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# Overview of ADHD

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# Inattention

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Six or more symptoms for children  $\leq 16$ , or five or more for adolescents  $\geq 17$ ; symptoms have been present for at least 6 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 (such as 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

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Six or more symptoms for children  $\leq 16$ , or five or more for adolescents  $\geq 17$ ; symptoms have been present for at least 6 months, and they are inappropriate for 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)

# Classic ADHD

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Characterized by pervasive difficulties with attention, concentration, sitting still, that occur in multiple social contexts (home, school, social activities outside home & school), and is noticed in childhood (before the age of 7 in DSM-IV; symptoms present before age 12 in DSM-V).

In addition, the following conditions must be met:

- Several inattentive or hyperactive-impulsive symptoms were present [though not necessarily brought to clinical attention] before age 12 years.
- Several symptoms are present in two or more setting, (such as at home, school or work; with friends or relatives; 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.

# Diagnostic Considerations

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More likely to be diagnosed, and to be diagnosed early:

- Male sex
- Hyperactive symptoms (more common in boys)
- Competitive/well-resourced school
- Family with higher educational background / higher educational and career aspirations
- Native English speakers
- Family more familiar negotiating medical and educational bureaucracy

# Screening Scales

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- The Adult ADHD Self-Report Scale (ASRS) v 1.1 is useful for screening and for documenting current symptom severity.  
It is widely available online, including in self-scoring formats:
  - <https://psychology-tools.com/test/adult-adhd-self-report-scale>
- For children and adolescents, the Conners Comprehensive Behavior Rating Scales™ (including parent and teacher assessments) are recommended, though they are proprietary
  - <https://www.wpspublish.com/conners-cbrs-conners-comprehensive-behavior-rating-scales>
- Prevalence is 2-7% of children and adolescents, 3-5% of adults.

# stimulants

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## METHYLPHENIDATE TYPE

methylphenidate IR (Ritalin®)

methylphenidate ER (Concerta®, others)

Quillivant XR (liquid ER form)

mixed IR/ER: Metadate® (30/70), etc.

Jornay PM®: super-XR methylphenidate  
taken at bedtime

dexmethylphenidate IR and ER (Focalin®)

## AMPHETAMINE TYPE

mixed amphetamine salts IR or ER  
(Adderall®)

dextroamphetamine (Dexadrine®)

lisdextamfetamine (Vyvanse®)

# bupropion

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- Dopamine reuptake inhibitor (DRI), minimal serotonin reuptake inhibition (50:1)
- Boxed warning for seizure risk in patients with eating disorders
- Seizure risk increases slightly with IR formulation (use XL if possible!) and above 450 mg daily (check med interactions)
- Benefits also for depression (not for anxiety), smoking cessation, weight loss, possibly for stimulant use disorder
- May be most useful in patients with comorbidities



# atomoxetine

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- Norepinephrine reuptake inhibitor (NRI)
- Not super effective for ADHD
- No other FDA indications
- Efficacy is low
- May be most useful in patients who have contraindications to stimulants, bupropion, or  $\alpha_2$ -agonists

# $\alpha_2$ agonists

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## **GUANFACINE**

XR-formulation (Intuniv®) FDA-indicated for ADHD in adolescents

IR also effective but hard to maintain BID dosing

May be especially useful for patients with anxiety or hx of substance use disorder

Sedating in the first 2 weeks

## **CLONIDINE**

IR and CR formulations, as well as a patch

Not FDA-indicated, but data supports efficacy

Higher side effect burden than guanfacine: more sedation, more rebound hypertension

# modafinil / armodafinil

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- Mechanism unclear: weak dopamine reuptake inhibitor, thought to have indirect effects on orexin and histamine receptors, leading to wakefulness
- Modest benefit for ADHD
- Not FDA indicated

# tricyclic antidepressants

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- Some data for TCAs such as nortriptyline with strong NRI effect
- Modest benefit for ADHD
- Not FDA indicated
- Be aware that this may explain history of a better response on TCA or NRI, or could consider TCA for someone with ADHD not responding well to the other standard meds

# cognitive-behavioral therapy

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- Harder to access but can be helpful
- Boards answer is that stimulants are the most effective treatment, but the stimulant trials have been better funded than purely behavioral trials

# other treatments / differential diagnosis

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- Evaluate for sleep apnea
- Consider iron deficiency in children with low ferritin levels – rare but known and reversible cause of attentional deficits. [Konofal, Eric, et al. 2004 Iron Deficiency in Children With Attention-Deficit/Hyperactivity Disorder. Archives of Pediatrics & Adolescent Medicine 158(12):1113-1115.]
- Anxiety or depression can present as problems with attention/concentration and can interact in mutually exacerbating ways with comorbid ADHD
- It's surprisingly hard to prove an effect of sugar, caffeine, or other dietary factors – they show on parental ratings, but hard to discern with double-blinded clinician or teacher ratings

# Monitoring and Safety Questions

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Increasing challenge: teen or young adult presents with cannabis use, challenges in school. Says they do better on exams when they borrow a friend's Adderall

- Cardiac monitoring: not indicated for general patient. Consider if there is a significant cardiac history
- Stimulants tend to decrease appetite and therefore decrease growth in children. Consider “drug holidays”. Chronic stimulant use may still reduce overall projected height by up to an inch
- Prescription stimulants and later substance misuse: kids and adults with ADHD are already at greater risk of substance use disorders. No evidence that prescription stimulants worsen this, and may help
- Importance of meeting developmental milestones
- Low self-esteem

# Clinical Examples: ADHD and cannabis

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Increasing challenge: teen or young adult presents with cannabis use, challenges in school. Says they do better on exams when they borrow a friend's Adderall

- Studies show that stopping cannabis improves test scores and objective performance measures while adding stimulants only improves patients' self-assessment → advise pt to stop the cannabis



# Thank You

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