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 guideline 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

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.
- Multiple prior names including “hyperkinetic syndrome of childhood” and “ADD,” now: 1) ADHD, inattentive type, 2) ADHD, hyperactive/impulsive type 3) ADHD, combined type.
- Prevalence 3–12 percent; males > females by ratio of 2–4:1.
- Continues in 60–85 percent of teens, >/= 40 percent in adults, with youth typically outgrowing hyperactivity first, followed by impulsivity; Most common residual symptom is inattention.
- Is associated with higher rates of criminal/antisocial behavior, greater marital and employment difficulty, higher rates of teen pregnancy, single parenthood, MVAs.
- Untreated ADHD creates risk for low self-esteem and depression due to lack of progression along normal academic/socio-emotional trajectory.
- Heritability=76 percent (eight genes implicated; DAT, D4)
- Associated with maternal smoking/substance abuse, perinatal stress, low birth weight, traumatic brain injury, and severe early deprivation.

These guidelines will cover the 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 2 Symptom Clusters, Inattention, and Hyperactivity/Impulsivity

**Inattention**

Six or more symptoms of inattention for children up to age 16 years, or five or more for adolescents 17 years and older, and adults; symptoms of inattention have been present for at least six months, and they are inappropriate for developmental level:

- 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, side-tracked).
- 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 and Impulsivity**

Six or more symptoms of hyperactivity-impulsivity for children up to age 16 years, or five or more for adolescents 17 years and older, and adults; symptoms of hyperactivity-impulsivity have been present for at least six months to an extent that is disruptive and inappropriate for the person’s developmental level:

- Often fidgets with or taps hands or feet, or squirms in seat.
- Often leaves 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 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 his/her turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games).
Core Symptoms of ADHD Are Divided Into 2 Symptom Clusters, Inattention, and Hyperactivity/Impulsivity (cont.)

In addition, the following conditions must be met:
- Several inattentive or hyperactive-impulsive symptoms were present before age 12 years.
- 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 a 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 were present for the past six months.

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

NOTE: For adults and adolescents age 17 years or older, only five symptoms are needed instead of the six needed for younger children.
History

Subjective

- Interview with child and caregivers with screening questions, emphasis on developmental history, especially language, diet, sleep, schedule, trauma, academic history. Many children with ADHD will not subjectively notice or endorse symptoms. Assess for comorbid or mimicking psychiatric conditions including depression, anxiety, including PTSD. Often parents will give history of lifelong difficulty sitting still, acting before thinking, losing things easily, pervasive disorganization, and failure to turn in homework even when completed.

- Current psychosocial/environmental structure.

Past history:

- Prior evaluations, prior treatments.
- Current treatments, including alternative and complementary treatment, including acupuncture, herbs, and yoga.

- Obtain family history of mental illness, with special emphasis on ADHD, learning disorders, and erratic work and/or social history with frequent changes.

- Obtain sleep history.

- Obtain adverse childhood experiences history or trauma history.

- Consideration of culture, and culture-informed perceptions of caregivers, and teachers.
History (cont.)

**Objective**
- 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 when indicated by history (may include sleep apnea, anemia, allergy, thyroid disease, celiac disease/gluten sensitivity, tics other). Persons with zinc and iron deficiency 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 (i.e. gifted, parents who scaffold, or only symptom is inattention). 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 Appendix for Vanderbilt tools.

- Screen for substances age 12 years and older.
  - Recommend using the CRAFFT screening tool. 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 prior to the patient's exam with the PCP. See Appendix for the CRAFFT.
  - 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.
  - Toxidology screen if appropriate as 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 necessary.

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

- Vanderbilt offers screen for learning disorders, depression, anxiety, ODD and CD.
- For anxiety, can use the SCARED anxiety rating scale or RCADS anxiety rating scale. See Appendix.
- If bipolar diagnosis concerns, consult with a psychiatrist.
- For co-occurring mental and complicated medical conditions, or 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 clinician should prescribe evidence-based parent- and/or teacher-administered behavior therapy as the first-line 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 moderate-to-severe continuing disturbance in the child’s function. 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 US 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 (12–18 years of age): The primary care clinician should prescribe Food and Drug Administration–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, requires schools to serve the educational needs of eligible students with 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, improved communication between parents and teachers to help the student with ADHD scaffold into improved organizational habits that are consistent with peers.
Behavioral Therapy

10-20 sessions with parents to:
- Inform and educate regarding a diagnosis, prognosis, and treatment.
- Pay attention to positive and negative behaviors.
- Establish a token economy.
- Use time-outs.
- Manage behaviors in public.
- Use daily report card/planner and communicate with the school.
- Anticipate future behaviors.

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

Engaging and Informing Parents
For the purpose of this guideline, 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.
- 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 first-line treatment and are generally most effective. See Appendix for list of commonly prescribed stimulants. Dose is based on weight and should be titrated to effect, and as child grows (see Appendix for list of commonly prescribed stimulants, not included are newer long acting stimulants including “Quillivant” long acting liquid methylphenidate, and Quillichew, long acting chewable methylphenidate.

- Most common side effects are appetite suppression, as well as possibly increased irritability, especially around the time that a stimulant is wearing off, may be related at least in part to hunger. Work with family to ensure good breakfast, recommend healthy snacks, i.e., nuts, cheese, smoothies, for afternoon time as meds start to wear off. Educate family that 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.
- Insomnia.
- Minor elevations in BP.
- Rarely, perceptual disturbances including tactile, auditory, visual hallucinations.
- “Zombie” feeling or affective flattening usually 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, less disinhibited. Try to use motivational interviewing to look at goals (i.e. doing well in school), benefits versus side effects.
- Cardiac monitoring:
  ▶ Acquiring an ECG is a Class Ila 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 necessary.
  ▶ This clarification has been endorsed by the American Academy of Pediatrics (AAP), the American Heart Association (AHA), American Academy of Child and Adolescent Psychiatry, the American College of Cardiology, Children and Adults with Attention-Deficit/Hyperactivity Disorder, the National Initiative for Children’s Healthcare Quality and the Society for Developmental and Behavioral Pediatrics.

Non-stimulants
- Atomoxetine—Norepinephrine reuptake inhibitor, 60-70 percent effective, needs to be at 1.0-1.5 mg/kg to be effective, tends to work best when dosed twice daily.
  ▶ May be helpful in cases with comorbid anxiety when anxiety is exacerbated by stimulants, may be better tolerated by some patients with autism spectrum disorder.
  ▶ Side effects: commonly associated with nausea, which can be prevented by taking with food, liver toxicity <1 percent, risk of suicidal ideation 4/1000.
- Extended release guanfacine: alpha-2 adrenergic agonist that increases synaptic norepinephrine, 65 percent effective, 0.08-.12mg/kg, dosed once daily, tends to last 18 to 2 hours, usually best 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.
  ▶ Tends to be more helpful with impulsive/hyperactive symptoms and associated poor frustration tolerance; May also be helpful with comorbid autonomic hyperarousal related to PTSD.
  ▶ Side effects: sedation, especially in first one to two weeks of treatment, with secondary irritability; orthostatic hypotension needs monitoring and encouragement of adequate hydration.
Starting Medication Treatment (cont.)

**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 function decline as evidenced by external measures, including Vanderbilt, 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.

http://www.aacap.org/aacap/Member_Resources/Practice_Information/When_to_See_referral_or_Consultation_with_a_CAP.aspx
Appendix

**TABLE 2**

<table>
<thead>
<tr>
<th>Medications Approved by the FDA for ADHD and/or by CDE</th>
<th>ADHD Score</th>
<th>TDM</th>
<th>FDA-Label</th>
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<tbody>
<tr>
<td>Amphetamine preparations</td>
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<tr>
<td>Adderall®</td>
<td>5, 7, 10, 15, 15</td>
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<td>Long-acting</td>
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<td>Adderall® XR</td>
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<td></td>
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<td></td>
<td>30 mg cap</td>
<td></td>
<td></td>
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<tr>
<td>Lisdexamfetamine®</td>
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<td>70 mg</td>
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<tr>
<td>Methylphenidate preparations</td>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td>&gt;50 mg</td>
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<td>Captopril®</td>
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<td>Selective norepinephrine</td>
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<tr>
<td>Concerted</td>
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**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.
References

- AACAP Practice Parameters ADHD. (2007).
- AACAP Practice Parameters ODD. (2007).