

ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS



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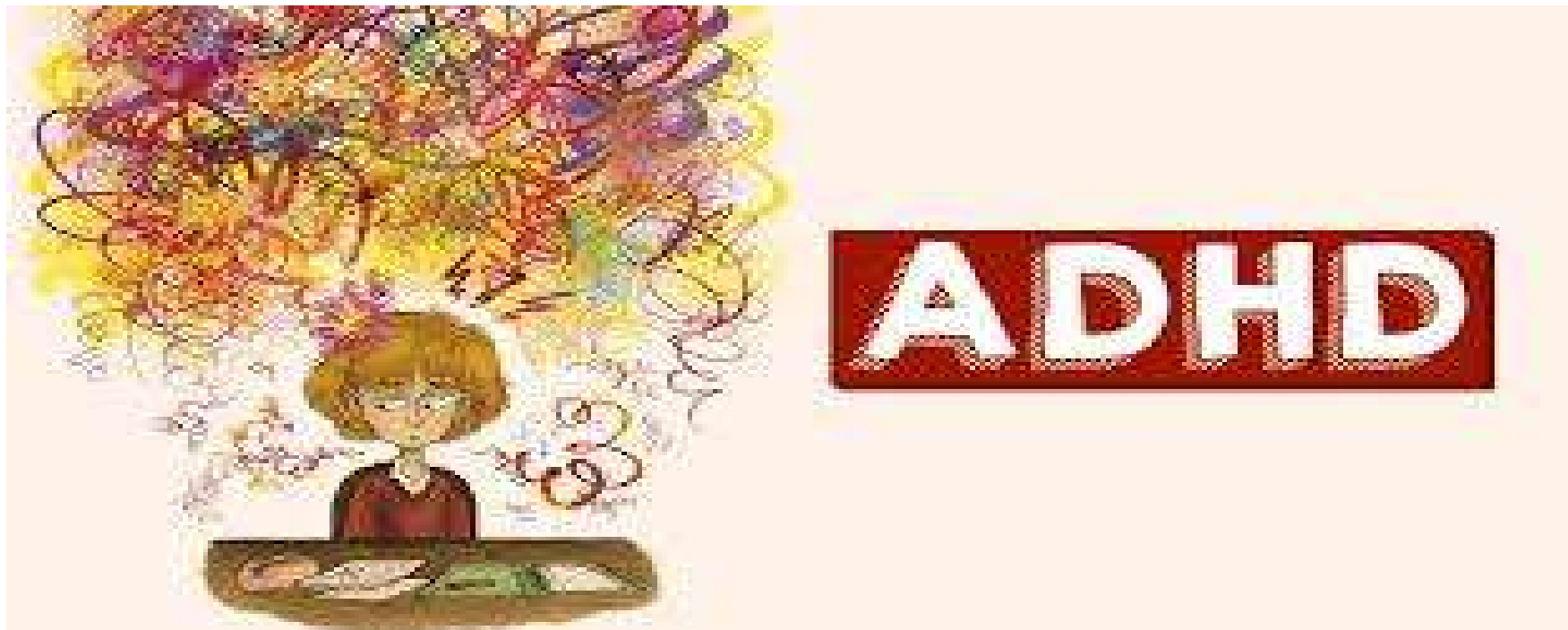
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INTRODUCTION

— Attention deficit hyperactivity disorder (ADHD) is a disorder that manifests in childhood with symptoms of hyperactivity, impulsivity, and/or inattention. ○

The symptoms affect cognitive, academic, ○
behavioral, emotional, and social functioning ○



CLINICAL FEATURES

Core symptoms ○

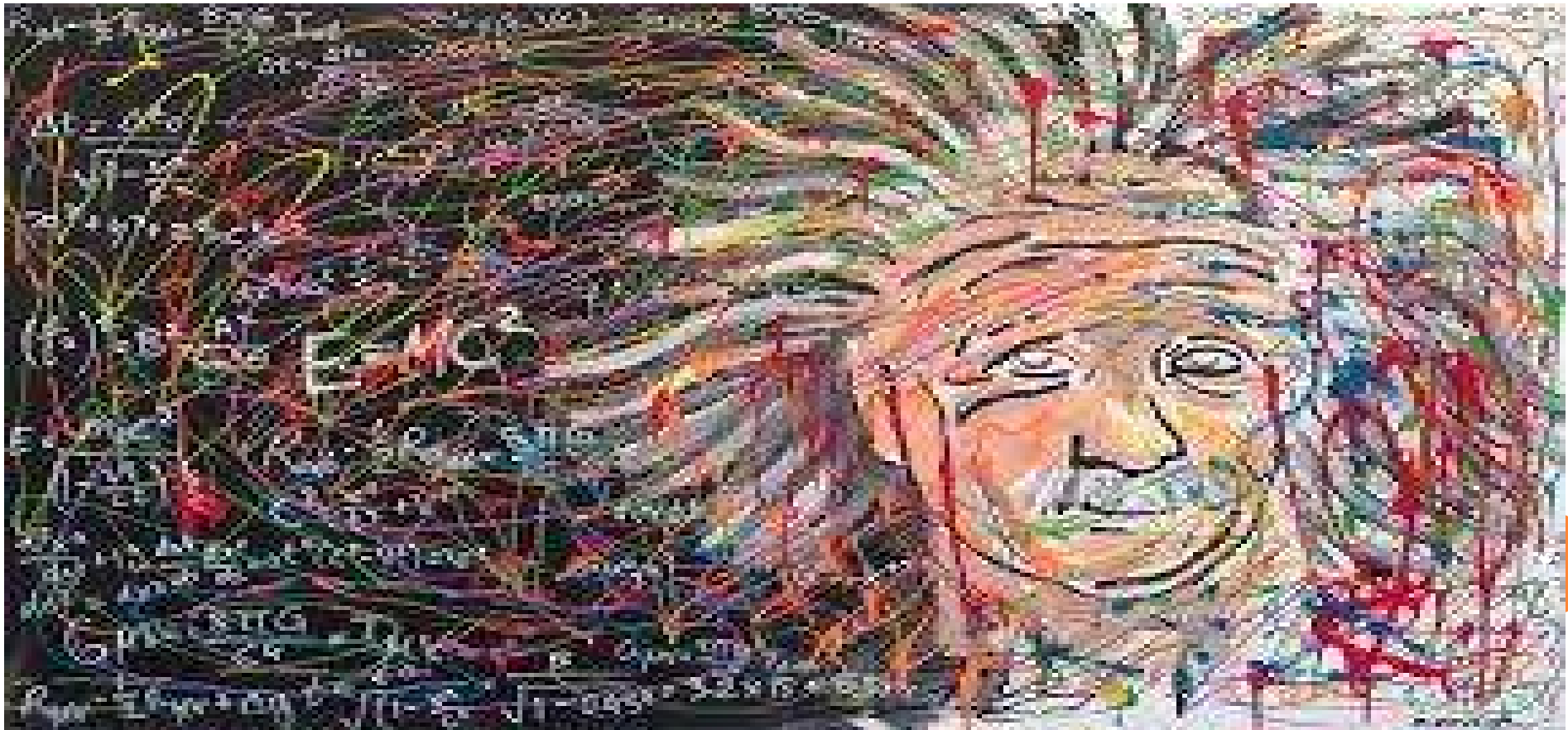
Hyperactivity and impulsivity ○

Difficult to keep up with, seeming to always be "on the go" ○

- Excessive talking ○
- Difficulty waiting turns ○
- Blurting out answers too quickly ○
- Excessive "fidgetiness" (eg, tapping the hands or feet, squirming in seat) ○



- Difficulty remaining **seated** when sitting is required ○
(eg, at school, work)●
- Feelings of **restlessness** (in adolescents) or ○
inappropriate running around or climbing in younger children● ○
- Difficulty playing **quietly** ○
interruption or intrusion of others ○



four years of age
increase during the next
three to four years, peaking in severity when the
child is seven to
eight years of age

After seven to eight years of age, hyperactive
symptoms begin to decline; by the adolescent
years

In contrast, impulsive symptoms
usually persist throughout life.

Symptoms of impulsivity in adolescents
include substance use, risky sexual behavior, and
impaired driving

INATTENTION

Failure to provide **close attention** to detail, careless mistakes

Difficulty maintaining **attention** in **play, school, or home** activities●

- Seems **not to listen**, even when directly addressed
- **Fails to follow through** (eg, homework, chores, etc)
- Difficulty **organizing** tasks, activities, and belongings
- Avoids tasks that require consistent **mental effort**



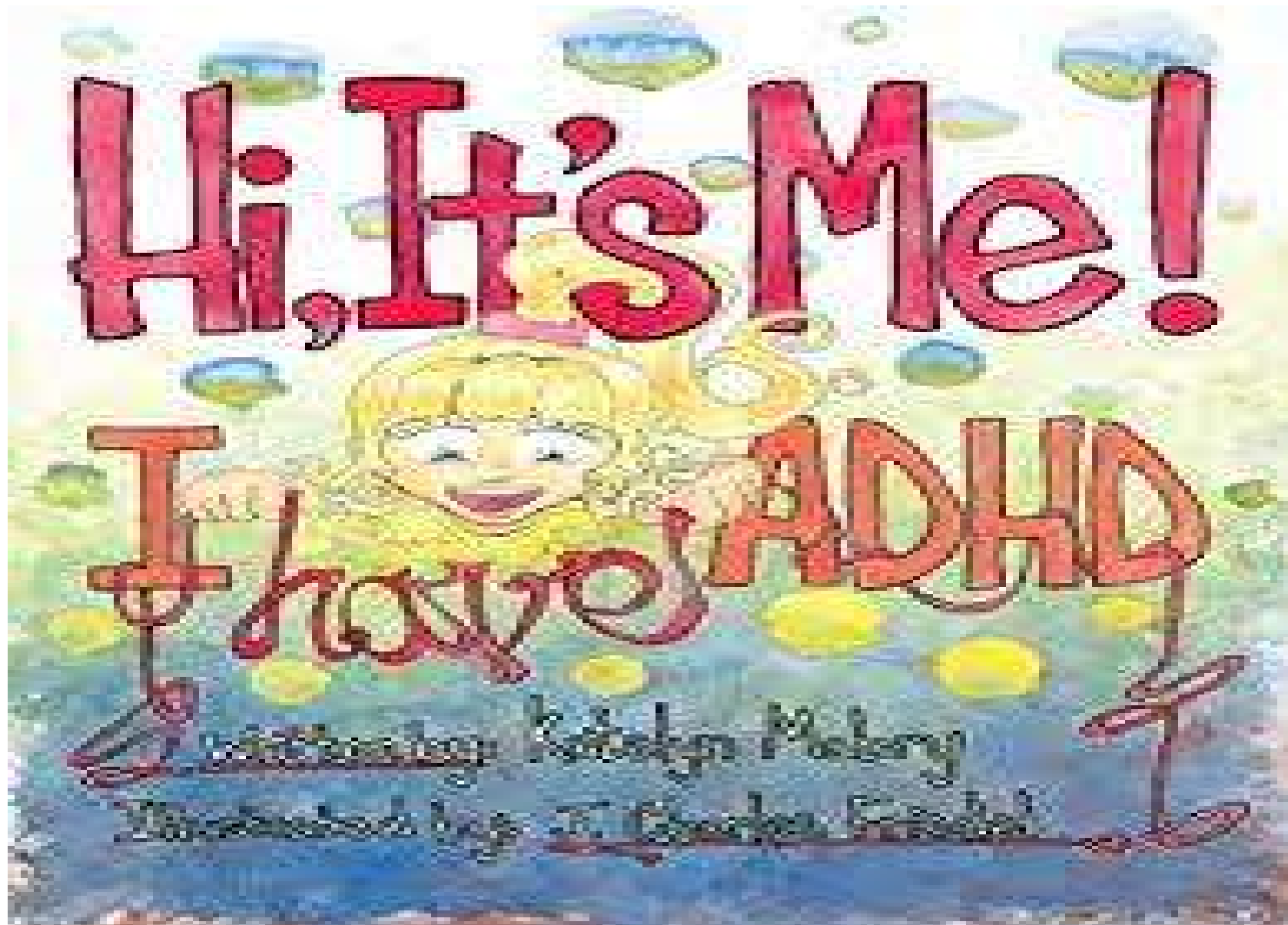
Loses objects required for tasks or activities (eg, school books, sports equipment, etc)●

- Easily **distracted** by irrelevant stimuli
- **Forgetfulness** in routine activities (eg, homework, chores, etc)

The symptoms of inattention typically are not apparent until the child is **eight to nine years** of age



TO MEET CRITERIA FOR ADHD, CORE
SYMPTOMS **MUST IMPAIR FUNCTION** IN
ACADEMIC, SOCIAL, OR OCCUPATIONAL
ACTIVITIES



EVALUATION

Differential diagnosis for ADHD

- Intellectual disability ○
- Learning disability ○
- Language disorder ○
- Autism spectrum disorder ○
- Neurodevelopmental syndromes ○
- Seizure disorders ○
- Anxiety disorder ○
- Oppositional defiant disorder ○
- Conduct disorder ○
- Mood disorder ○
- Lead poisoning ○
- Endocrine disorder ○
- Substance abuse ○
- IDA ○
- Sleep disorder ○



Reevaluation of children with ADHD is ○ warranted whenever symptoms worsen or new symptoms emerge because the differential diagnosis of ADHD is extensive and comorbidity is common



Medical evaluation

History – Important aspects of the medical history include prenatal exposures (eg, tobacco, drugs, alcohol), perinatal complications or infections, central nervous system infection, head trauma, recurrent otitis media, and medications

Family history

a strong genetic component.

family

stress, and problematic relationships,

sleep

disturbances



PHYSICAL EXAMINATION

The physical examination of most children with ADHD is **normal**.

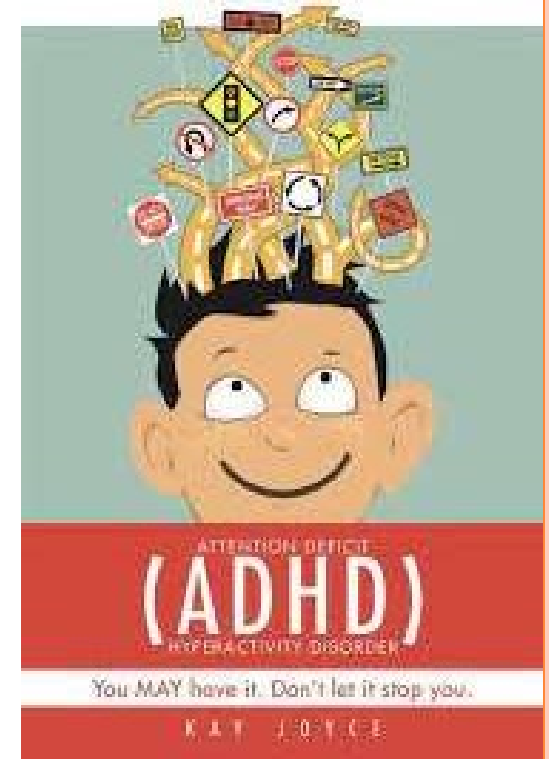
Measurement of **height, weight, head circumference**, and vital signs

Observation of the child's **communication skills**

Assessment of dysmorphic **features** and neurocutaneous abnormalities

A complete **neurologic** examination

Observation of the **child's behavior in the office setting**



ADHD-specific scales – ADHD-specific rating scales (also called narrow-band scales) focus directly on the symptoms of ADHD and can be used to establish the presence of the **core** symptoms

ADHD Rating Scale IV have been validated in preschool-aged children (ie, age **four through five** years)

The **ADHD Rating Scale-5** has been validated in children age **5 through 17** years

The **Vanderbilt** rating scales were not designed for preschool children but can be used in **children ≥ 4** years because the DSM-5/DSM 5-TR behavioral criteria for ADHD are the same for children age **4** through **17** years

EDUCATIONAL EVALUATION

Four to six months



Evaluation for coexisting disorders

Learning disabilities

Tics

Developmental coordination disorder

Depression and suicidality

Language disorder

Anxiety

ASD

Substance use

Sleep disorders

Oppositional defiant disorder
(ODD)

Conduct disorder

Oppositional defiant disorder ○

(ODD) is characterized by a persistent pattern of ○
angry or
irritable mood, argumentative or defiant ○
behavior,
and Ancillary evaluation for select patients

Conduct disorder is characterized by a ○
persistent pattern of aggression toward people or ○
animals,
destruction of property, deceitfulness or theft, ○
and serious
violation of rules that affects ability to function in ○
social, school, or work settings

Diagnostic criteria

For **children < 17 years**, the DSM-5-TR ○
diagnosis of ADHD requires●

≥ 6 symptoms of hyperactivity and ○
impulsivity or ≥ 6 symptoms of
inattention.

For adolescents ≥ 17 years and adults, ≥ 5 ○
symptoms of hyperactivity and ○
impulsivity or ≥ 5 symptoms of
inattention are required ○



The symptoms of hyperactivity/impulsivity or inattention must:

- **Occur often**
- Be present in **more than one setting** (eg, school and home)
- Persist for at least **six months**
- Be present **before the age of 12** years
- Impair function** in academic, social, or occupational activities
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- **Be excessive for** the developmental level of the child

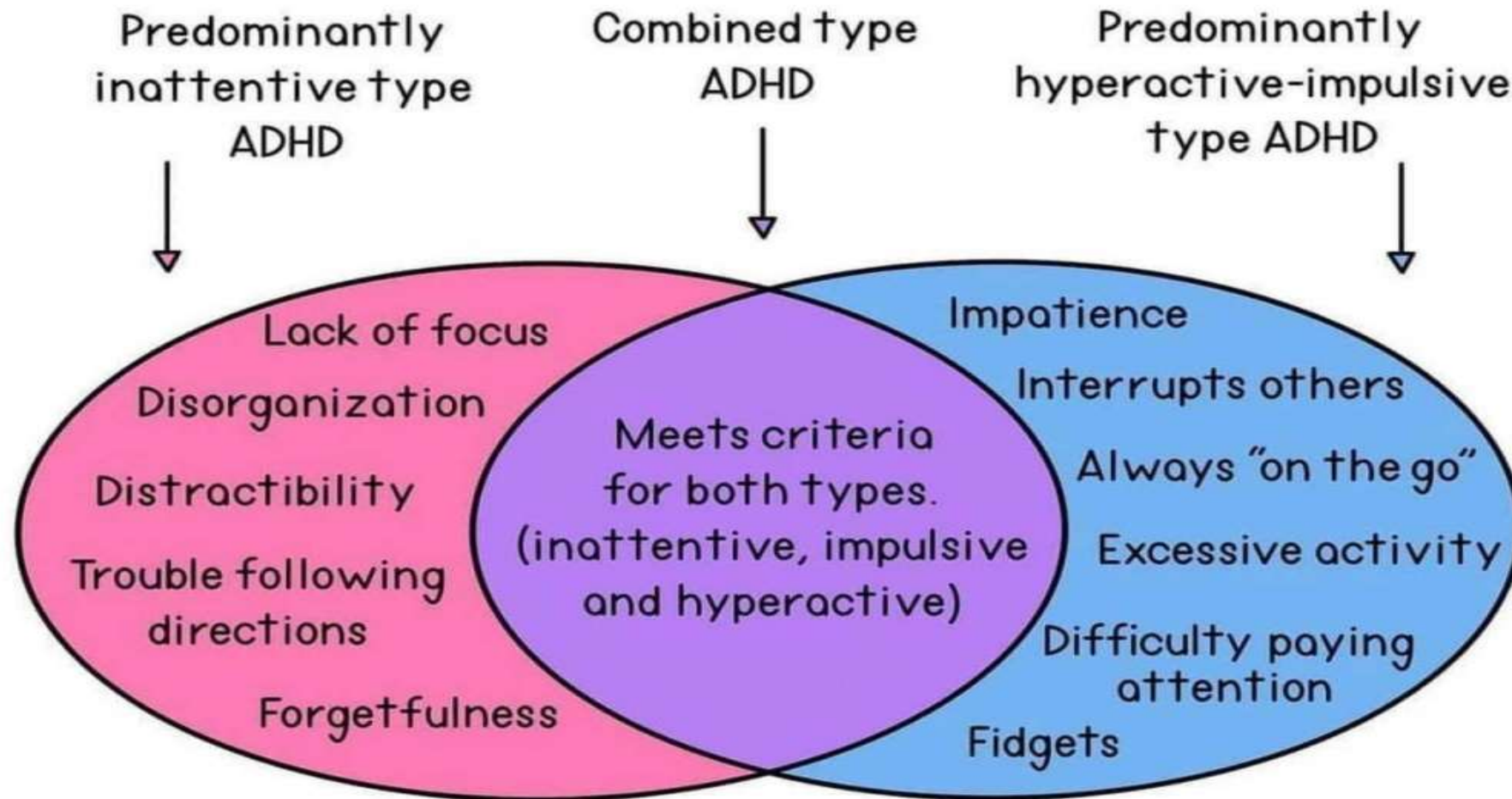
Positive or negative response to stimulant medication cannot be used to confirm or refute the diagnosis of ADHD

Stimulant medications improve behavior in children with ADHD, children with conditions other than ADHD (eg, learning disabilities, depression), and normal control children



Types of ADHD

@what.is.mental.illness



ADHD SUBTYPE

Predominantly inattentive ○

DSM-5-TR criteria require ≥ 6 ○
symptoms of inattention for
children < 17 years; ○

≥ 5 symptoms for adolescents ≥ 17 ○
years and adults and ○

< 6 symptoms of ○
hyperactivity/impulsivity

○




PREDOMINANTLY HYPERACTIVE-IMPULSIVE

DSM-5-TR criteria **require** ≥ 6 symptoms of \circ
hyperactivity impulsivity for children < 17 years; \circ
 ≥ 5 symptoms for \circ
adolescents ≥ 17 years and adults
and < 6 symptoms of \circ
inattention



COMBINED

DSM-5-TR criteria require ≥ 6 symptoms of 
inattention and

≥ 6 symptoms of hyperactivity-impulsivity for 
children

< 17 years; 

≥ 5 symptoms in each category for adolescents 

≥ 17 years and adults 

OVERVIEW OF TREATMENT AND PROGNOSIS

ADHD is a chronic condition and should be managed in a manner
similar to other chronic conditions of childhood

Involvement of patient and caregivers



TARGET GOALS

Treatment of coexisting conditions ○

As many as one-third of children with ADHD have one or more coexisting condition

sleep problems

✓ weeks treatment

three- and six-month follow-up,



For preschool children (age 3 through 5 years) who meet the diagnostic criteria for ADHD, we recommend **behavior therapy** rather than medication as the initial therapy



EXAMPLES OF SITUATIONS IN
WHICH IT MAY BE WARRANTED TO ADD MEDICATION TO
BEHAVIORAL THERAPY
FOR PRESCHOOL CHILDREN INCLUDE

Expulsion (or threatened expulsion) ○
from preschool or daycare

● Significant **risk of injury** to other ○
children or caregivers

● Strong **family history of ADHD** ○

● Suspected or established central ○
nervous system

ADHD symptoms **interfere** with ○
other needed therapiesinjury

for children < 6 years old : ○

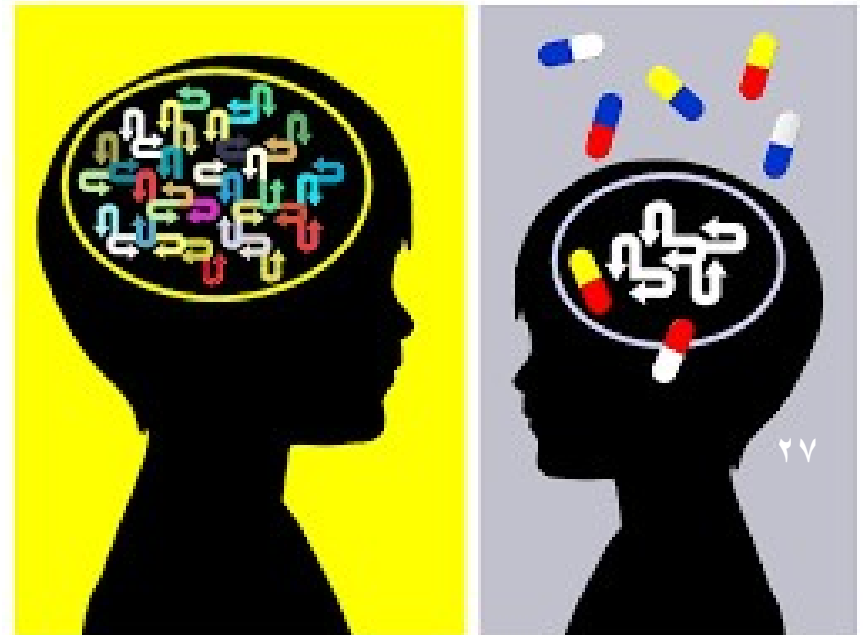
methylphenidate rather than amphetamines or ○
nonstimulant medications

For most school-aged children and adolescents (≥ 6 years of age) who meet the diagnostic criteria for ADHD and specific criteria for

medication, we suggest initial treatment with **stimulant medication**

combined with behavioral therapy to and

target outcomes.
Monitoring **weekly** during the titration stage to every **three or six months** during the maintenance phase



RESPONSE TO TREATMENT

objective measurement of reduction in core symptoms and/or improvement in target goals ○

Behavioral interventions

UNPROVEN INTERVENTIONS

Physical activity

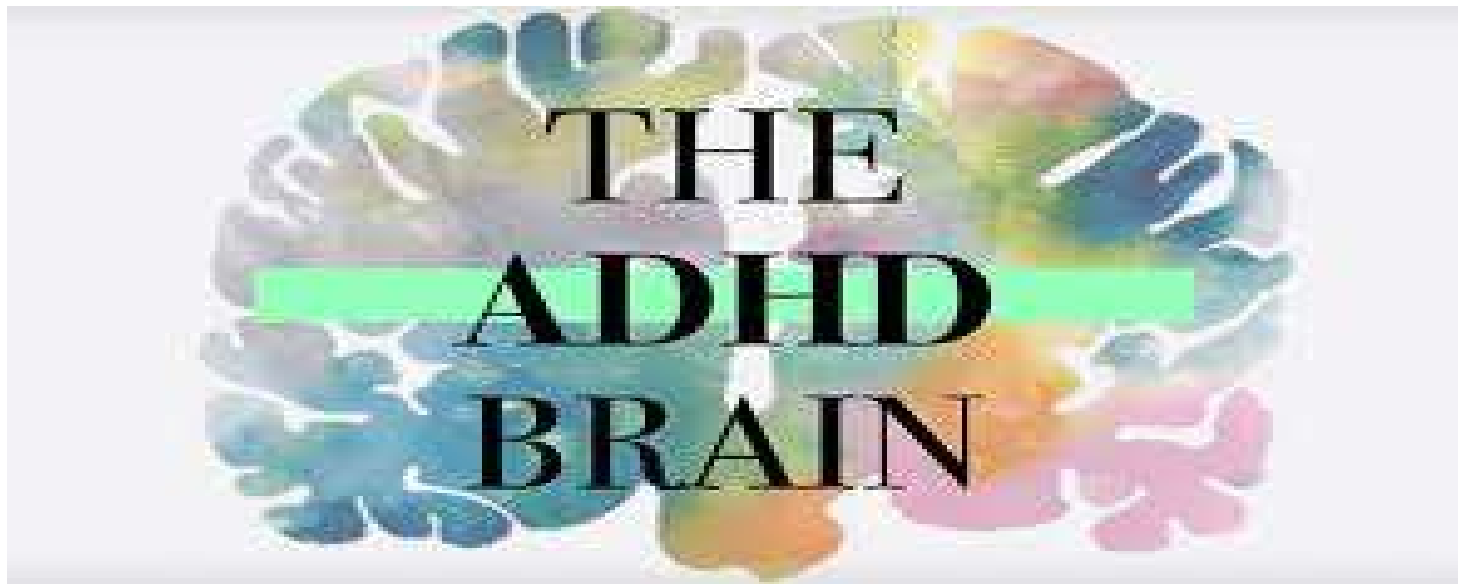
— At least 60 minutes of moderate to vigorous activity per day is recommended for all children ≥ 6 years of age, not just those with ADHD

Elimination diets ○

— We generally do not suggest elimination diets ○
for children with ADHD



Long-term follow-up (**six to eight years**) of the Multimodal Treatment study of children with ADHD (MTA) study cohort suggests that functioning during adolescence is predicted by the initial clinical presentation (including severity of symptoms and comorbid conduct problems), intellect, social advantage, and the strength of ADHD response to any mode of treatment



PERSISTENCE OF SYMPTOMS

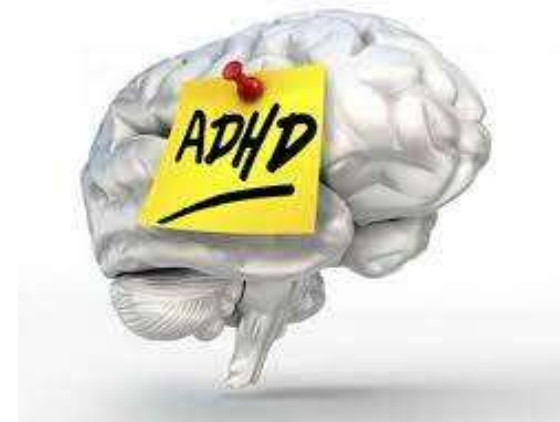
ADHD symptoms fluctuate between childhood and young adulthood with intermittent periods of

remission



In prospective follow-up, 558 participants in the Multimodal Treatment Study of ADHD had eight assessments over time ranging from 2 to 16 years after baseline

. At the study endpoint (mean age of 15.1 years), 64 percent had fluctuating periods of remission and recurrence (full or partial), 16 percent had sustained partial remission, 9 percent had sustained remission, and 11 percent had persistent ADHD (met ADHD criteria at all follow-ups)



In another prospective study, 71 percent of 88 children
diagnosed with ADHD at a tertiary care clinic before age seven
continued to meet criteria for ADHD four to nine years later
(median interval seven years) [14]. Among the 26 children who
no longer met criteria for ADHD, new diagnoses included autism
spectrum disorder (10 children), learning disorder (3 children),
and anxiety disorder (2 children), highlighting the importance of
monitoring young children diagnosed with ADHD for symptoms
of other neurodevelopmental and behavioral disorders.

Injury and self-injury ○

Education

Substance use

Employment

Antisocial personality



In an observational study, **54 percent** of 147 ADHD patients self-reported having **been arrested** at least **once by age 21 years** (compared with 37 percent of 73 community controls); **24 percent** of ADHD patients had been arrested for misdemeanors (compared with 11 percent of controls) and 27 percent for felony (compared with 11 percent of controls)

