentiality, and compliance with single daily dosing but may have greater problematic effects on evening appetite and sleep Metadate CD, ritalin LA and Focalin XR may be opened and sprinkled on soft food Concerta tab should be swallowed whole with liquids Concerta non-absorbable tab may be seen in stool Liquid (reconstituted by pharmacy from powder) 5mg per mL Before administering, vigorously shake bottle for at least 10 seconds. 	
Methylin Ritalin methylphenidate	4-7yo: 5 mg bid 8+: 10mg bid	60 mg	Increase by 2.5-5 mg/dose (depending on wt) am & noon; add 4pm dose as needed	Decreased appetite, insomnia, headaches, increased heart rate		
Intermediate-acting						
Metadate ER Methylin ER Ritalin SR	20mg SR in am only (considered for use in children tolerating 10mg dose am and noon)	60 mg	Add 5mg-10mg tablet in am and/or at 4pm	Decreased appetite, insomnia, headaches, increased heart rate		
Metadate CD Ritalin LA	6+: 20 mg q am	60 mg	May be increased 10mg daily at weekly intervals			
Long-acting						
Concerta	18mg q am	72 mg	May be increased 18 mg daily at weekly intervals, approved up to 72 mg for adolescents	Decreased appetite, insomnia, headaches, increased heart rate		
Daytrana (transdermal system)	6-12yo: 10 mg patch qd	30 mg	May increase to next transdermal patch size no more frequently than every week	Decreased appetite, insomnia, headaches, increased heart rate, allergic contact dermatitis		
Focalin XR	6+: 5 mg q am	30 mg	Children 6+: adjust in increments of 5 mg weekly	Headache, decreased appetite, restlessness, abdominal pain, increased heart rate		
Quillivant XR	20mg QAM	60mg	May be increased in increments of 10-20mg/day	Increased BP and heart rate, mental/psychiatric symptoms, circulation problems in fingers/toes		

Medications Used to Treat ADHD (alphabetical by class) continued...

Selective Norepinephrine Reuptake Inhibitor					
Atomoxetine Strattera	0.5 mg/kg/d for 3 d; then 1.2 mg/kg/d	Lesser of 1.4 mg/kg or 100 mg	Children and Adolescents weighing up to 70 kg: After 3 days of dosing, increase 1.2mg/kg/day. Give once daily or may be evenly divided into 2 doses, in morning and evening Patients weighing more than 70 kg: After 3 days of dosing, increase to 80 mg daily or may be evenly divided into 2 doses, in morning and evening	Nausea, vomiting, GI pain, anorexia, dizziness, somnolence, skin rash, pruritis Increased heart rate or blood pressure, urinary retention, rare severe liver injury Capsule should not be opened as atomoxetine is an ocular and mucous membrane irritant	<ul style="list-style-type: none"> • Not a Schedule II medication • Consider if active substance abuse or severe side effects of stimulants (mood lability, tics) • Monitor closely for suicidal thinking and behavior, clinical worsening, or unusual changes in behavior • The full effect may not be appreciated for up to 4 weeks on a given target dose
Other (selective α-2 adrenergic agonist)					
Intuniv guanfacine	1 mg qd	4 mg qd	May increase by 1 mg per week.	Drowsiness, dizziness, dry mouth, abdominal pain, constipation	<ul style="list-style-type: none"> • Swallow whole: chewing or crushing the tablet will markedly enhance the drug's release. • High fat meals will increase absorption of the drug.
Clonidine	<45 kg: 0.05 mg QHS >45 kg: 0.1 mg QHS	27-40.5 kg: 0.2 mg 40.5-45 kg: 0.3 mg >45 kg: 0.4 mg	Titrate in 0.05 mg increments BID, TID, QID Titrate in 0.1 mg increments BID, TID, QID	Drowsiness, hypotension	<ul style="list-style-type: none"> • Clonidine does not have a specific FDA indication for treatment of ADHD
Kapvay (extended release clonidine)	0.1mg qd	0.4mg	Titrate in increments of 0.1mg/day at weekly intervals until the desired response is achieved. Doses should be taken twice a day, with either an equal or higher split dosage being given at bedtime.	Somnolence, fatigue, insomnia, nightmares, constipation	<ul style="list-style-type: none"> • Should be discontinued slowly in decrements of no more than 0.1mg every 3-7 days due to potential risk of withdrawal effects.

Adapted from:

Institutes for Clinical Systems Improvement (ICSI). Behavioral Health Guidelines: ADHD, Attention Deficit Hyperactivity Disorder in Primary Care for School-Age Children & Adolescents, Diagnosis and Management (November, 2011). Retrieved February 5, 2014 from https://www.icsi.org/_asset/rp1toc/AAP-Supplement.pdf

American Academy of Child and Adolescent Psychiatry. *ADHD: Parents Medication Guide*. Revised July, 2013. Retrieved February 5, 2014. http://www.aacap.org/App_Themes?AACAP/Docs/resource_centers/adhd/adhd_parents_medication_guide_201305.pdf

**Attention Deficit Hyperactivity Disorder
(ADHD)
Resources/Community Support Groups**

The American Academy of Child and Adolescent Psychiatry <http://www.aacap.org/>

Children and Adults with ADD (CHADD) <http://www.chadd.org/>

National Center for Learning Disabilities <http://www.nclld.org/>

National Institute of Mental Health (NIMH)
<http://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd/index.shtml>

National Institute of Neurological Disorders and Stroke
<http://www.ninds.nih.gov/disorders/adhd/adhd.htm>

These Guidelines are promulgated by Sentara Health Plan (SHP) as recommendations for the clinical management of specific conditions. Clinical data in a particular case may necessitate or permit deviation from these Guidelines. The SHP Guidelines are institutionally endorsed recommendations and are not intended as a substitute for clinical judgment.

Attention Deficit Hyperactivity Disorder (ADHD)

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American Academy of Pediatrics. *ADHD: Clinical practice guideline for the Diagnosis, evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents*. Pediatrics Volume 128, Number 5, November 2011. www.pediatrics.org/cgi/doi/10.1542/peds.2011-2654

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National Institute for children's Health Quality (NICHQ). *Vanderbilt Assessment Scales*. <http://www.nichq.org/childrens-health/adhd/resources/vanderbilt-assessment-scales>

Multi-Health Systems Inc. (MHS). *Conners Comprehensive Behavior Rating Scales™ (CBRS)*. <http://www.mhs.com/product.aspx?gr=cli&prod=cbrs&id=overview>