Indian Academy of Pediatrics (IAP)

STANDARD TREATMENT GUIDELINES 2022

Attention Deficit Hyperactivity Disorder

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Attention Deficit Hyperactivity Disorder

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Introduction

- ☑ Attention deficit hyperactivity disorder (ADHD) is a chronic condition with genetic and neurobiological basis which manifests in early childhood with symptoms of hyperactivity, impulsivity, and/or inattention affecting the emotional, academic, and social functioning of the child.
- ☑ Prevalence of ADHD in a community-based sample in India in school children was around 11%.

Clinical Features

Characteristics of symptoms	*Hyperactivity–impulsivity*	*Inattention*
Age of onset	Observed by 4 years of age	Observed by 8–9 years of age
Peak	Hyperactivity peaks by 7–8 years and then declines, Impulsivity persists through adulthood	Persists throughout adulthood

Contd…

Clinical Features

Contd…

Characteristics of symptoms	***Hyperactivity–impulsivity***	***Inattention***
Symptoms:		
☑ Should occur often ☑ Be present in more than one setting (e.g., school and home) ☑ Persist for at least 6 months ☑ Be present before the age of 12 years ☑ Impair function in academic, social, or occupational activities ☑ Be excessive for the developmental level of the child ☑ Have negatively-impacted academic, social, and/or occupational functioning ☑ In patients aged <17 years, ≥6 symptoms are necessary; in those aged ≥17 years, ≥5 symptoms are necessary ☑ Other causes of core symptoms are ruled out (psychiatric/physical/neurological illness)	☑ Excess fidgetiness ☑ Has difficulty staying seated where required (school and work) ☑ Be on the go, in a constant motion ☑ Run around or climb in situations when it is not appropriate ☑ Difficulty in playing/doing an activity quietly ☑ Excessive talking ☑ Blurt out answers, interrupting the questioner ☑ Difficulty waiting for the turn ☑ Interrupt conversations/games/activities	☑ Fail to pay close attention to details/make careless mistakes in schoolwork ☑ Difficulty in focusing on tasks or play ☑ Appears not to listen, even when spoken to directly ☑ Fails to follow through on instructions/finish schoolwork/chores ☑ Trouble organizing tasks/activities/belongings ☑ Avoids/dislikes tasks that require focused mental effort such as homework ☑ Loses items needed for tasks or activities such as toys, school assignments, pencils, and books ☑ Easily distracted ☑ Forgetfulness in daily activities (homework and chores)

Clinical Subtypes

- ☑ *Combined type (ADHD):* 60–70% cases
- ☑ *Predominantly inattention (ADD):* 25–30% cases
- ☑ *Predominantly hyperactive impulsive (HI):* 8–10%

Comprehensive Assessment

It is needed to minimize underdiagnosis and overdiagnosis of ADHD and it includes the following:

A. *Confirm core symptoms of hyperactivity, impulsivity, inattention*	B. *Exclude differential diagnosis*	C. *Identify comorbid conditions*
Look for: 1. Presence 2. Persistence 3. Pervasiveness 4. Functional complications ☑ By thorough history, general examination, and neurological examination ☑ Parent and teacher rating scales—Vanderbilt/ Connors ☑ Fulfil DSM 5 criteria	☑ *Developmental variations*—normal variation and low/high IQ ☑ *Neurological conditions*—autism spectrum disorder, learning disability, seizure disorder, neurodevelopmental syndromes (fragile X and fetal alcohol), communication disorders ☑ *Emotional disorders*—depression, anxiety, mood, oppositional defiant disorder, conduct disorder, bipolar, and obsessive compulsive disorder ☑ *Psychosocial problems*—child abuse, neglect, and bullying ☑ *Medical conditions*—hearing/ vision impairment, sleep disorder, anemia, substance abuse, and thyroid disorders	☑ Oppositional defiant disorder—50% ☑ Conduct disorder—25% ☑ Learning disability—70% ☑ Autism spectrum disorder ☑ Anxiety, depression ☑ Tics and obsessive compulsive disorder

Management

Plan under the guidance of developmental pediatrician/pediatric neurologist/pediatric psychiatrist.

Principles of Management

- ☑ Early diagnosis and appropriate multidisciplinary intervention will improve prognosis
- ☑ Aim to improve functional outcomes, e.g., decrease activity levels, improve social and academic functioning
- ☑ Management of comorbid conditions

Modalities of Management

- ☑ Behavioral interventions—the first-line treatment for preschool children (below 6 years) with ADHD
- ☑ Medication—with or without behavioral interventions are the first-line therapy for school-aged children (≥6 years) and adolescents who meet the diagnostic criteria for ADHD
- ☑ Educational interventions
- ☑ Combination of the above

Suggested Effective Behavioral Techniques for Children with ADHD

Positive reinforcement	***Time-out***	***Response cost***	***Token economy***
Providing rewards or privileges according to good behavior	Remove any factors that could reinforce problem or unwanted behavior	Withdrawing rewards or privileges after unwanted or problem behavior	Combination of positive reinforcement and response cost
After completing house duties and assignments, the child can watch TV or play on the computer	After displaying rude behavior, e.g., hitting a brother, the child has to sit in the corner of the room for a period of time, e.g., 5 minutes	If homework was not completed, the child loses free-time privileges	Child earns stars for completed assignments and loses stars for untoward behavior, e.g., getting out of his or her seat
Age appropriate screen time can be permitted.			

General Principles in Psychopharmacologic Management of ADHD

- ☑ An accurate diagnosis of ADHD should be documented before starting medications.
- ☑ A child below 6–7 years of age should not be started on medications unless the child is extremely accident prone and that needs to be after careful evaluation by an expert in the field.
- ☑ Before starting medication—the family should be educated about the purpose and goals of the medications, that they are not curative, but will help manage symptoms, and may be required for many years. The medication should not be forced on any patient.
- ☑ Other management tools such as psychoeducation strategies and behavioral therapy should be instituted along the pharmacologic treatment.
- ☑ Treatment should be started with a low dose and increased slowly till the symptoms improve, maximum dose is achieved or toxicity limits dose increase.

Common Medications for ADHD

Types of drug	***Name of the drug***	***Dosage forms***	***Duration of action***	***Dosage***	***Maximum dose***
Stimulant	Methyl-phenidate	5 mg, 10 mg, and 20 mg tablets	3–5 hours	Start with 5 mg/day for 1st day, then 5 mg twice a day	*<25 kg:* 35 mg; *>25 kg:* 60 mg.
Stimulant	Delayed onset methyl-phenidate	5 mg, 10 mg, and 20 mg tablets	3–8 hours	5 mg/day twice daily dosing, Increments of 20 mg/day, every 3–7 days	*<50 kg:* 60 mg *>50 kg:* 100 mg
Stimulant	Methyl-phenidate	18 mg and 36 mg tablets	12 hours	☑ Initiate with 18 mg daily once in the morning ☑ Children 6–12 years of age 18 mg/day, 18–54 mg/day ☑ Adolescents 13–17 years of age, 18 mg/day, 18–72 mg/day not to exceed 2 mg/kg/day	*Children 6–12 years:* 54 mg/day *13–17 years:* 72 mg/day not to exceed 2 mg/kg/day
Non-stimulant	Atomo-xetine	10, 18, and 25 mg	10–12 hours	Start with 0.5 mg/kg/day for minimum 3 days and increase to 1.2 mg/kg/day after at least 3 days	100 mg/day or 1.4 mg/kg, whichever is lesser

Prognosis

- ☑ *Persistence of ADHD at age 25 years:*
  - *Meeting full criteria for ADHD:* ~15%
  - *ADHD in partial remission:* ~65%
- ☑ Symptoms of inattention persist more and show slower decline.

Further Reading

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- ☑ Substance Abuse and Mental Health Services Administration. DSM-5 Changes: Implications for Child Serious Emotional Disturbance [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); 2016.
- ☑ Venkata JA, Panicker AS. Prevalence of attention deficit hyperactivity disorder in primary school children. Indian J Psychiatry. 2013;55(4):338-42.