ADHD

• Attention Deficit Hyperactivity Disorder •

Attention Deficit Hyperactivity Disorder (ADHD) occurs in roughly 9.4% of children, with boys being more likely diagnosed (12.9%) than girls (5.6%)[1].

DSM-5 criteria for ADHD

≥5 symptoms per category **in adults**, ≥6 months; age of onset ≤12 years; noticeable in ≥2 settings; impact on social, academic or occupational functioning; not better accounted for by another mental disorder

Inattention

(a) Lack of attention to details / careless mistakes
(b) Difficulty sustaining attention
(c) Does not seem to listen
(d) Does not follow through on instructions (easily side-tracked)
(e) Difficulty organising tasks and activities
(f) Avoids sustained mental effort
(g) Loses and misplaces objects
(h) Easily distracted
(i) Forgetful in daily activities

Hyperactivity / Impulsivity

(a) Fidgetiness (hand or feet) / squirms in seat
(b) Leaves seat frequently
(c) Running about / feeling restless
(d) Excessively loud or noisy
(e) Always "on the go"
(f) Talks excessively
(g) Blurts out answers
(h) Difficulty waiting his or her turn
(i) Tends to act without thinking

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Screening

CoPPCAP recommends pediatric providers consider use of multi-informant rating scales to, diagnose ADHD, track response to intervention 2-3 weeks after starting medication, to guide dose changes, and routinely every 6 months even when stable medication dose is

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achieved to monitor symptoms. Additionally, when tracking response to treatment intervention, consider use of the same screening form used at baseline prior to diagnosis.

Screener.DxCategory	Screener.Name	Screener.Acronym	Screener.Description
ADHD	NICHQ Vanderbilt Assessment Scale Diagnostic Rating Scale 6-12 years Caregiver Report Teacher Report	Vanderbilt ⇒ English ⇒ Spanish	The Vanderbilt Assessment Scale is a 55-question assessment tool that reviews symptoms of ADHD. It also looks for other conditions such as conduct disorder, oppositional-defiant disorder, anxiety, and depression.
ADHD	ADHD Rating Scale IV - Preschool Version 3-5 years Caregiver Report	ADHD Rating Scale IV - Preschool Version ⇒ English	The ADHD Rating Scale-IV obtains parent ratings regarding the frequency of each ADHD symptom based on DSM-IV criteria. Parents are asked to determine symptomatic frequency that describes the child's home behavior over the previous 6 months. The ADHD Rating Scale-IV is completed independently by the parent and scored by a clinician. The scale consists of 2 subscales: inattention (9 items) and hyperactivity-impulsivity (9 items). If 3 or more items are skipped, the clinician should use extreme caution in interpreting the scale. Results from this rating scale alone should not be used to make a diagnosis.
ADHD	Swanson, Nolan, and Pelham (SNAP) Questionnaire – IV 3-5 years Caregiver Report Teacher Report	SNAP-IV ⇒ English ⇒ Spanish	The SNAP-IV 18-item scale is an abbreviated version of the Swanson, Nolan, and Pelham (SNAP) Questionnaire (Swanson, 1992;Swanson et al., 1983). Items from the DSM-IV criteria for attention-deficit/hyperactivity disorder (ADHD) are included for the two subsets of symptoms: Inattention (items 1–9) and Hyperactivity/Impulsivity (items 10–18).
ADHD	Adult ADHD Self-Report Scale ----	ASRS ⇒ English	The Adult ADHD Self-Report Scale (ASRS v1.1) is an 18-item self-report questionnaire developed by the World Health Organization (WHO) and Harvard researchers to screen

	18+ years Self-Report	⇒ Spanish	for and monitor ADHD symptoms in adults (18+). It is based on DSM-IV/DSM-5 criteria and is widely used in clinical and research settings.
ADHD	Connors, 3rd Edition 6 – 18 years Caregiver Report Teacher Report Self-Report	Conners 3 ⇒ $$$	The Conners 3 assesses cognitive, behavioral, and emotional problems, with a focus on ADHD and comorbid disorders– providing teacher, parent, and student perspectives.
ADHD	Child Behavior Checklist 6 – 18 years Caregiver Report Teacher Report Self-Report	CBCL ⇒ $$$	The Child Behavior Checklist (CBCL) is a common tool for assessing depression in children, as well as ADHD, and other emotional and behavioral problems.
ADHD	Behavior Assessment System for Children, 3rd Edition 2 – 21 years Caregiver Report Teacher Report Self-Report	BASC 3 ⇒ $$$	BASC-3 applies a triangulation method for gathering information. It analyzes a child's behavior from three perspectives: self, teacher, and parent.

Diagnosis

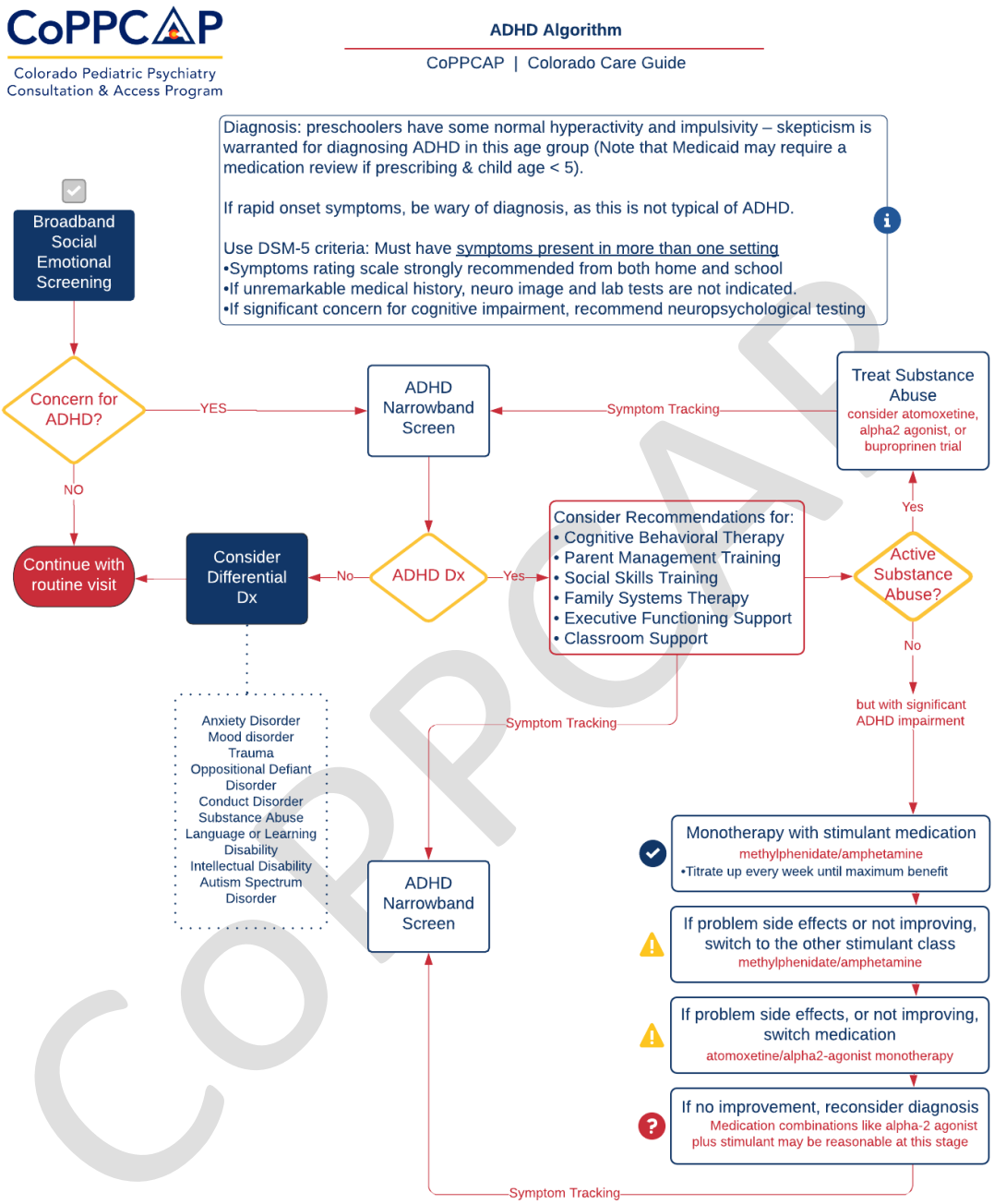
- 314.01 (F90.2) Combined presentation: If both Criterion A1 (inattention) and Criterion A2 (hyperactivity-impulsivity) are met for the past 6 months.
- 314.00 (F90.0) Predominantly inattentive presentation: If Criterion A1 (inattention) is met but Criterion A2 (hyperactivity-impulsivity) is not met for the past 6 months.
- 314.01 (F90.1) Predominantly hyperactive/impulsive presentation: If Criterion A2 (hyperactivity-impulsivity) is met but Criterion A1 (inattention) is not met over 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 only minor functional impairments.
- 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.



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Treatment Modalities

Pharmacological: when ADHD symptoms are moderate or severe, treatments using an evidenced-based therapy and medication in combination provide the best efficacy. Download a free ADHD medication guide!

- Prior to initiation, evaluate for cardiovascular, eating, or seizure disorder.
    - *Cardiovascular*: If patient or family has a cardiac history of sudden death, and/or cardiac symptoms patient should obtain more intensive cardiac workup before starting pharmacologic treatment.
    - *Eating*: If patient has an active eating disorder stimulants and bupropion should be avoided; selective NE reuptake inhibitors should be used with caution.
    - *Seizure*: If a patient has a poorly controlled seizure disorder, consult neurology given the risk for psychotropic medications to lower the seizure threshold.
- First Line: Stimulants
    - *Methylphenidate derivatives* (includes Ritalin, Focalin, Concerta, etc): FDA approved starting at age 6yo.
        - AAP 2019 guidelines recommend a methylphenidate derivative first line for preschool, elementary, middle, and high school students given improved tolerability including less appetite suppression, irritability, BP increase compared to amphetamine derivatives.
            - Preschool: use immediate release product. Start at low dose, with slow titration.
            - All other age groups: can start with extended-release product to minimize the need for doses at school.
    - *Amphetamine derivatives* (includes Adderall, Vyvanse, etc): some are FDA approved starting at age 3 yo (i.e. Adderall).
        - AAP 2019 guidelines recommend an amphetamine derivative as a second line option among those that do not respond to or tolerate a methylphenidate derivative.
        - common side effects include decreased appetite, headache, insomnia, GI discomfort

        - less common side effects: irritability, activation, heart problems, seizures, worsened tics
    - Second Line: Non-stimulants (FDA approved starting at age 6yo).
        - Alpha-2 adrenergic agonists: Guanfacine, Clonidine
            - can be used as monotherapy or in combination with a stimulant; more helpful for hyperactive symptoms
            - side effects include sedation (clonidine > guanfacine), constipation, hypotension (clonidine > guanfacine), dizziness, rebound hypertension if stopped suddenly
        - Selective NE reuptake inhibitors: Atomoxetine, Viloxazine
            - used as monotherapy; more helpful for inattentive symptoms
            - side effects include: nausea, vomiting, diarrhea, stomach pain, sleepiness, increased BP/HR
            - can rarely cause more serious side effects including: suicidal thoughts or actions, liver problems, seizures, heart problems
    - Other medications to consider
        - note that **none** of the following are FDA approved for ADHD
            - Bupropion
            - Natural Therapies (e.g. Omega3, attentional OTC "medications")
    - Routine pharmacotherapy monitoring: blood pressure, heart rate, height, weight, sleep. It is advisable to follow up every 2 weeks until target dose achieved, then every 3 months.

Therapy: When ADHD symptoms are mild, patients and families may consider therapy alone. However, evidence-based research supports the use of combined intervention with both therapy and medication for optimal outcomes. When recommending therapy services, consider the following evidence-based approaches:

- **Cognitive Behavioral Therapy (CBT)**
- **Parent Management Training**
- **Social Skills Training**
- **Family Systems Therapy**
- **Executive Function Coaching**

  - Emerging research supports executive function (EF) interventions in children, especially those with neurodevelopmental disorders. Implicit interventions (e.g., mindfulness, strategy teaching) are more effective and engaging than explicit task-based training. While most studies focus on college-age youth, evidence for younger children is growing (Takacs & Kassai, 2019).
  - Limitations include lack of insurance coverage, absence of a single credentialing body for EF coaches, and limited long-term data.
  - A recommended resource is **Unstuck And On Target**, a school-based EF intervention developed by Dr. Laura Anthony and colleagues. It has demonstrated improvements in cognitive flexibility, goal setting, and coping skills in neurodivergent children (Anthony et al., 2021).

- **Digital Therapeutics / Video Games**
  - In 2020, the FDA approved **EndeavorRx**, a prescription-only, game-based treatment indicated to improve attention function as measured by computer-based testing for children ages 8–12 years. Initial studies showed improvement in parent-reported inattention symptoms but did not demonstrate changes in hyperactivity or other ADHD rating scales. Importantly, impact on school functioning was not directly studied (Kollins et al., 2020).
- **Emerging Treatments**
  - **External Trigeminal Nerve Stimulation (eTNS)** is a non-invasive, FDA-approved treatment for pediatric ADHD. A small randomized controlled trial showed medium effect size improvements in ADHD symptoms after four weeks of nightly use, with mild side effects such as headache and fatigue (McGough et al., 2019). Larger trials are underway to assess long-term efficacy and cognitive outcomes.

Educational Interventions: recommend families contact the child's school district to learn more about the availability and process to obtain the following educational interventions, or visit http://www.cde.state.co.us/cdesped/iep

- IEP: Federal law (i.e. it's federally funded) entitles children/teens with specific disabilities to obtain a free & appropriate public education which may include services including Psychological services, PT, OT, and Speech amongst others.

ADHD falls under the "Other Health Impairment" classification. Obtaining an IEP is usually an involved process.

- 504 Plans: typically provide for classroom accommodations (i.e. extended testing time, student placement near teacher, etc) and may be easier to obtain than an IEP. 504 plans are managed by the school (principal, guidance counselor, teacher, etc) and need to be rewritten each year.

Free Resources:

AMERICAN ACADEMY OF CHILD & ADOLESCENT PSYCHIATRY
WWW.AACAP.ORG

CHADD®
CHILDREN AND ADULTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

NIH National Institutes of Health

Children's Hospital Colorado

ADHDchildhood

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