



Attention Deficit and Hyperactivity Disorder (ADHD): Screening, Referral and Treatment – Pediatric – Ambulatory Clinical Practice Guideline

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Introduction

ADHD is a condition which extends across developmental phases and may extend into adulthood. Core symptoms include hyperactivity, impulsivity, and distractibility resulting in academic, occupational, social, and personal underachievement. While the strongest risk factor is genetic predisposition, the presentation and severity of the disorder results from complex interactions among genetic, psychosocial, environmental, and biologic factors.¹ ADHD is a common behavioral diagnosis in primary care with substantial burden in terms of number of visits, cost of medication, behavioral management and additional service costs (e.g., injury costs).^{2,3} Diagnosis of ADHD requires evaluation of behavior across multiple settings, consideration of alternative causes, and possible comorbidities. A multimodal management plan, involving family, healthcare professionals, and school professionals, is essential. Early recognition, diagnostic accuracy, and optimal management, which includes family and educational support, contribute to improved short and long-term functioning for both the child and his or her family.^{4,5}

This guideline is meant to address the care of children ages 4 – 17 years and is primarily based on the 2007 American Academy of Child and Adolescent Psychiatry and 2011 American Academy of Pediatrics (AAP) guidelines for ADHD.

Consider referral for further evaluation to Behavioral Health (Pediatric Psychiatry or Psychology), Developmental Pediatrics, and/or Neurology for children younger than 4 years who present with significant behavior problems that are atypical for the child's developmental level. For patients aged 18 years and older, refer to the recommendations within [UW Health ADHD – Adult - Ambulatory Clinical Practice Guideline](#).

Scope

Intended User(s): Primary Care Physicians, Advanced Practice Providers, Psychiatrists, Psychologists, Pharmacists, Nurses

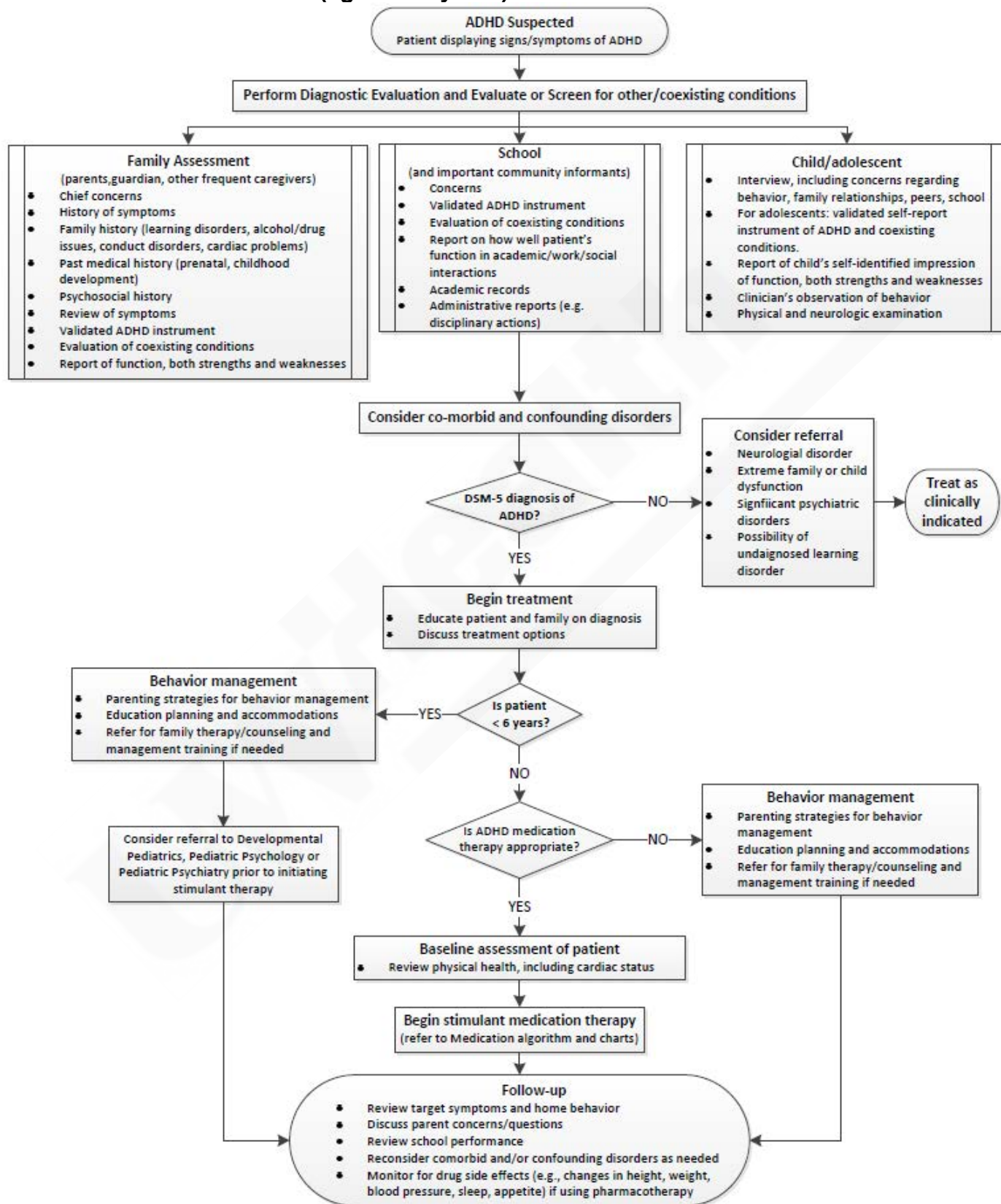
Objective(s): To provide evidence-based recommendations that support clinical decision making during developmental surveillance, diagnosis, and treatment of pediatric patients with ADHD

Target Population: Children (age 4-10 years) and adolescent (age 11-17 years) patients.

Clinical Questions Considered:

- What symptoms/conditions must be met when diagnosing ADHD in a child?
- Which medications can be used to treat ADHD in children?
- How soon should a patient be seen for follow-up after a new ADHD diagnosis?
- What are some interventions that can be used to offset side effects from ADHD stimulant therapy?

Overview of Pediatric ADHD (ages 4-17 years)



Recommendations

Presentation and Screening

The primary care clinician should initiate an evaluation for ADHD for any child 4-18 years of age who presents with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity.⁴ (*AAP Quality of evidence B, strong recommendation*) For children younger than 4 years who present with behavior problems inconsistent with developmental level, consider referral to a specialist for further evaluation (i.e., Behavioral Health or Neurology.)

Parents/guardians (or anyone representing the patient such as a non-parent relative, other caregiver, or school nurse) may request evaluation for ADHD because of their own concerns or at the suggestion of a teacher, therapist, or other caregiver. **Table 1** lists behaviors consistent with ADHD if they are present often or very often in a manner that is atypical for developmental level, and result in functional impairment in more than one aspect of daily life.

Table 1. Behaviors that may be consistent with ADHD⁶

A child with ADHD might:	
<ul style="list-style-type: none"> • daydream a lot • forget or lose things a lot • squirm or fidget • talk too much, interrupt others • make careless mistakes or take unnecessary risks 	<ul style="list-style-type: none"> • have a hard time resisting temptation • act without thinking • have trouble taking turns • have difficulty getting along with others • avoid task that require focus

See [Appendix A](#) for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria for ADHD.

Clinical Evaluation

To make a diagnosis of ADHD, the primary care clinician should determine that Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria have been met, including documentation of impairment in more than 1 major setting (see [Appendix A](#)). Information should be obtained primarily from reports from parents or guardians, teachers, and any other school and mental health clinicians involved in the child's care. The primary care clinician should also rule out any alternative cause(s).⁴ (*AAP Quality of evidence B, strong recommendation*)

Initial evaluations can usually be done in the primary care office, reserving referrals to Pediatric Psychiatry, Developmental Pediatrics, or Behavioral Pediatrics for those situations where the diagnosis is uncertain, or family situation is complicated. (see [Table 2](#)) Evaluation should consist of clinical interviews with the parent/guardian and patient, obtaining information about the patient's daytime functioning (i.e., school or daycare), evaluation for comorbid psychiatric disorders, and review of the patient's medical, social, and family histories. Data collection prior to a clinic visit is typically helpful, and more than one visit may be needed to perform the entire clinical assessment (e.g., parents/guardians may come without patient/child).

History of Present Illness

- The history of present illness should include a thorough description of the behaviors of concern, including age of onset, duration, and degree of functional impairment.⁵ The location and circumstances in which the behaviors occur should be assessed, as well as what interventions have been tried.

- Behaviors should be considered within the context of normal developmental variation, individual temperament, and parental/guardian expectations.

Past Medical History

- Past medical history should include any prenatal, birth, or childhood medical insults (e.g., seizures, head trauma, stroke, encephalitis, maternal smoking, prenatal exposures, chronic ear infections, premature or difficult birth, etc.) which could contribute to the behavioral concerns.
- Information from other clinicians including behavioral health and medical specialists/providers should be reviewed.

Family history

- Children with ADHD often have a positive family history for ADHD and associated concerns, such as conduct disorders, learning problems, mood and/or anxiety disorders.⁷⁻⁹
- Substance abuse can be a consequence of inadequate treatment or undiagnosed ADHD in adults.^{10,11} Having family members or caregivers with alcohol and other drug issues is a risk for medication diversion. Consider evaluation for drug-seeking behavior with multiple pharmacies or multiple prescribers by reviewing prescription data through the [Wisconsin Prescription Drug Monitoring Program](#) and/or the [Illinois Prescription Monitoring Program](#).
- A family history of sudden death or early cardiac problems should prompt review prior to initiating stimulant medication. Electrocardiography (ECG) may be considered prior to using stimulant therapy if indicated by risk factors determined by family or individual history or during review of systems.¹²⁻¹⁶ (*UW Health Moderate quality evidence, conditional recommendation*)

Social History

- It is important to assess the patient's current living arrangement. Chaotic home situations (including parenting patterns) can produce behavior problems like ADHD or make ADHD treatment more difficult.
- Significant stressors, including family disruption (e.g., divorce, frequent moves, significant losses), history of abuse or neglect, and parental mental health should be assessed.¹⁷⁻¹⁹
- Lifestyle factors, such as sleep patterns, screen time exposure, exercise habits, and structured home life/schedules should also be assessed.²⁰⁻²³

History of Educational Issues

- Clinicians should inquire whether behaviors occur in specific classes or at certain times of the day, when considering the likelihood of a learning disorder.
- It is helpful to review results from any school-based evaluations and to consider any special help or classroom accommodations that have been provided to the patient.
- Report cards can be used to document performance as well as behavioral concerns.
- Attendance problems should be considered as they can indicate school avoidance due to anxiety, physical problems, or chaotic parenting.

Physical Exam

A physical exam, including review of systems, should be performed as part of the initial evaluation for ADHD if the patient has not had a Well Child Visit within the previous year. (*UW Health Very low quality evidence, Strong recommendation*)

Vision or hearing deficits, sleep inadequacy, migraines, pica, or lead poisoning can all contribute to difficulty in function. Vision and hearing screening or lab work (such as lead screening,

complete blood count (CBC), ferritin, TSH) may be considered if indicated. (*UW Health Moderate quality evidence, conditional recommendation*) However, if a patient's medical history is unremarkable, laboratory testing or neurological testing is not indicated.⁵ (*UW Health Very low quality evidence, conditional recommendation*)

Comorbid and/or Confounding Disorders

ADHD is a clinical diagnosis made after consideration of other disorders which can also cause hyperactivity or inattentive behaviors. The primary care clinician should assess 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, absence seizures) conditions.⁴ (*AAP Quality of evidence B, strong recommendation*)

Some other comorbid and/or confounding disorders that can cause symptoms of hyperactivity or inattentiveness include the following and are described in greater detail below:

- Normal developmental variation or unrealistic parental/guardian or school expectations
- Obsessive compulsive disorder (OCD)
- Affective disorders (e.g., depression, anxiety)
- Oppositional defiant/intermittent explosive/ conduct disorder
- Sequela of abuse/trauma
- Developmental disorders, including Autism Spectrum Disorders
- Undiagnosed cognitive or learning disorder
- Sleep disorders
- Sensory processing disorders
- Substance abuse

Psychiatric evaluation is indicated for concern regarding any significant psychiatric or mood disorder. For patients undergoing evaluation for other psychologic dysfunctions in addition to ADHD, it may be appropriate to use a different rating scale with broader scope of assessment in lieu of or in addition to the Vanderbilt. (*UW Health Low quality evidence, conditional recommendation*) Patients from families with histories of or with ongoing abuse, high stress levels and/or dysfunctional parenting may benefit from a referral to Behavioral Health. (*UW Health Low quality evidence, conditional recommendation*)

ADHD symptoms can mask core symptoms of Autism Spectrum Disorders (ASD). Examples of overlapping symptoms include becoming easily distracted, often not seeming to listen when spoken to, avoidance/reluctance to do certain activities (behavioral rigidity), having conversational deficits like interrupting and talking excessively, having trouble waiting his/her turn, often fidgeting (may not be obviously atypical mannerisms), or running and climbing when inappropriate. It is recommended that a team of experts evaluate a child with co-occurring symptoms of ADHD and ASD. A referral to a Psychologist, Developmental Pediatrician, or an Autism treatment center for evaluation is appropriate.²⁴ (*UW Health Low quality evidence, conditional recommendation*)

A referral to a center which specializes in interdisciplinary evaluation (e.g., the Waisman Center in Madison, WI) is appropriate to differentiate complicated cases of behavioral symptoms related to a range of neurodevelopmental disorders and suspected ASD. The Waisman Resource Center serves to provide information about community resources to patients and families. (800-532-3321 or wrc@waisman.wisc.edu)

Learning disorders are frequently a comorbid or alternative diagnosis. Neuropsychological and psychological tests should be performed by a specialist if the patient's history suggests low general cognitive ability or low achievement in language or mathematics relative to the patient's intellectual ability.⁵ Referral to the school for further evaluation may also be appropriate, especially if the behaviors are limited to one area of academic functioning, such as math or reading, or there is concern about comprehension. (*UW Health Very low quality evidence, conditional recommendation*) This testing may not be covered by insurance. Patient Relations may be able to provide information on specific testing agencies, including agencies that provide training opportunities to graduate students and provide testing at a reduced rate.

Sleep problems are common in children with ADHD. The causes are likely multifactorial and may include adverse effects of medications used to treat ADHD (See [the Medication Treatment Algorithm](#)), factors intrinsic to ADHD, or comorbid conditions such as oppositional disorder or mood disorders.^{25,26} In some cases, sleep disturbances may lead to ADHD-like symptoms.²⁷ Referral for a sleep consultation is recommended for any child with nightly snoring, frequent sleepwalking or night terrors, significant difficulty falling asleep or staying asleep, restless leg symptoms, or daytime sleepiness in addition to symptoms of hyperactivity and inattention.^{28,29} (*UW Health Moderate quality evidence, conditional recommendation*)

In the subset of patients who have symptoms of ADHD in addition to symptoms of a sensory processing disorder, a referral to Pediatric Occupational Therapy may be considered.^{4,30} (*UW Health Very low quality evidence, conditional recommendation*)

Substance abuse can result in similar symptoms to ADHD or can represent a consequence of inadequate treatment. For assessment of tobacco or alcohol use, reference the [UW Health Tobacco – Pediatric/Adult – Inpatient/Ambulatory Guideline](#) or [UW Health Alcohol – Pediatric/Adult – Ambulatory Guideline](#). Consider evaluation for drug-seeking behavior with multiple pharmacies or prescribing providers using the [Wisconsin Prescription Drug Monitoring Program](#) or the [Illinois Prescription Monitoring Program](#).

Using a rating scale to evaluate symptoms

There are many rating scales based on the DSM-5 criteria that can be used for evaluation of ADHD symptoms. The use of ADHD rating scales for diagnosis and follow up purposes is historically low.³¹ Barriers to rating scale completion include both clinic and patient factors. These barriers (e.g., scale length, evaluator familiarity) may contribute to low usage of rating scales. The ideal rating scale is validated, has low barriers to completion, includes items that evaluate for common comorbid conditions (e.g., oppositional defiant disorder, anxiety), and is easy to use and document in the electronic health record. Use of a consistent tool across settings and over time is preferred for tracking changes in patient symptoms.

For both initial and ongoing evaluation of ADHD, the preferred rating scale is the National Institute for Children's Health Quality (NICHQ) Vanderbilt Assessment Scale (long form) for both [parent/guardian](#) and [teacher](#) informant(s) in patients age 4-5 years (*UW Health Very low quality, conditional recommendation*), 6-12 years (*UW Health Low quality evidence, strong recommendation*), and 13-17 years.^{4,32} (*UW Health Very low quality evidence, conditional recommendation*) While validation studies have been performed on individuals between the ages of 6 and 12 only, these studies were only for the comparison of normative data. This tool has been widely used in to collect information required for a DSM-5 diagnosis in children and adolescents within the published medical literature.^{33,34}

If a non-UW Health provider (including a school psychologist) initiated an ADHD evaluation using a rating scale other than the Vanderbilt, the other rating scale (e.g., Connors, SNAP) can still be used in the diagnosis of ADHD. However, it is recommended to transition to the Vanderbilt scale for ongoing follow-up per above recommendations. (*UW Health Low quality evidence, conditional recommendation*)

When using the [NICHQ Vanderbilt Assessment Scale \(Teacher Informant\)](#), the teacher informant is ideally a current teacher who has significant contact with the patient. If the evaluation is taking place over the summer or at the beginning of the school year, the prior year's teacher may provide the most valid ratings. Report cards, individualized education program (IEP) evaluations, teacher notes, assessments from school psychologists, and other school documentation are valuable data and when available, should also be used in the evaluation of ADHD.

Obtaining completed rating scales from high school teachers is notoriously difficult. Although use of both a parent/guardian and teacher informant rating scale is preferred, use of the ADHD Self-Assessment Scale may be considered in carefully selected older adolescents in lieu of a teacher informant. It is still essential though to have a completed parent/guardian informant scale.^{35,36} (*UW Health Very low quality evidence, conditional recommendation*)

Provide Treatment

Treatment consists of a variety of approaches including family and parenting support, educational accommodations, behavioral therapy, and medication.

Treatment Recommendations by Age

Children (4-5 years): The first line of treatment should be evidence-based parent/guardian and/or teacher-administered behavior therapy.⁴ (*AAP Quality of evidence A, strong recommendation*) Providers may prescribe stimulant medication if behavioral interventions do not provide significant improvement and there is moderate-to-severe continuing disturbance in function.⁴ (*AAP Quality of evidence B, recommendation*) In severe cases involving concerns for safety or personal harm to the patient or others, stimulant medication may be used as first line therapy with referral to Developmental Pediatrician, Pediatric Psychology, or Pediatric Psychiatry.³⁷⁻³⁹ (*UW Health Moderate quality evidence, conditional recommendation*)

Initiating stimulant therapy should not be delayed if referral to a specialist is unattainable (e.g., regional availability) or cannot occur in a timely fashion. Thus, providers should exercise discretion and use clinical judgment when starting stimulant therapy in a young patient.

Children (6-11 years): Prescription of FDA-approved medications for ADHD⁴ (*AAP Quality of evidence A, strong recommendation*) and/or evidence-based parent and/or teacher-administered behavior therapy should be completed for treatment. It is preferred to prescribe both medication and behavioral therapy.⁴ (*AAP Quality of evidence B, strong recommendation*)

Adolescents (12-18 years): FDA-approved medications for ADHD should be prescribed with patient assent.⁴ (*AAP Quality of evidence A, strong recommendation*) Behavioral therapy may be prescribed, as treatment using both methodologies is preferred.⁴ (*AAP Quality of evidence C, recommendation*)

Behavioral Therapy

Behavioral therapy includes a broad set of psychosocial interventions, which can occur via family counseling, parent support groups, self-education, and/or clinician visits. Behavioral therapy typically includes training parents in techniques intended to shape the child's behavior and to improve the child's ability to regulate his or her own behavior. Examples may include emotion coaching for preschoolers, positive discipline techniques, social skills training, and developing routines (i.e., organizational training). Behavioral therapy should be evidence-based and appropriate to the patient's age, developmental level, and comorbid conditions. Providers are encouraged to inquire about behavioral interventions during primary care follow-up visits to stress their importance and emphasize parental roles in the complete treatment plan.⁴⁰⁻⁴⁵

Vocational/Educational Accommodations

Students with disabilities, including those with ADHD, have legal protections regarding public education and vocational accommodations. Special services or educational accommodations are not needed by all students with ADHD; however, it is important for all parents and guardians to develop a constructive working relationship with their child's teachers and school.

Between 2011 and 2016, the U.S Department of Education's Office for Civil Rights (OCR) received more than 16,000 complaints alleging discrimination based on disability in elementary and secondary education programs, and more than 10 percent involved allegations of discrimination of students with ADHD. The most common complaints with ADHD experience at school was that students were not timely and properly evaluated for disability or did not receive necessary special education or related aids/services. In response, the OCR released guidance clarifying the obligation of schools to provide students with ADHD equal education opportunity under Section 504 of the Rehabilitation Act of 1973.⁴⁶ Thus, it is important that all parents/guardians be informed of the possibilities and process for obtaining a school-based evaluation to determine eligibility for services. (*UW Health Moderate quality evidence, conditional recommendation*)

Special services or educational accommodations are not needed by all students with ADHD; however, it is important for all patients to develop a constructive working relationship with their school/university or employer.

If a student is eligible for services through their school, parents and guardians should expect to work with the school to develop and monitor an educational plan which maximizes the child's academic functioning and achievement. Coordination with health care providers is an integral part of successful educational plans. Additional resources and information may be obtained by contacting the school psychologist or nurse.

Patient Resources:

- [Wisconsin Department of Workforce Development \(DVR\)](#)
- [Illinois Department of Human Services – Vocational Rehabilitation](#)
- [UW-Madison McBurney Disability Resource Center](#)
- Suggest new students go to the university website and search “disability services”
- U.S Department of Education [Students with ADHD and Section 504: A Resource Guide](#)(2016)
- U.S Department of Education [Know Your Rights: Students with ADHD](#) (2016)
- U.S Department of Education [Identifying and Treating Attention Deficit Hyperactivity Disorder: A Resource for School and Home 2008](#)

Medication Therapy

Medication therapy is often effective in treating pediatric ADHD.^{47,48} Medication therapy may also ameliorate the structural differences observable in the brains of ADHD patients.⁴⁹⁻⁵¹

[Appendix B](#) and [Appendix C](#) give medication information including product names, duration of action, available strengths and common dosing for stimulant and non-stimulant medications. [Appendix D](#) is a medication treatment algorithm that provides an overview on ADHD treatment by medication and provides strategies for managing some common side effects.

Medication success is based on reduction of target symptoms without problematic side-effects. When medication therapy is effective, the treatment effect does not persist following discontinuation. Parents/guardians and patients should be advised that it may take several attempts to find the most efficacious medication with the least side effects from ADHD medication.⁵²⁻⁵⁴

Consider the following when developing the medication plan (*UW Health Very low quality evidence, conditional recommendation*):

- Perform a baseline patient assessment to assess for potential of adverse ADHD medication effects prior to prescribing drug therapy.
- Medication should be periodically re-evaluated to assess the recurrence of symptoms related to attention and hyperactivity. When evaluating effectiveness of drug therapy, consider other components of the treatment plan as well.
 - Assess compliance- missed doses are common both at home and school.
 - Determine if behavior therapy is being implemented.
 - Determine if more educational support is needed.
- If there is a risk of substance abuse or drug diversion either by patient or family members, non-stimulant preparations or stimulant products with lower abuse potential (i.e., lisdexamfetamine) are preferred.
- Consider insurance coverage and costs when prescribing medication. Medication costs can be a significant barrier to treatment for some families. Consider using generic medication and/or a referral to Patient Resources.
- All controlled-substances (i.e., stimulants) must be prescribed in accordance with federal and state laws.

Suggested Resources for Prescribing Controlled Substances (include but are not limited to):

- Title 21 Code of Federal Regulations, Part 1300-END
<https://www.deadiversion.usdoj.gov/21cfr/cfr/index.html>
- Drug Enforcement Agency Practitioner's Manual
<https://www.deadiversion.usdoj.gov/pubs/manuals/pract/>
- DEA frequently asked questions, issuance of multiple prescriptions for Schedule II controlled substances https://www.deadiversion.usdoj.gov/faq/mult_rx_faq.htm
- Wisconsin Uniformed Controlled Substance Act, Chapter 961
<https://docs.legis.wisconsin.gov/statutes/statutes/961>
- Wisconsin Administrative Code Phar 8, Requirements for Controlled Substances
https://docs.legis.wisconsin.gov/code/admin_code/phar/8
- Wisconsin Administrative Code CSB 4, Prescription Drug Monitoring Program
https://docs.legis.wisconsin.gov/code/admin_code/csb/4
- Illinois Department of Financial and Professional Regulation Controlled Substances
<https://www.idfpr.com/profs/contsub.asp>

Medication Holidays

“Medication holidays” (i.e., discontinuation of medication use during weekends and summer break) are generally not recommended. A break from stimulant medication or a reduction in dosage may be considered for less demanding times or if there are troublesome side effects. For example, a patient who primarily uses medication for inattention and focusing rather than impulsivity and hyperactivity may inquire about a medication holiday on weekends. The decision to continue or discontinue ADHD medication during non-school days should be based on the individual patient’s needs.⁵⁴⁻⁵⁶ (*UW Health Low quality evidence, conditional recommendation*)

Most children will respond to one or more of the stimulant medications; therefore, consider referral to Psychiatry or a provider-to-provider consultation for children who do not respond after several medication trials or who experience severe side effects. (*UW Health Very low quality evidence, conditional recommendation*)

Complementary and Alternative Therapies (CAT)

Many families and patients express interest in using complementary and alternative therapies to treat ADHD. For some, it is because medication and/or behavioral therapies have been ineffective, while others have concerns about the safety of long-term medication use. Behavioral therapies may also be difficult to access for some families. Examples of CAT modalities used to treat ADHD include restricted diets, nutritional supplements, and mind-body therapies such as meditation, massage, acupuncture, neurofeedback, and working memory training.

Robust evidence to support the effectiveness of CAT therapies is lacking. Some studies show modest benefit, however many of these studies are not methodologically strong. Due to the lack of consistent supporting empirical evidence, CAT modalities are not recommended. (*UW Health Low quality evidence, conditional recommendation*) Discussion of CAT modalities with families should include possible harms (e.g., restricted diet), burden on patients and families (e.g., financial risk), and understanding patient and family values and interests. Patients and their families should be encouraged to follow basic healthy lifestyle factors (e.g., structured sleep schedule, exercise, limited screen time, nutritious diet) which are supported by emerging literature.²⁰⁻²³ (*UW Health Low quality evidence, conditional recommendation*)

Follow-Up Care

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.⁴ (*AAP Quality of evidence B/strong recommendation*).

Based on UW Health consensus for chronic care management, patients with a new ADHD diagnosis and a newly prescribed ADHD medication should be seen by a provider (physician or advanced practice provider) in 2-3 weeks, and have two additional follow up appointments within the next 9 months. (*UW Health Very low quality evidence, conditional recommendation*) Follow-up within this timeframe is a required Healthcare Effectiveness Data and Information Set (HEDIS) measure. For more information, see [Appendix E](#).

At each follow-up visit clinicians: (*UW Health Low quality evidence, conditional recommendation*):

- Ask parents/guardians and teacher to complete [Vanderbilt rating scale](#) and review results.
- Review target symptoms and home behavior.
- Review school performance including success of educational plan.

- Monitor for adverse effects to medications, if applicable, including effects on appetite and sleeping patterns.
- Adjust medication therapy as needed.
- Reinforce the importance of medication adherence. Medication holidays are NOT universally recommended but may be appropriate based on individual patient needs.
- Reconsider comorbid and/or confounding disorders, particularly when treatment goals are not achieved.
- Periodic physical assessment including height, weight, pulse, and blood pressure.^{16,57,58}
- Discuss parent/guardian concerns and questions. Review success of parenting strategies and educational needs.
- Remind parents/guardians that caring for a child with ADHD can be challenging. Determine if a referral to Patient Resources or elsewhere may be needed for the parent/guardian to seek evaluation or treatment for possible depression, adult ADHD, or another mental health concern.

If at any time a provider feels uncomfortable with determining a diagnosis or treating a patient, or continuing treatment for a patient, referral to a specialist is appropriate.⁵⁹ Other reasons for referral are listed in **Table 2**.

All patients diagnosed with ADHD should be evaluated at least annually by their primary care provider, including patients who see a psychiatrist or psychologist for ADHD management. (*UW Health Very low quality evidence, strong recommendation*)

Table 2. When to Refer to a Specialist⁵⁹

A provider may refer to specialist if:

- Patient is < 4 years with significant behavior problems inconsistent with developmental level
- Unclear diagnosis (e.g., complicate case of behavioral symptoms, suspected ASD)
- Multiple comorbid disorders
- Failure to respond to treatment (e.g., failure of methylphenidate *and* amphetamine)
- Difficulties with side effect management
- Patient presents with first significant symptoms after age \geq 12 years

Disclaimer

Clinical practice guidelines assist clinicians by providing a framework for the evaluation and treatment of patients. This guideline outlines the preferred approach for most patients. It is not intended to replace a clinician's judgment or to establish a protocol for all patients. It is understood that some patients will not fit the clinical condition contemplated by a guideline and that a guideline will rarely establish the only appropriate approach to a problem.

Methodology

Development Process

Each guideline is reviewed and updated a minimum of every 3 years. All guidelines are developed using the guiding principles, standard processes, and styling outlined in the UW Health Clinical Practice Guideline Resource Guide. This includes expectations for workgroup composition and recruitment strategies, disclosure and management of conflict of interest for participating workgroup members, literature review techniques, evidence grading resources, required approval bodies, and suggestions for communication and implementation.

Methods Used to Collect the Evidence:

The following criteria were used by the guideline author(s) and workgroup members to conduct electronic database searches in the collection of evidence for review.

Literature Sources:

- Electronic database search (e.g., PubMed)
- Databases of systematic reviews (e.g., Cochrane Library)
- *Rutter's Child and Adolescent Psychiatry* (2015)
- *DSM-5 Handbook of Differential Diagnosis* (2014)

Time Period: June 2018 to July 2018

The following is a list of various search terms that were used individually or in combination with each other for literature searches on PubMed: ADHD, stimulant, medication, pediatric, methylphenidate, atomoxetine, desipramine.

Methods to Select the Evidence:

Literary sources were selected with the following criteria in thought: English language, subject age (i.e., pediatric), publication in a MEDLINE core clinical journal and strength of expert opinion (e.g., professional organization or society).

Methods Used to Formulate the Recommendations:

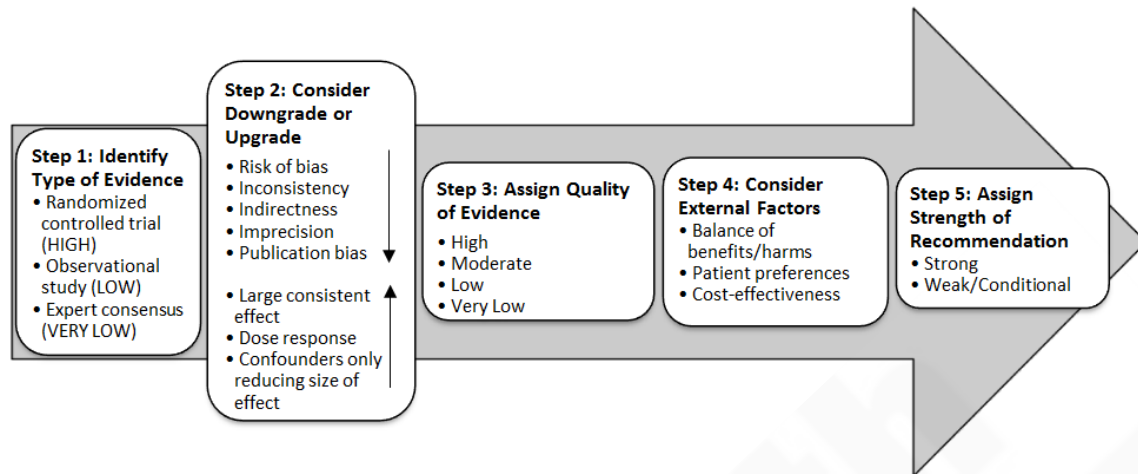
The workgroup members agreed to adopt recommendations developed by external organizations and/or created recommendations internally via a consensus process using discussion of the literature and expert experience/opinion. If issues or controversies arose where consensus could not be reached, the topic was escalated appropriately per the guiding principles outlined in the UW Health Clinical Practice Guideline Resource Guide.

Methods Used to Assess the Quality of the Evidence/Strength of the Recommendations:

Recommendations developed by external organizations maintained the evidence grade assigned within the original source document and were adopted for use at UW Health.

Internally developed recommendations, or those adopted from external sources without an assigned evidence grade, were evaluated by the guideline workgroup using an algorithm adapted from the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology (see **Figure 1**).

Figure 1. GRADE Methodology adapted by UW Health



Rating Scheme for the Strength of the Evidence/Recommendations:

GRADE Ranking of Evidence

High	We are confident that the effect in the study reflects the actual effect.
Moderate	We are quite confident that the effect in the study is close to the true effect, but it is also possible it is substantially different.
Low	The true effect may differ significantly from the estimate.
Very Low	The true effect is likely to be substantially different from the estimated effect.

GRADE Ratings for Recommendations For or Against Practice

Strong	The net benefit of the treatment is clear, patient values and circumstances are unlikely to affect the decision.
Conditional	Recommendation may be conditional upon patient values and preferences, the resources available, or the setting in which the intervention will be implemented.

Figure 2. American Academy of Pediatrics Grading Scheme (2011)

Evidence Quality	Preponderance of Benefit or Harm	Balance of Benefit and Harm
A. Well-designed RCTs or diagnostic studies on relevant population	Strong recommendation	Option
B. RCTs or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies	Recommendation	
C. Observational studies (case-control and cohort design)	Option	No Rec
D. Expert opinion, case reports, reasoning from first principles	Option	No Rec
X. Exceptional situations in which validating studies cannot be performed and there is a clear preponderance of benefit or harm	Strong recommendation Recommendation	

Recognition of Potential Health Care Disparities: Starting in kindergarten, African-American children and some Latino children are less likely than Caucasian children to be diagnosed with ADHD. This is despite a similar frequency of ADHD-related behaviors in the classroom. Non-white children continue to be diagnosed with ADHD at lower rates through eighth grade.⁶⁰⁻⁶³ Of those diagnosed with ADHD, African-American children and adolescents were less likely to receive methylphenidate than Caucasian children.⁶⁴⁻⁶⁶

Collateral Tools & Resources

The following collateral tools and resources support staff execution and performance of the evidence-based guideline recommendations in everyday clinical practice.

Metrics

- Percentage of children who had one follow-up visit with a practitioner with prescribing authority during the 30-day initiation phase.
- Percentage of children, who remained on ADHD medication for at least 210 days and who, in addition to the visit in the Initiation Phase, had at least 2 additional follow-up visits within 270 days after the Initiation Phase ended.

Order Sets & Smart Sets

ADD/ADHD [73]

Patient Resources

1. Health Facts For You #7902 What is ADHD?
2. Health Facts For You #7903 ADHD Care Guidelines
3. Health Facts For You #3202 ADHD New Diagnosis Packet
4. Healthwise: ADHD (Attention Deficit Hyperactivity Disorder): Pediatric
5. Kids Health: What is ADHD? (Parents)
6. Kids Health: ADHD Special Needs Factsheet (Parents)
7. Kids Health: Could ADHD Be Hereditary? (Parents)
8. Kids Health: Does Ritalin Have Side Effects? (Parents)
9. Kids Health: ADHD Medicines (Kids)
10. Kids Health: Word! ADHD (Kids)
11. Kids Health: What is Hyperactivity? (Kids)
12. Kids Health: ADHD Medicines (Teens)
13. Kids Health: ADHD: Tips to Try (Teens)
14. Kids Health: ADHD (Teens)
15. Kids Health: Is My ADHD Medication Affecting My Sleep? (Teens)
16. Health Information: ADHD (Attention Deficit/Hyperactivity Disorder)
17. Health Information: ADHD and Hyperactivity
18. Health Information: ADHD Medicines: Suicide Warning for Strattera
19. Health Information: ADHD Myths and Facts
20. Health Information: ADHD: Helping Your Child Get the Most From School
21. Health Information: ADHD: Helping Your Child Get Things Done
22. Health Information: Impulsivity and Inattention
23. Health Information: Other Conditions With Similar Symptoms
24. Health Information: Should My Child Take Medicine for ADHD?
25. Health Information: Social Skills Training
26. Health Information: Taking Care for Yourself When Your Child Has ADHD
27. Health Information: ADHD: Tests for Other Disorders

Reporting Workbench Reports

UWOP Pediatric Patients with ADHD [7643988]

My Patients with ADHD [7865026]

Smart Texts

1. ADHD Initial Eval [16832]
2. ADHD Follow Up And Medication Management Progress Note – Pediatric [74652]
3. ADHD Refill [16818]
4. ADHD Recheck [16831]
5. ADHD Brief Care Plan [74661]
6. PI ADHD Neuropsychology Testing Options [74727]
7. MCHC ADD/ADHD Followup [10421]
8. MCHC ADD PATIENT Instructions English [10429]
9. Pre-Visit Peds Concern Screen ADHD [35022]
10. ADHD Phone Follow Up
11. ADHD Brief Care Plan - Problem List [74661]
12. ADHD Phone Intake [77192]

Smart Phrases – System

1. ROOMINGFUADD [369945]
2. ADHDINITALEVAL [236179]
3. ADHDMEDCHECK [485903]
4. ADHDRECHECK [253302]
5. ADHDREFILL [235327]
6. VANDERBILT [355045]
7. FLOWADULTADHDSELFREPORTINGSSCALE [410674]

Smart Links

1. UWOP SBAR ADHD Phone Follow Up [100987]
2. UWOP SBAR ADHD Phone Intake [100986]
3. UW OP ADHD Medication Initiation Date [100933]

Appendix A. DSM-5 Diagnostic Criteria ⁶⁷

A. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by (1) and/or (2):

1. **Inattention:** Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

Note: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions. **For older adolescents and adults (age 17 and older), at least five symptoms are required.**

- a. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate).
- b. Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading).
- c. Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction).
- d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked).
- e. Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines).
- f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers).
- g. Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
- h. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts).
- i. Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments).

2. **Hyperactivity and impulsivity:** Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

Note: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required.

- a. Often fidgets with or taps hands or feet or squirms in seat.
- b. Often leaves seat in situations when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place).
- c. Often runs about or climbs in situations where it is inappropriate. (**Note:** In adolescents or adults, may be limited to feeling restless.)
- d. Often unable to play or engage in leisure activities quietly.
- e. Is often "on the go," acting as if "driven by a motor" (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with).
- f. Often talks excessively.

- g. Often blurts out an answer before a question has been completed (e.g., completes people's sentences; cannot wait for turn in conversation).
 - h. Often has difficulty waiting his or her turn (e.g., while waiting in line).
 - i. Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people's things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing).
- B. Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years.
- C. Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities).
- D. There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication or withdrawal).

DSM-5 Diagnosis

Specify whether:

- **Combined presentation:** If both Criterion A1 (inattention) and Criterion A2 (hyperactivity-impulsivity) are met for the past 6 months.
- **Predominantly inattentive presentation:** If Criterion A1 (inattention) is met but Criterion A2 (hyperactivity-impulsivity) is not met for the past 6 months.
- **Predominately hyperactive/impulsive presentation:** If Criterion A2 (hyperactivity-impulsivity) is met and Criterion A1 (inattention) is not met for the past 6 months.

Specify if:

In partial remission: When full criteria were previously met, fewer than the full criteria have been met for the past 6 months, and the symptoms still result in impairment in social, academic, or occupational functioning.

Specify current severity:

- **Mild:** Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning.
- **Moderate:** Symptoms or functional impairment between "mild" and "severe" are present.
- **Severe:** Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

Appendix B. Pediatric ADHD Treatment – Stimulant Medications

Drug	Formulation	Pediatric Dosing and Administration (<i>unless otherwise specified, dosing is for patients ≥ 6 years</i>)
Methylphenidate Preparations		
Short-acting		
Ritalin® ^{37,53,68-71}	5, 10, 20 mg tablet	Children 3-5 years: Start at 1.25 mg twice daily and titrate to effect in weekly intervals. Preferred first-line agent by AAP guidelines if stimulant therapy is needed.
Methylin® ^{72,73}	5mg/5mL, 10mg/5mL oral solution 2.5, 5, 10 mg chew tablets	Children ≥ 6 years: Dose 0.3 mg/kg/dose or 2.5-5 mg/dose given before breakfast and lunch; increase by 0.1mg/kg/dose or by 5-10mg in weekly intervals. Maximum daily dose: If patient weight ≤ 50 kg, max daily dose 2 mg/kg/day or 60 mg/day; if weight > 50 kg, max dose 100mg/day
Intermediate-acting		
Ritalin LA® ⁷⁴	10, 20, 30, 40 mg capsules*	Start at 20 mg in the morning and increase by 20 mg each week until good control is achieved. May need second dose or regular methylphenidate dose in the afternoon. ⁵³
Ritalin SR® ⁶⁸	20 mg tablets	
Metadate CD® ⁷⁵	10, 20, 30, 40, 60 mg capsules*	Start at 10 mg each morning and increase by 10 mg each week until good control is achieved ⁵³ Maximum recommended daily dose: 60 mg
Metadate ER® ⁷⁶	10, 20 mg tablets	Start at 10 mg each morning and increase by 10 mg each week until good control is achieved. May need second dose or regular methylphenidate in the afternoon. ⁵³ Maximum recommended daily dose: 60 mg
QuilliChew ER® ⁷⁷	20, 30, 40 mg chewable tablets (10 mg and 15 mg doses can be achieved by breaking in half 20 mg and 30 mg tablets, respectively)	Children 6-12 years: Start at 20 mg once daily in the morning. Dose may be titrated up or down weekly in increments of 10 mg, 15 mg or 20 mg. Maximum recommended daily dose: 60 mg
Cotempla XR-ODT® ⁷⁸	8.6, 17.3, 25.9 mg extended release oral disintegrating tablet	Begin at a dose of 17.3 mg daily. Dose may be adjusted by 8.6mg in weekly intervals to a maximum dose of 51.8 mg/day. Place the whole tablet on the tongue and allow it to disintegrate without chewing or crushing. Patients are advised to take consistently either with food or without food.
Long-acting		
Aptensio XR® ⁷⁹	10, 15, 20, 30, 40, 50, 60 mg capsules*	Begin at a dose of 10 mg daily. Dose may be adjusted in 10mg increments weekly to a maximum dose of 60mg/day.
Concerta® ^{5,69,80}	18, 27, 36, 54, 72 mg tablet (non-crushable)	Begin at a dose of 18mg once in the morning if new to methylphenidate. Dose may be adjusted by 18mg at weekly intervals. Maximum daily dose: If patient weight ≤ 50 kg, 54 mg/day; if weight > 50 kg, max dose 108mg/day Nonabsorbable tablet shell may be seen in stool (Concerta) and is normal, may also appear on x-ray. For patients using methylphenidate, dosing case on current dose regiment and clinical judgment.
Daytrana® ⁸¹	10, 15, 20, 30 mg transdermal patch	Begin at 10 mg/day (if new to or converting from another methylphenidate formulation.) May adjust dose to next patch size in weekly intervals to max dose of 30 mg/day. Patch should be applied to the hip area 2 hours before effect is needed and should not be worn > 9 hours after application. Transdermal patch absorption can increase if body temperature increases thus patients should avoid long, hot baths, sunbathing, and/or use of heat sources (e.g., sunlamps, tanning beds, heating pads, electric blankets, heat lamps, saunas, hot tubs, heated waterbeds)
Quillivant XR® ⁸²	25 mg/5mL oral suspension	Children 6-12 years: Begin at a dose of 20 mg daily in morning. Dose may be adjusted in 10 to 20 mg increments weekly to a maximum dose of 60mg/day. Before administering the dose, vigorously shake the bottle of for at least 10 seconds, to ensure that the proper dose is administered

*Capsules may be carefully opened and beads sprinkled over a spoonful of applesauce and **given immediately without chewing** and should not be stored for future use.

Drug	Formulation	Pediatric Dosing and Administration <i>(unless otherwise specified, dosing is for patients ≥ 6 years)</i>
Dexmethylphenidate Preparations		
Short-acting		
Focalin® ^{53,83}	2.5, 5, 10 mg tablets	Begin at a dose of 2.5 mg 1-2 times per day and increase by 5 mg each week until good control is achieved. May need third reduced dose in afternoon. Maximum recommended daily dose: 60 mg. ⁵³ Doses should be administered at least 4-hours apart. In general, dexmethylphenidate immediate-release (IR) dosage forms are dosed at one-half the dosage of methylphenidate IR formulations
Long-acting		
Focalin XR® ⁸³	5, 10, 15, 20, 25, 30, 35, 40 mg capsules*	Begin at a dose of 10 mg daily. Dose may be adjusted in 5-10 mg increments weekly to a maximum dose of 40mg/day.
Amphetamine Preparations		
<i>When transitioning a patient from one amphetamine product to another, milligram-for-milligram substitution should be avoided. For example, patients need to be re-initiated on and titrated to an optimal dosage when changing from amphetamine based formulations to mixed-salt amphetamines.</i>		
Short-acting		
Mixed amphetamine salts Adderall® ⁸⁴	5, 7.5, 10, 12.5, 15, 20, 30 mg tablets	Age 3-5 years: Start 2.5 mg per day in morn; may increase by 2.5 mg at weekly intervals until optimal response achieved; give 1 st dose on awakening. Age ≥ 6 years: 5 mg once or twice a day; may increase by 5 mg at weekly intervals until optimal response achieved; give 1 st dose on awakening. An additional one or two doses may be given at 4-6-hour intervals. DO NOT USE in patients with cardiac disease. Contraindicated in patients with glaucoma, hyperthyroidism, moderate to severe hypertension, cardiovascular disease, and within 14 days of MAO Inhibitors.
Dextroamphetamine Dexedrine® ⁸⁵	5,10 mg tablets	Age 3-5 years: Start 2.5 mg per day in morn; may increase by 2.5 mg at weekly intervals until optimal response achieved. Note: although FDA approved, AAP does not recommend use in children ≤ 5 years.
Dextroamphetamine Procentra® ⁸⁶	5mg/mL oral solution	Age ≥ 6 years: 5 mg once or twice a day; may increase by 5 mg at weekly intervals until optimal response achieved; give 1 st dose on awakening. Doses should be administered at least 4 hours part. Maximum daily dose 40mg/day. <i>Contraindicated in patients with glaucoma and within 14 days of MAO inhibitors.</i>
Long-acting		
Adderall XR® ⁸⁷	5, 10, 15, 20, 25, 30 mg capsules*	Age 6-12 years: Begin at 10 mg once daily. May increase daily dose by 5 mg or 10 mg at weekly intervals. Initial dose of 5 mg once a day may be given based on clinical judgment. Age 13-17 years: Begin at 10 mg once a day; may increase to 20 mg once a day after 1 week if symptoms not controlled. DO NOT USE in patients with cardiac disease.
Dextroamphetamine Dexedrine Spansules® ^{69,88}	5, 10, 15 mg capsules*	Begin at a dose of 5 mg once or twice daily. Dose may be adjusted in 5 mg increments weekly. Maximum daily dose if patient weight ≤ 50 kg: 40mg/day, if weight > 50 kg, max 60 mg/day
Mixed amphetamine salts Mydayis® ⁸⁹	12.5, 25, 37.5, 50 mg capsules*	Begin at a dose of 12.5 mg once daily. Dose may be adjusted in 12.5 mg increments weekly to a maximum dose of 50mg/day. Do not substitute for other amphetamine products on a mg-per-mg basis.
Lisdexamfetamine Vyvanse® ⁹⁰	10, 20, 30, 40, 50, 60, 70 mg capsules* 10, 20, 30, 40, 50, 60 mg tablets	Begin at a dose of 30 mg once daily. Dose may be adjusted in 10-20 mg increments weekly to a maximum dose of 50mg/day. May be good option given less abuse-potential since only active after ingestion.

*Capsules may be carefully opened and beads sprinkled over a spoonful of applesauce and **given immediately without chewing** and should not be stored for future use.

Stimulant Medications – Warnings 78,81,85,88 68,72-77,82,83,86,90

(This appendix contains summary level information and the reader should consult full references for full details)

Potential absolute or relative contraindications for stimulant use

- Severe hypertension, angina pectoris, cardiac arrhythmias, heart failure, recent myocardial infarction, advanced arteriosclerosis
- Use may aggravate pre-existing anxiety, tension, or agitation
- Monoamine oxidase inhibitors (MAOIs)
- Glaucoma
- Motor tics or family/patient history of Tourette's syndrome
- Hyperthyroidism or thyrotoxicosis
- History of substance abuse or concern for diversion

Warnings and precautions for stimulant use

- Sudden deaths, stroke, and myocardial infarction have been reported in adults taking stimulant drugs at usual doses for ADHD. Adults have a greater likelihood of having serious structural cardiac abnormalities, cardiomyopathy, serious heart rhythm abnormalities, coronary artery disease, or other serious cardiac problems
- Stimulant medications may cause a modest increase in average blood pressure (about 2-4 mmHg) and average heart rate (about 3-6 bpm), and individuals may have larger increases.
- Pre-existing psychosis or bipolar illness or the emergence of new psychotic or manic symptoms
- Appearance of or worsening of aggressive behavior or hostility
- Pre-existing seizure disorder
- Priapism, usually after some time on the drug but also during periods of drug withdrawal
- Peripheral vasculopathy, including Raynaud's phenomenon
- Visual disturbances (difficulties with accommodation and blurred vision)
- Phenylketonuria, some chewable products have phenylalanine

Potential Harms/Side Effects

- Common side effects include headache, weight loss, anxiety, lack of appetite, insomnia, dry mouth or abdominal pain.
- Less common but serious side effects include:
 - Signs of severe cerebrovascular disease (change in strength on one side is greater than the other, trouble speaking or thinking, change in balance, or change in eyesight)
 - Signs of serotonin syndrome (dizziness, severe headache, agitation, hallucinations, tachycardia, abnormal heartbeat, flushing, tremors, sweating a lot, change in balance, severe nausea, or severe diarrhea)
 - Signs of liver problems (dark urine, fatigue, lack of appetite, nausea, abdominal pain, light-colored stools, vomiting, or jaundice)
 - Angina, severe dizziness, passing out, vision changes, shortness of breath, joint pain, purple patches on skin or mouth, blurred vision, tachycardia, bradycardia, abnormal heartbeat, severe headache, severe nausea, vomiting, seizures, chills, pharyngitis, tremors, abnormal movements, sweating a lot, severe loss of strength and energy, change in color of hands or feet from pale to blue or red, burning or numbness of hands or feet, cold sensation of extremities, wounds on fingers or toes, change in amount of urine passed, urinary retention, muscle pain, muscle weakness, libido changes, priapism, skin discoloration, severe skin irritation, signs of depression (suicidal ideation, anxiety, emotional instability, or confusion), hallucinations, mood changes, or behavioral changes

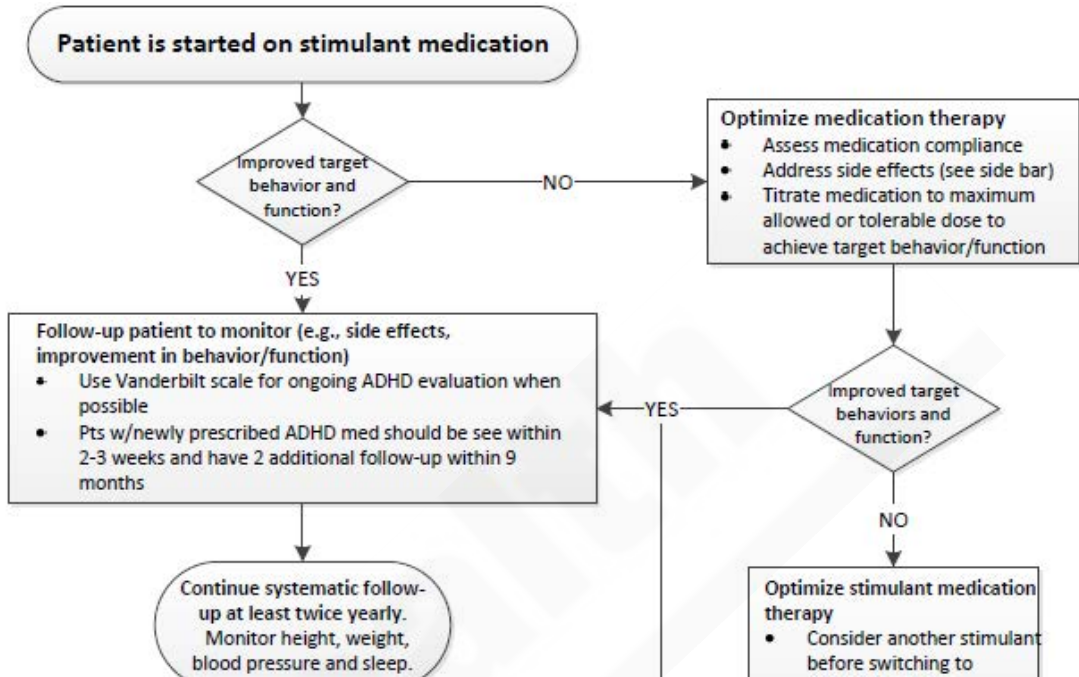
Appendix C. Pediatric ADHD Treatment – Non-Stimulant Medications

Drug	Formulations	Dosing and Administration	Contraindications, Warnings, and Precautions	Notes
Atomoxetine ^{5,91} Strattera®	10, 18, 25, 40, 60, 80, 100 mg capsules	<p>Children and adolescents body weight ≤ 70 kg body weight: Initiate total daily dose 0.5mg/kg and increased after a minimum of 3 days to target total daily dose of 1.2 mg/kg, given as either single daily dose or as evenly divided doses in morning and late afternoon/evening.</p> <p>Children and adolescents body weight > 70 kg body weight: Initiate total daily dose of 40 mg and increase after a minimum of 3 days to target total daily dose of approximately 80 mg (given either as a single daily dose in the morning or as evenly divided doses in the morning and late afternoon/early evening.) After 2-4 additional weeks, dose may be increased to a maximum of 100 mg an optimal response not achieved.</p> <p>Total daily dose should not exceed 1.4 mg/kg or 100 mg, whichever is less.</p>	<p><u>Contraindications</u></p> <ul style="list-style-type: none"> • Monoamine Oxidase Inhibitors • Narrow angle glaucoma • Pheochromocytoma • Severe cardiovascular disorders <p><u>Warnings and Precautions</u></p> <ul style="list-style-type: none"> • Black box warning-increased risk of suicidal ideation in children/adolescents 	<ul style="list-style-type: none"> • Adverse effects include sedation and somnolence • Delayed onset (2-4 weeks), lower efficacy than stimulants • DO NOT open capsule and sprinkle on food.
Guanfacine* extended-release (ER) ^{5,91} Intuniv®	1, 2, 3, 4 mg extended-release tablets	<p>Initiate dose of 1 mg/day, and adjust in increments of no more than 1 mg/week. Maintain dose within the range of 1 mg to 4 mg once daily, or both monotherapy and adjunctive therapy to a psychostimulant.</p> <p>If switching from immediate-release (IR) guanfacine, discontinue IR treatment and titrate with above schedule. DO NOT substitute on mg per mg bases because of differing pharmacokinetic profiles (ER guanfacine has lower bioavailability than IR.)</p>	<p><u>Contraindications</u></p> <ul style="list-style-type: none"> • Known hypersensitivity to guanfacine 	<ul style="list-style-type: none"> • Dosing adjustments are recommended with concomitant use of CYP3A4 inhibitors or inducers • Delayed onset (2-4 weeks) • Taper off to avoid rebound hypertension
Clonidine* Extended-release ^{69,92} Kapvay®	0.1 mg extended-release tablets	<p>Initiated with one 0.1 mg tablet at bedtime, and the daily dosage should be adjusted in increments of 0.1 mg/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. Doses higher than 0.4 mg/day (0.2 mg twice daily) were not evaluated in clinical trials for ADHD and are not recommended.</p> <p>Do not substitute for other clonidine products on a mg-per-mg basis, because of differing pharmacokinetic profiles.</p>	<p><u>Contraindications</u></p> <ul style="list-style-type: none"> • Known hypersensitivity to guanfacine 	<ul style="list-style-type: none"> • Adverse effects include sedation and somnolence (especially with IR use) • Taper off to avoid rebound hypertension

***Note:** Immediate release (IR) guanfacine and IR clonidine are available. Clinicians should be aware that utilizing IR formulations of either medicine to treat ADHD constitutes off-label use since they are not FDA-approved for this indication.

Drug	Formulations	Dosing and Administration	Contraindications, Warnings, and Precautions	Notes
Bupropion ^{5,69,93,94} <i>Off-label for ADHD</i>	IR: 75 mg, 100 mg SR: 100, 150, 200 mg XL: 150, 300 mg	<p>Immediate release, hydrochloride salts: Dose 3 mg/kg/day in 2 to 3 divided doses; maximum initial dose: 150 mg/day. Titrate dose as needed to a maximum daily dose of 6 mg/kg/day or 300 mg/day with no single dose >150 mg</p> <p><i>Sustained Release (SR) and Extended Release (XL) formulations:</i> May be used in place of regular tablets once 12-hour dosage corresponds to SR tablet or 24-hour dosage corresponds to XL tablet size.</p>	<p><u>Contraindications</u></p> <ul style="list-style-type: none"> Seizure disorder Bulimia Anorexia nervosa Abrupt discontinuation of alcohol, benzodiazepines, barbiturates and antiepileptics Monoamine oxidase inhibitors <p><u>Warnings and Precautions</u></p> <ul style="list-style-type: none"> Black box warning- increased risk of suicidal ideation in children/adolescents Lowers seizure threshold Hypertension Activation of mania/hypomania Psychosis Angle-closure glaucoma 	<ul style="list-style-type: none"> Adverse effects include agitation, headache/migraine Can cause false-positive urine test results for amphetamines Inhibits CYP2D6 can increase concentration of antidepressants (e.g., venlafaxine, desipramine, nortriptyline, sertraline), antipsychotics (e.g., risperidone, haloperidol)
Desipramine ⁹⁵ Norpramin® <i>Off-label for ADHD</i>	10, 25, 50, 75, 100, 150 mg	Initial: 25 mg at bedtime; increase at weekly intervals in 25 mg/day increments up to a maximum dose of 25 mg four times daily (100 mg/day) not to exceed 3 mg/kg/day	<p><u>Contraindications</u></p> <ul style="list-style-type: none"> Monoamine oxidase inhibitors Acute recovery period following myocardial infarction Hypersensitivity to drug 	<ul style="list-style-type: none"> Adverse effects include anticholinergic effects
Nortriptyline ⁹⁶ Pamelor® <i>Off-label for ADHD</i>	10, 25, 50, 75 mg 10 mg/5mL solution	0.5 mg/kg/day; may increase by 0.5 mg/kg/day increments at weekly intervals; can consider splitting dose to twice daily Maximum dose: 2mg/kg/day or 100 mg, whichever is less	<p><u>Warnings and Precautions</u></p> <ul style="list-style-type: none"> Suicide Risk Mania/hypomania Serotonin Syndrome Cardiovascular disease (consider obtaining baseline ECG before initiating) Seizure disorder Bone marrow suppression Unmasking of Brugada Syndrome Angle-Closure glaucoma 	

Appendix D. Pediatric ADHD Medication Algorithm ^{53,97,98}



Possible Strategies for Common Side Effects	
Side effect	Intervention(s)
Decreased appetite	<ul style="list-style-type: none"> Take medication after breakfast (so child will be hungry for morning meal) Give larger meal in evening when medication is wearing off Give snack/food if child is hungry
Sleep problems- difficulty falling asleep	<ul style="list-style-type: none"> Set-up bedtime routine Restrict stimulating activities before bedtime (i.e., cell phones, television, video games) Consider taking medication earlier in the day Restrict or eliminate caffeine medications Consider switching from long-acting to shorter-acting formulation; if on short-acting formulation consider reducing or stopping afternoon dosing Consider additional drug therapy (e.g., clonidine, guanfacine, melatonin)
Drowsiness	<ul style="list-style-type: none"> If taking non-stimulant and sleepy during day, may consider switching to bedtime administration vs. morning, dividing the dose into twice a day or lowering dose
“Behavioral Rebound” (i.e., irritability, impulsivity, inattention late afternoon or evening)	<ul style="list-style-type: none"> Consider longer-acting formulation taken in the morning Consider small dose of short-acting, immediate release stimulant later in day in addition to long-acting medication
Other side effects and items to monitor for	
<ul style="list-style-type: none"> Peripheral vasculopathy, including Raynaud's Phenomenon Priapism (with methylphenidate use) Permanent loss of skin color (with Daytrana® Patch) Rhabdomyolysis 	<ul style="list-style-type: none"> Psychiatric Adverse events (e.g., hearing voices, experiencing mania) Growth suppression Abuse of stimulant medication Suicidality (with atomoxetine) Hepatotoxicity (with atomoxetine)

Appendix E. ADHD HEDIS Measure

Follow-Up Care for Children Prescribed ADHD Medications (ADD)

The percentage of children newly prescribed ADHD medication who had at least 3 follow-up care visits within a 10-month (300 day) period, one of which was within 30 days of when the first ADHD medication was dispensed. Two rates are reported:

- **Initiation Phase** –Percentage of members, 6-12 years of age, who had 1 follow-up visit with a prescribing practitioner within 30 days of starting the medication
- **Continuation and Maintenance (C&M) Phase** –Percentage of members, 6-12 years of age, who remained on the medication for at least 210 days (*allowed 90 gap days, so look at 300 days total to find 210 days on Rx*) and who had at least 2 additional follow-up visits with a practitioner within 270 days (9 months) after end of Initiation phase. One of these two contacts (during days 31-300) may be by telephone with an MD, PA or NP (not RN or LPN).

Member must not have filled a prescription for an ADHD medication within 120 days (4 months) prior to current prescription.

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