



Overview

Attention-deficit hyperactivity disorder (ADHD) is a neurobehavioral condition that interferes with a person's ability to pay attention and exercise age-appropriate inhibition. A person with ADHD is so inattentive or impulsively hyperactive – or both – that daily functioning at home, school and work is compromised. ADHD usually becomes apparent in children during preschool and early school years.

Who Gets It

ADHD affects 3 percent to 5 percent of all American children (approximately 2 million children). While typically diagnosed in children, adults can also have the condition. Adults with ADHD may be unaware they have the disorder, yet know they have difficulty getting organized and staying focused. Everyday tasks such as waking up, getting dressed, organizing for the day's work, getting to work on time or being productive on the job can be major challenges for the ADHD adult.

Symptoms

ADHD's principal characteristics are inattention, hyperactivity, and impulsivity. Children may exhibit one or all of these three behavioral subtypes of ADHD: predominantly hyperactive-impulsive type (without significant inattention); predominantly inattentive type (without significant hyperactive-impulsive behavior) sometimes called ADD—an outdated term formerly used for the entire disorder; and combined type (that displays both inattentive and hyperactive-impulsive symptoms).

ADHD symptoms appear over many months, often with impulsiveness and hyperactivity preceding those of inattention. Different symptoms may appear in different settings, depending on the demands the situation poses for the child's self-control.

Symptoms of Hyperactivity-Impulsive Type:

- Restlessness, often fidgeting with hands or feet, or squirming while seated
- Running, climbing, or leaving a seat in situations where sitting or quiet behavior is expected
- Blurting out answers before hearing the whole question
- Difficulty waiting in line or taking turns

Symptoms of Inattention Type:

- Ignores details; makes careless mistakes
- Has trouble sustaining attention in work or play
- Does not seem to listen when directly addressed
- Does not follow through on instructions; fails to finish
- Difficulty organizing tasks and activities
- Avoids activities requiring sustained mental effort
- Loses needed items
- Forgetful of daily activities

Symptoms of Combined Type (most children and adolescents with ADHD have this type):

- Demonstrates symptoms of both inattention and hyperactivity-impulsivity (six or more symptoms of both)
- Has symptoms that have persisted for at least six months

How It Is Diagnosed

Because symptoms may vary across settings, ADHD can be difficult to diagnose. A diagnosis of ADHD is based on the number, persistence, and history of symptomatic behaviors, and the degree to which they impede a child's performance in more than one setting. Parents or teachers may be the first to notice possible signs of ADHD.

Diagnosis of adult ADHD is based on symptoms, impairments, and history. Adults with ADHD might experience symptoms such as lack of focus, disorganization, restlessness, difficulty finishing projects, and/or losing things. They may also have difficulties at work, at home, or with personal relationships. Also, adults diagnosed with ADHD must have had symptoms prior to age 7 that continued for at least 6 months.

Diagnosis should be made by a professional with training in ADHD or mental disorders.

Physical examinations are given to exclude such things as undetected seizures, temporal lobe seizures and middle ear infections; psychological tests can rule out conditions such as specific learning disabilities, anxiety, or affective disorders. Ideally, reviews are made of school records, which include evaluations by teachers and others about a child's behavior based on rating scales. Parents and others who know the child well may be interviewed. Intelligence and learning tests may be administered. The specialist uses all this information to make a diagnosis of ADHD.

Causes and Related Research

ADHD is a neurological disorder and research indicates that it may be due to alterations in the brain and the way it functions. The causes of these differences are not entirely known, but family and twin studies reveal ADHD is genetic. Between 10 percent and 35 percent of children with ADHD have a close relative with ADHD, and nearly half of parents who had ADHD as a child also have a child with the disorder. Studies in families of children with ADHD show that relatives are at high risk for ADHD, other psychiatric disorders, and learning disabilities.

ADHD and the Brain

Some of the changes in the brain that researchers have found associated with ADHD are in the:

- Pre-frontal cortex, which is involved in behavior regulation or "executive function" such as time management, judgment, impulse control, organization, planning, and critical thought.
- Limbic system, which controls emotion, moods, irritability, negativity, and the ability to comprehend emotions.
- Reticular Activating System, which affects attention, arousal, and impulse control.

Treatments and Side Effects

There is no "cure" for ADHD and no single treatment for every child. Although ADHD is very treatable, children with the disorder seldom outgrow it. They usually develop adaptive measures to compensate for their condition. Current ADHD treatments focus on symptom management with medications, behavior modification or both.

Medications

Stimulants, which come in long- and short-acting form, are considered the most effective drug for the condition and are deemed safe when used properly. Stimulants primarily work on the dopamine system in the brain. There is also no evidence of dependence or increased risk of drug abuse with stimulants. Side effects of stimulants are usually related to the dosage, which can be altered. Higher doses produce more side effects, with the most common being decreased appetite, insomnia, increased anxiety and/or irritability. Some children also report mild stomachaches and headaches.

A new FDA-approved medication, Strattera (atomoxetine), works on norepinephrine, a different neurotransmitter system. Anti-depressants are also sometimes used as a second line of treatment for ADHD.

Behavior Modification

Behavior modification can help to improve a child's behavior and his/her relationships by developing his/her interactions with other children and adults.

The "ABCs" of behavior modification involve identifying:

Antecedents - things that initiate or precede 'behaviors'

Behaviors - undesirable behaviors

Consequences - things that occur as a result of 'behaviors'

Parents are taught how to change the antecedents by changing the way they verbally instruct their child. They also learn how to alter the consequences of undesirable behavior by changing the way they react to their child's obedience or disobedience. This teaches the child more appropriate behavior patterns that can ultimately help in all facets of his/her life.

Combination Therapy

Combination therapy for ADHD involves using two or more types of treatment (combination of medication and behavioral methods, or community care resources) at the same time. Combination therapy has been shown to be very effective in treating children with ADHD.

Whatever the treatment plan, collaboration and cooperation between child, family members, physicians, and school personnel is vital.

For more information

on the latest advances
in the diagnosis and treatment
of ADHD and other serious
brain disorders by
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