

UCSF BENIOFF CHILDREN'S HOSPITALS

# Mental Health Clinical Guidelines

Attention Deficit/Hyperactivity Disorder (ADHD) in Children & Adolescents



**UCSF Benioff Children's Hospitals**  
Oakland | San Francisco

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## General Clinical Guidance

- Pediatric primary care providers are on the front lines for preventing, screening, assessing, treating, and monitoring pediatric mental health concerns.
- The primary care clinician should initiate an evaluation for ADHD for any child 4 to 18 years of age who presents with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity (quality of evidence B/strong recommendation).
- The American Academy of Pediatrics has recommended that the first step for addressing ADHD and other common pediatric mental health concerns be to develop standard office procedures.
- This booklet will give recommendations for children and youth with suspected/diagnosed ADHD aged 4 to 18 years:
  - ▶ Screening tools
  - ▶ Treatment protocols
  - ▶ Resource and referral guides
  - ▶ Criteria for consultation.

## For More Information

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## Overview

- ADHD is a neurocognitive executive function deficit that results in failure to maintain an appropriate problem-solving set to attain a future goal likely involving fronto-striatal dopaminergic circuits.
- ADHD has had multiple prior names, including “hyperkinetic syndrome of childhood” and “ADD.” Is is now known as: 1) ADHD, inattentive type; 2) ADHD, hyperactive/impulsive type; or 3) ADHD, combined type.
- Prevalence of ADHD is 3 to 12 percent; males are affected more than females by a ratio of 2–4 to 1.
- ADHD continues in 60 to 85 percent of teens and in 40 percent or more of adults, with youth typically outgrowing hyperactivity first, followed by impulsivity. The most common residual symptom is inattention.
- ADHD is associated with higher rates of criminal and antisocial behavior, greater marital and employment difficulty, and higher rates of teen pregnancy, single parenthood, and MVAs.
- Untreated ADHD creates risks for low self-esteem and depression due to a lack of progression along normal academic and socio-emotional trajectories.
- Heritability is 76 percent (eight genes implicated; DAT, D4).
- ADHD is associated with maternal smoking/substance abuse, perinatal stress, low birth weight, traumatic brain injury, and severe early deprivation.

These guidelines will cover screening, assessment, treatment, and referral criteria. These guidelines will not cover how to make specific referrals for specialty care or therapy.



## Core Symptoms of ADHD Are Divided into two Symptom Clusters: Inattention and Hyperactivity/Impulsivity

### Inattention

Inattention manifests as six or more symptoms for children up to age 16 years, or five or more for adolescents 17 years and older and adults. Symptoms of inattention will have been present for at least six months, and they are inappropriate for the child or adolescent's developmental level. Someone with ADHD:

- Often fails to give close attention to details, or makes careless mistakes in schoolwork, at work, or with other activities.
- Often has trouble holding attention on tasks or play activities.
- Often does not seem to listen when spoken to directly.
- Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., loses focus, gets sidetracked).
- Often has trouble organizing tasks and activities.
- Often avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time—including schoolwork or homework.
- Often loses things necessary for tasks and activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
- Is often easily distracted.
- Is often forgetful in daily activities.

### Hyperactivity/Impulsivity

Hyperactivity/impulsivity manifests as six or more symptoms for children up to age 16 years, or five or more for adolescents 17 years and older and adults. Symptoms of hyperactivity/impulsivity will have been present for at least six months to an extent that is disruptive and inappropriate for the child or adolescent's developmental level. Someone with ADHD:

- Often fidgets with or taps their hands or feet, or squirms in their seat.
- Often leaves their seat in situations when remaining seated is expected.
- Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless).
- Often is unable to play or take part in leisure activities quietly.
- Is often “on the go,” acting as if “driven by a motor.”
- Often talks excessively.
- Often blurts out an answer before a question has been completed.
- Often has trouble waiting their turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games).



## Core Symptoms of ADHD Are Divided into two Symptom Clusters: Inattention and Hyperactivity/Impulsivity (cont.)

In addition, to recognize ADHD, the following conditions must be met:

- Several inattentive or hyperactive-impulsive symptoms were present before age 12.
- Several symptoms are present in two or more settings, including home, school, or work; with friends or relatives; or in other activities.
- There is clear evidence that the symptoms interfere with or reduce the quality of social, school, or work functioning.
- The symptoms are not better explained by another mental disorder, such as a mood disorder, anxiety disorder, dissociative disorder, or personality disorder. The symptoms do not happen only during the course of schizophrenia or another psychotic disorder.

Based on the types of symptoms, three kinds (presentations) of ADHD can occur:

- Predominantly inattentive presentation: if enough symptoms of inattention, but not hyperactivity/impulsivity, were present for the past six months.
- Predominantly hyperactive/impulsive presentation: if enough symptoms of hyperactivity/impulsivity, but not inattention, were present for the past six months.
- Combined presentation: if enough symptoms of both criteria—inattention and hyperactivity/impulsivity—have been present for the past six months.

Because symptoms can change over time, the presentation may change over time as well.

For adults and adolescents age 17 years or older, in order to recognize ADHD, only five symptoms are needed instead of the six needed for younger children.

## History

### Subjective

- Interview the child and caregivers using screening questions with an emphasis on developmental history (especially language, diet, sleep, schedule, trauma, and academic history). Many children with ADHD will not subjectively notice or endorse symptoms. Assess for comorbid or mimicking psychiatric conditions, e.g., depression, and anxiety, including PTSD. Often parents will give a history of lifelong difficulty with sitting still, acting before thinking, losing things easily, pervasive disorganization, and failure to turn in homework even when completed.
- Determine the current psychosocial and environmental structures.
  - Obtain the patient's history:
    - ▶ Prior evaluations and treatments.
    - ▶ Current treatments, including alternative/complementary treatments such as acupuncture, herbs, and yoga.
  - Obtain a family history of mental illness, with special emphasis on ADHD, learning disorders, and erratic work and/or social history with frequent changes.
  - Obtain a sleep history.
  - Obtain a record of adverse childhood experiences or trauma history.
  - Consider the child's culture and culture-informed perceptions of caregivers and teachers.

## History (cont.)

### Objective

- Perform physical/mental status examination:
  - ▶ Note that not all children/adolescents will demonstrate ADHD symptoms in a one-on-one office setting evaluation.
  - ▶ Assess for other possible comorbid physical conditions, especially when indicated by history (may include sleep apnea, anemia, allergies, thyroid disease, celiac disease/gluten sensitivity, and/or tics). Persons with zinc and iron deficiencies can present with ADHD symptoms and, when treated, the ADHD symptoms may resolve.
  - ▶ Note that ADHD symptoms are usually present throughout life, though sometimes symptoms may not cause impairment until school demands become more complex—especially if a child has other compensatory mechanisms (e.g., giftedness, parents who scaffold, or symptom of inattention only). However, if inattention, hyperactivity, or impulsivity suddenly develop in an older child, evaluate for other causes.
- Commonly used screens include the Vanderbilt, the Connors, and the ADHD Symptom Checklist. See the appendix on page 11 for Vanderbilt tools.
- Screen for substances with those who are age 12 or older.
  - ▶ The CRAFFT screening tool is recommended. The questionnaire takes less than five minutes to complete and score, and it can be scored by the doctor, nurse, medical technician, or other office staff member prior to the patient's exam with the PCP. See the appendix for the CRAFFT on page 11.
  - ▶ It is recommended that parents are informed that a behavioral health screening questionnaire will be administered as part of the exam. In order to obtain honest answers, patients should be left alone to complete the CRAFFT in a private environment and should be informed of their rights regarding confidentiality before the questionnaire is administered.
  - ▶ Perform a toxicology screen if appropriate, as the rate of substance abuse, especially tobacco use, is higher in youth with ADHD.
  - ▶ Clinicians should assess adolescent patients with newly diagnosed ADHD for symptoms and signs of substance abuse. When these signs and symptoms are found, evaluation and treatment for addiction should precede treatment for ADHD, if possible, or careful treatment for ADHD can begin if appropriate and necessary.

Screen for comorbid conditions: oppositional defiant disorder (ODD) 54 to 84 percent, conduct disorder (CD) 25 to 45 percent, substance abuse 15 to 19 percent, learning disorders 25 to 35 percent, anxiety disorders 33 percent, depression 0 to 33 percent, bipolar disorder 0 to 16 percent.

- Vanderbilt offers a screen for learning disorders, depression, anxiety, ODD, and CD.
- For anxiety, you can use the SCARED anxiety rating scale or RCADS anxiety rating scale. See the appendix.
- If there are bipolar diagnosis concerns, consult with a psychiatrist.
- For co-occurring mental and complicated medical conditions, or for multiple comorbid psychiatric conditions, consider a referral to psychiatry.



## Plan and Treatment for ADHD

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

### **For preschool-aged children (4 to 5 years of age):**

The primary care physician (PCP) should prescribe evidence-based, parent- and/or teacher-administered behavior therapy as the firstline of treatment (quality of evidence A/strong recommendation). PCPs may also prescribe short-acting methylphenidate if the behavior interventions do not provide significant improvement and there is a moderate to severe level of continuing disturbance in the child's functioning. In areas where 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).

### **For elementary school-aged children (6 to 11 years of age):**

The primary care clinician should prescribe U.S. Food and 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 (75- 90-percent effective) and sufficient but less strong for atomoxetine, extended-release guanfacine, and extended-release clonidine (in that order, 50- 60-percent effective) (quality of evidence A/strong recommendation). The school environment, program, or placement is a part of any treatment plan.

**For adolescents (12 to 18 years of age):** The primary care clinician should prescribe FDA-approved medications 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.

The primary care clinician should titrate doses of medication for ADHD to achieve maximum benefit with minimum adverse effects (quality of evidence B/strong recommendation).

The PCP should help the family advocate for a 504 or individualized educational plan (IEP) when appropriate, as educational interventions may be a key component of treatment for ADHD. Most students with only ADHD will qualify for a 504 but may not qualify for an IEP unless there are comorbid disorders. Regardless, the Individuals with Disabilities Education Act (IDEA) requires schools to meet the educational needs of eligible students who have disabilities. Schools must evaluate students suspected of having disabilities—including learning disabilities—but not every child with learning and attention issues qualifies for special education services under IDEA. Interventions may include preferred seating, extended time on tests, limitations on homework, and improved communication between parents and teachers to help students with ADHD develop improved organizational habits that are consistent with those of their peers.

## Behavioral Therapy

### Behavioral Therapy

#### 10 to 20 sessions with parents to:

- Inform and educate the patient and family regarding a diagnosis, prognosis, and treatment.
- Pay attention to the patient's positive and negative behaviors.
- Establish a token economy.
- Use time-outs.
- Manage behaviors in public.
- Use a daily report card/planner and communicate with staff at the school.
- Anticipate future behaviors.

#### Ineffective treatments:

- EEG feedback: There is mild evidence for neurofeedback, but the benefits are modest, and it is costly.
- Eye Movement Desensitization & Reintegration (EMDR).
- Social skills groups.
- Routine play therapy.

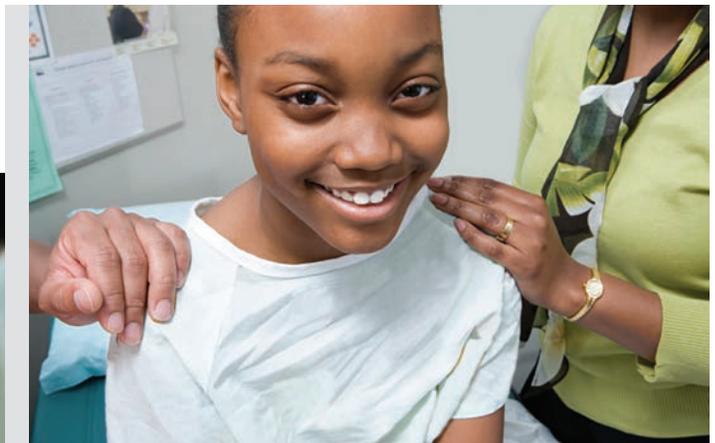
### Engaging and Informing Parents

For the purpose of this booklet, "parents" are defined as the legal guardian for the patient.

- Inform parents of confidentiality rules for the patient.
- Obtain written permission from parents to allow collaboration between the primary care physician and the behavioral health specialist.

### Educational Materials for Families

- AACAP ADHD guide for families on [aacap.org](http://aacap.org).
- *Taking Charge of ADHD* by Russell Barkley.
- Educational materials for patients.
- *ADHD and Me: What I Learned from Lighting Fires at the Dinner Table* by Blake Taylor.



## Starting Medication Treatment

### Stimulants

Stimulants are the firstline treatment for ADHD and are generally the most effective. See the appendix (page 11) for a list of commonly prescribed stimulants. Dosage is based on weight and should be titrated to effect, and as the child grows. Not included in the appendix are newer, long-acting stimulants, including Quillivant, which is long-acting liquid methylphenidate, and Quillichew, which is long-acting chewable methylphenidate.

- The most common side effect of stimulant use is appetite suppression, as well as possibly increased irritability, especially around the time that a stimulant is wearing off (this effect may be related, at least in part, to hunger). Work with the family to ensure the patient has a good breakfast; recommend healthy snacks—e.g., nuts, cheese, smoothies—for afternoon as meds start to wear off. Educate the family that the child may not feel hungry until later in the evening. If there is severe appetite suppression, this may affect final adult height (on average, 1 cm).
- When using stimulants, patients may experience insomnia.
- Minor elevations in blood pressure can occur.
- Rarely patient's may experience perceptual disturbances, including tactile, auditory, and/or visual hallucinations.
- Patient's may have a "Zombie" feeling or affective flattening; usually this occurs when the dose is too high. Some youth feel they are "not as funny" when taking a stimulant, since their thoughts tend to be more linear and less disinhibited. Try to use motivational interviewing to look at goals (e.g., doing well in school), and exploring the benefits versus side effects.
- Cardiac monitoring:
  - ▶ Acquiring an ECG is a Class IIa recommendation. This means that it is reasonable for a physician to consider obtaining an ECG as part of the evaluation of children being considered for stimulant drug therapy; but this should be at the physician's judgment, and it is not mandatory to obtain one.
  - ▶ Treatment of a patient with ADHD should not be withheld because an ECG is not done. The child's physician is the best person to make the assessment about whether there is a need for an ECG.
- ▶ Medications that treat ADHD have not been shown to cause heart conditions, nor have they been demonstrated to cause sudden cardiac death. However, some of these medications can increase or decrease heart rate and blood pressure. While these side effects are not usually considered dangerous, they should be monitored in children with heart conditions, as the physician feels it is necessary.
- ▶ This clarification has been endorsed by the American Academy of Pediatrics (AAP), the American Heart Association (AHA), the American Academy of Child and Adolescent Psychiatry (AACAP), the American College of Cardiology (ACC), Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD), the National Institute for Children's Healthcare Quality (NICHQ), and the Society for Developmental and Behavioral Pediatrics (SDBP).

### Non-stimulants

- Atomoxetine is a norepinephrine reuptake inhibitor that is 60- to 70-percent effective. It needs to be at 1.0 to 1.5 mg/kg to be effective, and it tends to work best when dosed twice daily.
  - ▶ It may be helpful in cases with comorbid anxiety when the anxiety is exacerbated by stimulants; it may be better tolerated by some patients with autism spectrum disorder.
  - ▶ Side effects: It is commonly associated with nausea, which can be prevented by taking it with food. Liver toxicity is less than 1 percent, and risk of suicidal ideation is 4/1000.
- Extended-release guanfacine is an alpha-2 adrenergic agonist that increases synaptic norepinephrine. 65-percent effective. Dosage is 0.08 to .12mg/kg, dosed once daily. It tends to last 18 to 2 hours and is usually best administered in the morning, but if it causes sedation may change to qhs dosing; regular-release guanfacine may also be used and should be doses BID-TID.
  - ▶ It tends to be more helpful with impulsive/hyperactive symptoms as well as possible comorbid poor frustration tolerance. It may also be helpful with comorbid autonomic hyperarousal related to PTSD.

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## Starting Medication Treatment (cont.)

- ▶ Side effects include sedation, especially in the first one to two weeks of treatment, with a secondary effect of irritability. Orthostatic hypotension, if present, needs monitoring, and encourage adequate hydration.

### Maintenance

Once an optimal dose is determined, maintenance treatment begins. Frequency of monitoring can be reduced to follow-up every one to three months, depending on the patient's needs.

Trials off stimulants or other ADHD medications may be done during periods of less academic demand, including summer, to see how much the child has outgrown ADHD symptoms. It is best to include a fallback agreement that, should the child's academic and/or social functioning decline, as evidenced by external measures, including Vanderbilt and/or a precipitous drop in grades, the child will agree to restart ADHD medication.

### When to Refer the Patient to Child Psychiatry

- Complexity or lack of clarity regarding a diagnosis.
- Moderate to severe substance abuse.
- Primary caregiver has serious mental health problems (including substance abuse).
- Psychosis or mania.
- History of psychiatric hospitalization.
- Lack of response after three medical trials.
- Patient is 6 years old or younger.
- A chronic medical condition and/or the patient's behavior seriously interferes with medical treatment.

[http://www.aacap.org/aacap/Member\\_Resources/Practice\\_Information/When\\_to\\_Seek\\_Referral\\_or\\_Consultation\\_with\\_a\\_CAP.aspx](http://www.aacap.org/aacap/Member_Resources/Practice_Information/When_to_Seek_Referral_or_Consultation_with_a_CAP.aspx)

Appendix

**TABLE 2**  
Medications Approved by the FDA for ADHD (Alphabetical by Class)

Generic Class/ Brand Name	Dose Form	Typical Starting Dose	FDA Max/Day	Off-Label Max/Day	Comments
<b>Amphetamine preparations</b>					
Short-acting					
Adderall <sup>f</sup>	5, 7.5, 10, 12.5, 15, 20, 30 mg tab	3–5 y: 2.5 mg q.d.; ≥6 y: 5 mg q.d.–b.i.d.	40 mg	>50 kg: 60 mg	Short-acting stimulants often used as initial treatment in small children (<16 kg), but have disadvantage of b.i.d.–t.i.d. dosing to control symptoms throughout day
Dexedrine <sup>d</sup>	5 mg cap	3–5 y: 2.5 mg q.d.			
DextroStat <sup>d</sup>	5, 10 mg cap	≥6 y: 5 mg q.d.–b.i.d.			
Long-acting					
Dexedrine Spansule	5, 10, 15 mg cap	≥6 y: 5–10 mg q.d.–b.i.d.	40 mg	>50 kg: 60 mg	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 foods
Adderall XR	5, 10, 15, 20, 25, 30 mg cap	≥6 y: 10 mg q.d.	30 mg	>50 kg: 60 mg	
Lisdexamfetamine	30, 50, 70 mg cap	30 mg q.d.	70 mg	Not yet known	
<b>Methylphenidate preparations</b>					
Short-acting					
Focalin	2.5, 5, 10 mg cap	2.5 mg b.i.d.	20 mg	50 mg	Short-acting stimulants often used as initial treatment in small children (<16 kg) but have disadvantage of b.i.d.–t.i.d. dosing to control symptoms throughout day
Methylin <sup>d</sup>	5, 10, 20 mg tab	5 mg b.i.d.	60 mg	>50 kg: 100 mg	
Ritalin <sup>d</sup>	5, 10, 20 mg	5 mg b.i.d.	60 mg	>50 kg: 100 mg	
Intermediate-acting					
Merdate ER	10, 20 mg cap	10 mg q.a.m.	60 mg	>50 kg: 100 mg	Longer acting stimulants offer greater convenience, confidentiality, and compliance with single daily dosing but may have greater problematic effects on evening appetite and sleep Merdate CD and Ritalin LA caps may be opened and sprinkled on soft food
Methylin ER	10, 20 mg cap	10 mg q.a.m.	60 mg	>50 kg: 100 mg	
Ritalin SR <sup>d</sup>	20 mg	10 mg q.a.m.	60 mg	>50 kg: 100 mg	
Merdate CD	10, 20, 30, 40, 50, 60 mg	20 mg q.a.m.	60 mg	>50 kg: 100 mg	
Ritalin LA	10, 20, 30, 40 mg	20 mg q.a.m.	60 mg	>50 kg: 100 mg	
Concerta	18, 27, 36, 54 mg cap	18 mg q.a.m.	72 mg	108 mg	
Daytrana patch	10, 15, 20, 30 mg patches	Begin with 10 mg patch q.d., then titrate up by patch strength	30 mg	Not yet known	Swallow whole with liquids Nonabsorbable tablet shell may be seen in stool.
Focalin XR	5, 10, 15, 20 mg cap	5 mg q.a.m.	30 mg	50 mg	
<b>Selective norepinephrine reuptake inhibitor</b>					
Atomoxetine					
Strattera	10, 18, 25, 40, 60, 80, 100 mg cap	Children and adolescents <70 kg: 0.5 mg/kg/day for 4 days; then 1 mg/kg/day for 4 days; then 1.2 mg/kg/day	Lesser of 1.4 mg/kg or 100 mg	Lesser of 1.8 mg/kg or 100 mg	Not a schedule II medication Consider if active substance abuse or severe side effects of stimulants (mood lability, rics); give q.a.m. or divided doses b.i.d. (effects on late evening behavior); do not open capsule; monitor closely for suicidal thinking and behavior, clinical worsening, or unusual changes in behavior

*Note:* FDA – U.S. Food and Drug Administration; ADHD – attention-deficit/hyperactivity disorder.  
<sup>d</sup> Generic formulation available.

**CRAFFT – Adolescent Substance Use Screening**

1. Have you ever ridden in a **CAR** driven by someone (including yourself) who was “high” or had been using alcohol or drugs?
2. Do you ever use alcohol or drugs to **RELAX**, feel better about yourself, or fit in?
3. Do you ever use alcohol or drugs while you are by yourself, or **ALONE**?
4. Do you ever **FORGET** things you did while using alcohol or drugs?
5. Do your **FAMILY** or **FRIENDS** ever tell you that you should cut down on your drinking or drug use?
6. Have you ever gotten into **TROUBLE** while you were using alcohol or drugs?

CRAFFT Scoring: Each “yes” response scores 1 point.  
A total score of 2 or higher is a positive screen, indicating a need for additional assessment.

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