



# Attention Deficit Hyperactivity Disorder

## Overview

Attention-deficit/hyperactivity disorder (ADHD) is a brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development.

- **Inattention** means a person wanders off task, lacks persistence, has difficulty sustaining focus, and is disorganized; and these problems are not due to defiance or lack of comprehension.
- **Hyperactivity** means a person seems to move about constantly, including in situations in which it is not appropriate; or excessively fidgets, taps, or talks. In adults, it may be extreme restlessness or wearing others out with constant activity.
- **Impulsivity** means a person makes hasty actions that occur in the moment without first thinking about them and that may have high potential for harm; or a desire for immediate rewards or inability to delay gratification. An impulsive person may be socially intrusive and excessively interrupt others or make important decisions without considering the long-term consequences.

## Signs and Symptoms

Inattention and hyperactivity/impulsivity are the key behaviors of ADHD. Some people with ADHD only have problems with one of the behaviors, while others have both inattention and hyperactivity-impulsivity. Most children have the combined type of ADHD.

In preschool, the most common ADHD symptom is hyperactivity.

It is normal to have some inattention, unfocused motor activity and impulsivity, but for people with ADHD, these behaviors:

- are more severe
- occur more often
- interfere with or reduce the quality of how they functions socially, at school, or in a job

## Inattention

People with symptoms of inattention may often:

- Overlook or miss details, make careless mistakes in schoolwork, at work, or during other activities
- Have problems sustaining attention in tasks or play, including conversations, lectures, or lengthy reading
- Not seem to listen when spoken to directly
- Not follow through on instructions and fail to finish schoolwork, chores, or duties in the workplace or start tasks but quickly lose focus and get easily sidetracked
- Have problems organizing tasks and activities, such as what to do in sequence, keeping materials and belongings in order, having messy work and poor time management, and failing to meet deadlines
- Avoid or dislike tasks that require sustained mental effort, such as schoolwork or homework, or for teens and older adults, preparing reports, completing forms or reviewing lengthy papers
- Lose things necessary for tasks or activities, such as school supplies, pencils, books, tools, wallets, keys, paperwork, eyeglasses, and cell phones
- Be easily distracted by unrelated thoughts or stimuli
- Be forgetful in daily activities, such as chores, errands, returning calls, and keeping appointments

## Hyperactivity-Impulsivity

People with symptoms of hyperactivity-impulsivity may often:

- Fidget and squirm in their seats
- Leave their seats in situations when staying seated is expected, such as in the classroom or in the office
- Run or dash around or climb in situations where it is inappropriate or, in teens and adults, often feel restless
- Be unable to play or engage in hobbies quietly
- Be constantly in motion or “on the go,” or act as if “driven by a motor”
- Talk nonstop
- Blur out an answer before a question has been completed, finish other people’s sentences, or speak without waiting for a turn in conversation
- Have trouble waiting his or her turn
- Interrupt or intrude on others, for example in conversations, games, or activities

Diagnosis of ADHD requires a comprehensive evaluation by a licensed clinician, such as a pediatrician, psychologist, or psychiatrist with expertise in ADHD. For a person to receive a diagnosis of ADHD, the symptoms of inattention and/or hyperactivity-impulsivity must be chronic or long-lasting, impair the person’s functioning, and cause the person to fall behind normal development for his or her age. The doctor will also ensure that any ADHD symptoms are not due to another medical or psychiatric condition. Most children with ADHD receive a diagnosis during the elementary school years. For an adolescent or adult to receive a diagnosis of ADHD, the symptoms need to have been present prior to age 12.

ADHD symptoms can appear as early as between the ages of 3 and 6 and can continue through adolescence and adulthood. Symptoms of ADHD can be mistaken for emotional or disciplinary problems or missed entirely in quiet, well-behaved children, leading to a delay in diagnosis.

Adults with undiagnosed ADHD may have a history of poor academic performance, problems at work, or difficult or failed relationships.

ADHD symptoms can change over time as a person ages. In young children with ADHD, hyperactivity-impulsivity is the most predominant symptom. As a child reaches elementary school, the symptom of inattention may become more prominent and cause the child to struggle academically. In adolescence, hyperactivity seems to lessen and may show more often as feelings of restlessness or fidgeting, but inattention and impulsivity may remain. Many adolescents with ADHD also struggle with relationships and antisocial behaviors. Inattention, restlessness, and impulsivity tend to persist into adulthood.

## Risk Factors

Scientists are not sure what causes ADHD. Like many other illnesses, a number of factors can contribute to ADHD, such as:

- Genes
- Cigarette smoking, alcohol use, or drug use during pregnancy
- Exposure to environmental toxins during pregnancy
- Exposure to environmental toxins, such as high levels of lead, at a young age
- Low birth weight
- Brain injuries

ADHD is more common in males than females, and females with ADHD are more likely to have problems primarily with inattention. Other conditions, such as learning disabilities, anxiety disorder, conduct disorder, depression, and substance abuse, are common in people with ADHD.

## Treatment and Therapies

While there is no cure for ADHD, currently available treatments can help reduce symptoms and improve functioning. Treatments include medication, psychotherapy, education or training, or a combination of treatments.

### Medication

For many people, ADHD medications reduce hyperactivity and impulsivity and improve their ability to focus, work, and learn. Medication also may improve physical coordination. Sometimes several different medications or dosages must be tried before finding the right one that works for a particular person. Anyone taking medications must be monitored closely and carefully by their prescribing doctor.

**Stimulants.** The most common type of medication used for treating ADHD is called a “stimulant.” Although it may seem unusual to treat ADHD with a medication that is considered a stimulant, it works because it increases the brain chemicals dopamine and norepinephrine, which play essential roles in thinking and attention.

Under medical supervision, stimulant medications are considered safe. However, there are risks and side effects, especially when misused or taken in excess of the prescribed dose. For example, stimulants can raise blood pressure and heart rate and increase anxiety. Therefore, a person with other health problems, including high blood pressure, seizures, heart disease, glaucoma, liver or kidney disease, or an anxiety disorder should tell their doctor before taking a stimulant.

Talk with a doctor if you see any of these side effects while taking stimulants:

- decreased appetite
- sleep problems
- tics (sudden, repetitive movements or sounds);
- personality changes
- increased anxiety and irritability
- stomachaches
- headaches

**Non-stimulants.** A few other ADHD medications are non-stimulants. These medications take longer to start working than stimulants, but can also improve focus, attention, and impulsivity in a person with ADHD. Doctors may prescribe a non-stimulant: when a person has bothersome side effects from stimulants; when a stimulant was not effective; or in combination with a stimulant to increase effectiveness.

Although not approved by the U.S. Food and Drug Administration (FDA) specifically for the treatment of ADHD, some antidepressants are sometimes used alone or in combination with a stimulant to treat ADHD. Antidepressants may help all of the symptoms of ADHD and can be prescribed if a patient has bothersome side effects from stimulants. Antidepressants can be helpful in combination with stimulants if a patient also has another condition, such as an anxiety disorder, depression, or another mood disorder.

Doctors and patients can work together to find the best medication, dose, or medication combination. Learn the basics about stimulants and other mental health medications on the [NIMH Mental Health Medications](https://www.nimh.nih.gov/health/topics/medications-for-adhd) webpage and check the FDA website (<http://www.fda.gov/>), for the latest information on warnings, patient medication guides, or newly approved medications.

## Psychotherapy

Adding psychotherapy to treat ADHD can help patients and their families to better cope with everyday problems.

**Behavioral therapy** is a type of psychotherapy that aims to help a person change his or her behavior. It might involve practical assistance, such as help organizing tasks or completing schoolwork, or working through emotionally difficult events. Behavioral therapy also teaches a person how to:

- monitor his or her own behavior
- give oneself praise or rewards for acting in a desired way, such as controlling anger or thinking before acting.

Parents, teachers, and family members also can give positive or negative feedback for certain behaviors and help establish clear rules, chore lists, and other structured routines to help a person control his or her behavior. Therapists may also teach children social skills, such as how to wait their turn, share toys, ask for help, or respond to teasing. Learning to read facial expressions and the tone of voice in others, and how to respond appropriately can also be part of social skills training.

Cognitive behavioral therapy can also teach a person mindfulness techniques, or meditation. A person learns how to be aware and accepting of one's own thoughts and feelings to improve focus and concentration. The therapist also encourages the person with ADHD to adjust to the life changes that come with treatment, such as thinking before acting, or resisting the urge to take unnecessary risks.

**Family and marital therapy** can help family members and spouses find better ways to handle disruptive behaviors, to encourage behavior changes, and improve interactions with the patient.

For more information on psychotherapy, see the [Psychotherapies webpage](#) on the NIMH website.

## Education and Training

Children and adults with ADHD need guidance and understanding from their parents, families, and teachers to reach their full potential and to succeed. For school-age children, frustration, blame, and anger may have built up within a family before a child is diagnosed. Parents and children may need special help to overcome negative feelings. Mental health professionals can educate parents about ADHD and how it affects a family. They also will help the child and his or her parents develop new skills, attitudes, and ways of relating to each other.

**Parenting skills training (behavioral parent management training)** teaches parents the skills they need to encourage and reward positive behaviors in their children. It helps parents learn how to use a system of rewards and consequences to change a child's behavior. Parents are taught to give immediate and positive feedback for behaviors they want to encourage, and ignore or redirect behaviors that they want to discourage. They may also learn to structure situations in ways that support desired behavior.

**Stress management techniques** can benefit parents of children with ADHD by increasing their ability to deal with frustration so that they can respond calmly to their child's behavior.

**Support groups** can help parents and families connect with others who have similar problems and concerns. Groups often meet regularly to share frustrations and successes, to exchange information about recommended specialists and strategies, and to talk with experts.

## Tips to Help Kids and Adults with ADHD Stay Organized

### For Kids:

Parents and teachers can help kids with ADHD stay organized and follow directions with tools such as:

- Keeping a routine and a schedule. Keep the same routine every day, from wake-up time to bedtime. Include times for homework, outdoor play, and indoor activities. Keep the schedule on the refrigerator or on a bulletin board in the kitchen. Write changes on the schedule as far in advance as possible.
- Organizing everyday items. Have a place for everything, and keep everything in its place. This includes clothing, backpacks, and toys.
- Using homework and notebook organizers. Use organizers for school material and supplies. Stress to your child the importance of writing down assignments and bringing home the necessary books.

- Being clear and consistent. Children with ADHD need consistent rules they can understand and follow.
- Giving praise or rewards when rules are followed. Children with ADHD often receive and expect criticism. Look for good behavior, and praise it.

### For Adults:

A professional counselor or therapist can help an adult with ADHD learn how to organize his or her life with tools such as:

- Keeping routines
- Making lists for different tasks and activities
- Using a calendar for scheduling events
- Using reminder notes
- Assigning a special place for keys, bills, and paperwork
- Breaking down large tasks into more manageable, smaller steps so that completing each part of the task provides a sense of accomplishment.

## Learn More

### [Free Booklets and Brochures](#)

**Attention-Deficit/Hyperactivity Disorder:** A brochure on childhood attention deficit hyperactivity disorder that explains its causes, symptoms, treatments, and how parents can get help. [Also available en Español.](#)

### [Multimedia](#)

[Watch: ADHD: Signs, Symptoms, Research:](#) NIMH researchers talk about the symptoms of ADHD as well as the latest research.

For more videos, visit [ADHD – Multimedia.](#)

### [Federal Resources](#)

[Centers for Disease Control and Prevention - Free Educational Materials](#)

MedlinePlus offers information [in English](#) and [en Español.](#)

### [Research and Clinical Trials](#)

[Journal Articles:](#) This webpage provides information on references and abstracts from MEDLINE/PubMed (National Library of Medicine).

[ADHD Statistics: Adults](#)

[ADHD Statistics: Children 13 to 18 years old](#)

[ADHD Clinical Trials at NIMH - Children](#)

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