ADHD Overview

Previously distinguished as "Attention Deficit Disorder (ADD)" or "Attention Deficit Hyperactivity Disorder (ADHD)" under the current DSM-5 there is just one diagnostic heading of "Attention Deficit Hyperactivity Disorder (ADHD)" with the following presentations:

- Combined Presentation
- Predominantly Inattentive Presentation
- Predominantly Hyperactive-Impulsive Presentation

Considerations in children and youth:

- ADHD is estimated to affect around 5% of school-aged children. As it is a chronic condition that can manifest at a young age, there are different guidelines for treatment based on the patient's age range.
- ADHD is more frequent in males than in females in the general population (2:1 in children). Females are more likely than males to present primarily with inattentive features, which often leads to missed diagnoses.
- There is substantial increase in the incidence of ADHD in first-degree biological relatives of individuals with ADHD. Additionally, family interactions in early childhood may not cause ADHD but may influence or contribute to secondary development of conduct problems. Consider recommending parents of pre-school aged children complete a parent-training program and/or placement in a qualified pre-school program first before confirming an ADHD diagnosis.

American Academy of Pediatrics Recommendations:

- The treatment algorithm on the following pages is based on the American Academy of Pediatrics Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents*, which is based on a collaborative review of relevant articles on the diagnosis and treatment of ADHD. Recommendations are ordered based on the quality of evidence backing the strength of the proposed recommendation.
- ADHD should be recognized as a chronic condition, and therefore, consider children and adolescents with ADHD as children and youth with special healthcare needs. For these cases, the medical home model has been the preferred standard of care. Encourage strong family-school partnerships as well as bidirectional communication with teachers, parents and patient.

Resource:
American Academy of Pediatrics, Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. ADHD: Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. *Pediatrics*. 2011;128;1007.

DSM 5 Criteria for ADHD Disorders

The diagnostic criteria includes a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning/development, as characterized by (1) and/or (2), with symptoms inconsistent with developmental level that negatively impact directly on social and academic/occupational activities:

1. Inattention: 6 or more (5+ in adolescents) of the following symptoms for at least 6 months
    a. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities
    b. Often has difficulty sustaining attention in tasks or play activities
    c. Often does not seem to listen when spoken to directly
    d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace
    e. Often has difficulty organizing tasks and activities
    f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort
    g. Often loses things necessary for tasks or activities
    h. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts)
    i. Is often forgetful in daily activities (ex: doing chores, running errands, keeping appointments)
2. Hyperactivity and Impulsivity: 6 or more of the following symptoms for at least 6 months
    a. Often fidgets with or taps hands or feet or squirms in seat
    b. Often leaves seat in situations when remaining seated is expected
    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"
    f. Often talks excessively
    g. Often blurts out an answer before a question has been completed
    h. Often has difficulty waiting his or her turn
    i. Often interrupts or intrudes on others (ex: conversations, games, activities)

Combined Presentation - ICD-10: F90.2

If both (1) and (2) are met for the past 6 months

Predominantly Inattentive Presentation - ICD-10: F90.0

If only (1) is met for the past 6 months

Predominantly Hyperactive/Impulsive Presentation - ICD-10: F90.1

If only (2) is met for the past 6 months

Other Specified Attention-Deficit/Hyperactivity Disorder - ICD-10: F90.8

Symptoms characteristic of attention-deficit/hyperactivity disorder that cause significant distress or impairment in social, occupational or other important areas of functioning predominate but do not meet the full criteria for attention-deficit/hyperactivity disorder or any of the disorders in the neurodevelopmental disorders diagnostic class.

Resource:
American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA: American Psychiatric Association, 2013.

Algorithm for Evaluation and Diagnosis

Routine screening and/or appointment with concern for inattention/hyperactivity

1. Rule out any underlying medical causes which may also be contributing (e.g. hyperthyroidism, seizures, drug or medication side effect)
2. Rule out any other psychiatric conditions (e.g. Anxiety, depression, pervasive developmental disorders such as Autism/Asperger's, learning disabilities, or psychotic disorders) with similar or related symptoms (ex: Anxiety may lead to avoidance of difficult tasks or restlessness, psychotic disorders may result in inattention due to focus on internal stimuli). Oppositional Defiant Disorder and Intermittent Explosive Disorder may also be present with or without ADHD.
3. With "sudden onset" change in functioning, also consider screening for psychosocial factors such as bullying (including cyberbullying), trauma or substance use (especially in adolescents)

Once other factors are ruled out, establish if patient meets diagnostic criteria through screening questionnaires. It is important to establish symptoms in more than one setting through objective reporting (ex: Vanderbilt Assessment Scale – Teacher Informant).

- If symptoms are only present in one setting, consider other environmental or behavioral factors contributing to symptoms.
- Pre-school aged children who are not in a school setting may only have parent reports – if there are concerns about the parent observation consider recommending parents to a parent-training program or place child in a qualified preschool program.
- In adolescents try to obtain information from at least 2 teachers as well as other sources such as coaches, school guidance counselors, or leaders of community activities where they participate.
- In situations where there is diagnostic uncertainty, neuropsychological testing may be helpful to provide further diagnostic clarification

SCREENING MEASURES

Diagnostic tools can be a helpful way to screen for ADHD. They can also be used to follow up on symptoms once treatment is initiated. An important thing to note is that the symptoms must be present in more than one setting (ex: home and school), and also a positive screening measure does not necessarily equal a diagnosis, as other differential diagnoses still have to be ruled in/out. One helpful tool is the Vanderbilt questionnaire, which has both parent and teacher versions (example below)

CHOC Children's

Vanderbilt Assessment Scale
Parent Informant

Today's Date: _____ **Child's Name:** _____ **Date of Birth:** _____

Parent's Name: _____ **Parent's Phone Number:** _____

Directions: **Each rating should be considered in the context of what is appropriate for the age of your child. When completing this form, please think about your child's behaviors in the past 6 months.**

Is this evaluation based on a time when the child was ☐on medication ☐ was not on medication ☐ not sure?

Symptoms	Never	Occasionally	Often	Very Often
1. Does not pay attention to details or makes careless mistakes with, for example, homework.	0	1	2	3
2. Has difficulty keeping attention to what needs to be done	0	1	2	3
3. Does not seem to listen when spoken to directly	0	1	2	3
4. Does not follow through when given directions and fails to finish activities (not due to refusal or failure to understand)	0	1	2	3
5. Has difficulty organizing tasks and activities	0	1	2	3
6. Avoids, dislikes, or does not want to start tasks that require ongoing mental effort	0	1	2	3
7. Loses things necessary for tasks or activities (toys, assignments, pencils, or books)	0	1	2	3
8. Is easily distracted by noises or other stimuli	0	1	2	3
9. Is forgetful in daily activities	0	1	2	3
10. Fidgets with hands or feet or squirms in seat	0	1	2	3
11. Leaves seat when remaining seated is expected	0	1	2	3
12. Runs about or climbs too much when remaining seated is expected	0	1	2	3
13. Has difficulty playing or beginning quiet play activities	0	1	2	3
14. Is "on the go" or often acts as if "driven by a motor"	0	1	2	3
15. Talks too much	0	1	2	3
16. Blurts out answers before questions have been completed	0	1	2	3
17. Has difficulty waiting his or her turn	0	1	2	3
18. Interrupts or intrudes in on others' conversations and/or activities	0	1	2	3
19. Argues with adults	0	1	2	3
20. Loses temper	0	1	2	3
21. Actively defies or refuses to go along with adults' requests or rules	0	1	2	3
22. Deliberately annoys people	0	1	2	3
23. Blames others for his or her mistakes or misbehaviors	0	1	2	3
24. Is touchy or easily annoyed by others	0	1	2	3
25. Is angry or resentful	0	1	2	3
26. Is spiteful and wants to get even	0	1	2	3
27. Bullies, threatens, or intimidates others	0	1	2	3
28. Starts physical fights	0	1	2	3
29. Lies to get out of trouble or to avoid obligations (ie,"cons" others)	0	1	2	3

Adapted from the Vanderbilt Rating Scales developed by Mark L. Wolraich, MD, Revised – 1102

Algorithm for Treatment

Patient diagnosed with Attention Deficit Hyperactivity Disorder (based on DSM criteria)

Ages 4-5 (preschool):
Start with behavioral therapy or parent training program
+
If ongoing moderate to severe symptoms consider adding on methylphenidate
(Although dextroamphetamine is the only medication FDA approved for children <6yrs old, methylphenidate has the most data for safety and efficacy in this patient population)

Ages 6-11 (school age):
Start with behavioral therapy and/or FDA approved medications for ADHD [stronger evidence for stimulants vs Strattera, Intuniv (Guanfacine ER), or Kapvay (Clonidine ER)]

Ages 12-18 (teenagers):
Start with FDA approved medications for ADHD (see chart on next page)
+
May prescribe behavior therapy, depending on circumstances

Until symptoms are stabilized, follow up at least every 3-4 weeks. Give parents follow-up parent and school Vanderbilt forms to complete before each follow up visit to help track the efficacy of treatments that have been initiated. At each follow up, assess treatment efficacy, side effects (ex: monitor height, weight, blood pressure, pulse, sleep, appetite, mood, tics), and presence of other comorbid conditions.

Considerations when using stimulant medications:

- Stimulants are the first-line treatment for ADHD
- In children 6yrs and older, start with methylphenidate and then if intolerable side effects or treatment failure (on at least 40mg total daily), switch to mixed salts of amphetamine options. If ineffective or serious side effects, consider 4-6wk trial of non-stimulant or referral to child/adolescent psychiatry.
- Use stimulants with caution in patients with drug/alcohol dependence or possible misuse/diversion. Consider starting with non-stimulant options in this population.
- The most common side effects are decrease in appetite and/or difficulty sleeping. Some patients may also have behavioral rebound when the medication wears off.
- For initial trial of medications, consider starting with short acting formulations and then when dose is stabilized and tolerated, switching to extended release for ease of administration
- Consider cardiac clearance first in any patients with family history of arrhythmias or sudden death or if patient is symptomatic (ex: chest pain, shortness of breath, palpitations, suspected hypertrophic obstructive cardiomyopathy)

Commonly Used Medications

Medication	Starting dose	Max daily dose	Dosing	Features
Methylphenidate - Ritalin - Methylin	5mg	60mg	Start with 5mg (2.5mg for Focalin) 1-2 times per day and increase by 5mg each week until good control is achieved	Type: Stimulant, immediate release (IR) Duration of effect: 3-4 hrs Has most evidence for safety/efficacy in preschool-aged children
Methylphenidate sustained/extended release - Concerta - Ritalin SR - Ritalin LA - Metadate CD (30% IR/70% ER) - Metadate ER	Concerta – 18mg	Concerta – 72mg	Concerta – Start with 18mg each morning and increase by 18mg each week until good control is achieved	Type: Stimulant, sustained/ extended release Duration of effect: 4-8 hrs Ritalin LA capsules can be sprinkled onto food for patients that cannot swallow pills
	Ritalin SR and LA – 20mg	Ritalin SR and LA – 60mg	Ritalin SR and LA – Start with 20mg daily and increase by 20mg each week until good control is achieved (may need second dose or methylphenidate IR dose in the afternoon)	
	Metadate CD – 20mg Metadate ER – 10mg	Metadate CD – 60mg Metadate ER – 60mg	Metadate CD/ER – Can increase by 10mg increments weekly until good control is achieved	
Dexmethylphenidate - **Focalin**	2.5mg	20mg	Start with 2.5mg 1-2 times per day and increase by 2.5mg-5mg each week until good control is achieved	Type: Stimulant, immediate release (IR) Duration of effect: 3-5 hrs
Dexmethylphenidate extended release - **Focalin XR**	5mg	30mg	Start with 5mg each morning and increase 5mg each week until good control is achieved	Type: Stimulant, extended release (XR) Duration of effect: 9-12 hrs

Mixed salts of amphetamine - **Adderall**	5mg	40mg	Start with 5mg 1-2 times per day and increase by 5mg each week until good control is achieved	Type: Stimulant, immediate release (IR) Duration of effect: 4-6 hrs Do not use in patients with Cardiac disease
Mixed salts of amphetamine extended release - **Adderall XR**	10mg	40mg	Start with 10mg each morning and increase by 10mg each week until good control is achieved	Type: Stimulant, extended release Duration of effect: 8-12 hrs Do not use in patients with Cardiac disease
Dextroamphetamine - **Dexedrine**	5mg	40mg	Start with 5mg 1-2 times per day and increase by 5mg each week until good control is achieved	Type: Stimulant, immediate release (IR) Duration of effect: 4-5 hrs
Dextroamphetamine extended release - **Dexedrine Spansule**	5mg	45mg	Start with 5mg each morning and increase by 5mg each week until good control is achieved	Type: Stimulant, extended release Duration of effect: 8-10 hrs
Lisdexamfetamine - **Vyvanse**	20mg	70mg	Start with 20mg I the morning and increase in 10-20mg intervals every 3-7 days until good control is achieved	Type: Stimulant, extended release Duration of effect: Prodrug of dextroamphetamine and so it's only active if ingested (pts cannot misuse medication by injecting it for a "high") Also effective for binge eating disorder Available in chewable tablets
Atomoxetine - **Strattera**	0.5mg/kg/day	1.4mg/kg/day	Start as a single daily dose, 0.5mg/kg/day for the first week then increase to single daily dose of 1.4mg/kg/day (Capsule forms: 10mg, 18mg, 25mg, 40mg, 60mg, 80mg, 100mg)	Type: Selective norepinephrine reuptake inhibitor Plasma concentrations may be increased by drugs that inhibit CYP450 2D6 (ex: Paroxetine, Fluoxetine) so doses should be reduced by half in coadministration

Guanfacine - **Tenex (IR)** – not FDA approved for ADHD - **Intuniv (ER)**	IR: 0.5mg QHS (if pt ≤45kg) or 1mg QHS (if pt >45kg)	IR: 2mg/day (if 27-40.5kg), 3mg/day (if 40.5-45kg), 4mg/day (if >45kg)	IR: Titrate up every 3 to 4 days in 0.5mg/day increments, can dose up to four times a day	Type: Alpha 2A agonist Can be used either monotherapy or as adjunct therapy with stimulant for partial responders
	ER: 1mg QHS	ER: 4mg (ages 6-12) or 7mg (ages 13-17)	ER: Start with 1mg once per day and increase by 1mg per week until adequate clinical response or max dose is achieved	Can cause dose related hypotension For ADHD can take a few weeks to see maximum benefits
Clonidine - **Catapres (IR) –** not FDA approved for ADHD - **Kapvay (ER)**	IR: 0.05mg QHS (if pt ≤45kg) or 0.1mg QHS (if pt >45kg)	IR: 0.2mg/day (if 27-40.5kg), 0.3mg/day (if 40.5-45kg), 0.4mg/day (if >45kg)	IR: Can increase in 0.05-0.1mg increments (depending on weight) every 3-7 days, up to four times a day	Type: Alpha 2A agonist Can be used either monotherapy or as adjunct therapy with stimulant for partial responders
	ER: 0.1mg QHS	ER: 0.4mg	ER: Start with 0.1mg QHS and increase by 0.1mg per week with doses divided and larger dose at bedtime	Can cause dose related hypotension

Possible strategies for common side effects:

- Decreased appetite/weight loss – Decrease dose, dose after meals, offer frequent snacks, take drug holidays on weekends/breaks, try another stimulant medication, try a non-stimulant medication
- Insomnia (most common with stimulants) – Dose earlier in the day, reduce dose, reduce or hold afternoon booster dose, restrict or eliminate other sources of caffeine/sugar
- Somnolence (most common with non-stimulants) – Dose earlier or later (depending on if somnolence is in the evening or morning), reduce dose, try another non-stimulant medication or if using Tenex, switch to Intuniv, which is less sedating
- Wearing off too soon – Increase dose, move AM dose to later in the day, add afternoon dose, try sustained release stimulant

Consider referral to psychiatry if:

- Considering meds in child <6yrs old
- Medically complicated or multiple co- morbid psychiatric conditions
- Medication or comorbid condition contraindicating stimulant (ex: substance abuse, eating disorder)
- Previous failed medication trials
- Any time you're considering medication or treatment outside of your comfort zone

OTHER RESOURCES/CONSIDERATIONS

For additional resources, check out the following:

- American Academy of Pediatrics (AAP) – Caring for Children with ADHD: A Resource Toolkit for Clinicians

- ADHD MedCalc – Easy to use online tool to help providers calculate equivalent doses between different stimulant medications
    - http://www.adhdmedcalc.com

- CHOC Children's Individualized Education Program (IEP) Tips for Parents of Children with ADHD*

- CHOC Children's Tips for Parents of Children with ADHD*

- CHOC Children's ADHD Assessment Toolkit*

- Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD)
    - http://www.chadd.org

*Documents found at the end of this ADHD Toolkit document for your reference.

Additional References

C.A. Childress, Psy.D.

Goldblatt E.S. (2007) 18 Tips for Getting Quality Special Education for Your Child. Disability Rights California www.disabilityrightsca.org/pubs.513001.htm

Wayne RESA Parent Advisory Committee (2003) Parent Handbook

Individualized Education Program (IEP)/504 Plan

What is an IEP (Individualized Education Program)?

An IEP is a program that addresses a child's special education experience at school. Special education services must be provided even for undocumented children who need these supports. The school district is required to provide these accommodations/services at no cost to parents.

Who is eligible for an IEP?

In order to qualify for an IEP, your child generally must be between the ages of 3 and 18, and have one of 13 specific disabilities listed in a federal special education law (IDEA). The identified disability must also be affecting their school performance and/or their ability to learn in a general education setting.

Eligible conditions can include specific learning disabilities, emotional disabilities, cognitive delays, intellectual disability, and certain medical/health conditions (including ADHD).

If they are found not to be eligible for an IEP, they may still qualify for a 504 Plan. A 504 Plan is another way for a child to receive accommodations, support, or services to support their learning.

How do I start the process?

A written request should be sent to your child's school principal or director of special education services. It should ask the school district to evaluate whether your child is eligible for special education services (see example on next page).

What types of services or placements are available?

There are many options, and your school will be able to tell you what is offered there. Some examples include:

- Modifications to general education classroom (e.g. sitting at the front of the classroom, being given written notes/handouts to follow along with during classes, etc.)
- Resource Specialist Program (RSP) – your child will be pulled out of the general education classroom for a particular subject(s) to receive more individualized help
- Special Day Class (SDC) – a special education classroom environment for those with more extensive educational needs
- Additional services/therapies (e.g., speech therapy (ST), occupational therapy (OT), physical therapy (PT), nursing assistance, psychological counseling, etc.)

Who attends the IEP meeting?

- All individuals who help develop the IEP: parents, child (if older), school administrator, general education and/or special education teachers, nurse, and/or school psychologist
- Other people who sometimes attend are those who provide special services like ST, OT or PT
- An interpreter, provided by the district, if parents do not speak English
- Parents can also bring a representative to the meeting, such as a relative, family friend, the child's therapist/counselor, an educational advocate, or someone who has independently evaluated their child, such as a neuropsychologist. Parents can also bring an attorney, however, the school district must be notified of this 5 days prior to the meeting.

Tips for Parents

- Assessments should be completed and an IEP developed within 60 calendar days of receipt of parents' written consent for an evaluation
- Discuss any concerns your child's current teachers have prior to IEP meetings
- Bring any copies of any prior assessments and/or medical/psychiatric diagnoses
- Actively participate in the meeting (e.g. bring a list of questions, discuss status of goals)
- An IEP is a legal document. If you are uncertain about anything or disagree with the findings or recommendations, you **do not** have to sign the IEP
    - The parts of the IEP that you DO agree to can be started while other aspects can be rewritten or appealed
    - Parents can take a copy of the written IEP home before signing to review it first
    - The school district must offer to translate the written IEP into the language of the child's parents, by request, if parents do not speak English
- Parents can request an IEP meeting any time it is appropriate to review or change the plan
- It is generally NOT recommended to bring an attorney to an IEP meeting unless an issue is already in dispute

Sample Letter – Request for Assessment (fill in bold portions)

(Your Name)
(Your Address)
(Your Telephone Number)

(Date)

(Name of Principal, Special Education Director and/or Program Specialist)

(Address)

Re: **(Your Child's Name/Date of Birth)**

Dear **(X),**

I am writing to refer my child, **(Name)**, for a full assessment to determine if **s/he** is eligible for special education services and support. **S/He** is **(age)** years old and attends **(name of school)**. I am requesting my child be evaluated for an IEP in the areas of **(speech, academics, behavior, etc.)** for the following reasons: **(e.g. s/he is not clear when speaking, s/he is failing several classes, s/he has a medical/psychiatric condition that is impacting learning)**.

I also request that my child be evaluated under Section 504 of the Rehabilitation Act of 1973 if applicable.

I would like an assessment plan authorizing this evaluation within 15 days after receipt of this request. I am also requesting that the IEP meeting be set within the time required by law so that we may discuss the results and programing my child required. Please ensure that I get copies of the assessment reports one week before the IEP meeting.

Sincerely,

(Signature)

(Your Name)