

## Facts about Attention Deficit Hyperactivity Disorder (ADHD)

**Attention deficit hyperactivity disorder (ADHD)** is one of the most common childhood disorders and can continue through adolescence and adulthood. Symptoms include difficulty staying focused and paying attention, difficulty controlling behavior, and hyperactivity (over-activity). ADHD has three subtypes:

- **Predominantly hyperactive-impulsive**
  - Most symptoms (six or more) are in the hyperactivity-impulsivity categories.
  - Fewer than six symptoms of inattention are present, although inattention may still be present to some degree.
  
- **Predominantly inattentive**
  - The majority of symptoms (six or more) are in the inattention category and fewer than six symptoms of hyperactivity-impulsivity are present, although hyperactivity-impulsivity may still be present to some degree.
  - Children with this subtype are less likely to act out or have difficulties getting along with other children. They may sit quietly, but they are not paying attention to what they are doing. Therefore, the child may be overlooked, and parents and teachers may not notice that he or she has ADHD.
  
- **Combined hyperactive-impulsive and inattentive**
  - Six or more symptoms of inattention and six or more symptoms of hyperactivity-impulsivity are present.
  - Most children have the combined type of ADHD.

Treatments can relieve many of the disorder's symptoms, but there is no cure. With treatment, most people with ADHD can be successful in school and lead productive lives. Researchers are developing more effective treatments and interventions, and using new tools such as brain imaging, to better understand ADHD and to find more effective ways to treat and prevent it.

Scientists are not sure what causes ADHD, although many studies suggest that, like many other illnesses, ADHD probably results from a combination of factors:

**Genes.** Inherited from our parents, genes are the "blueprints" for who we are. Results from several international studies of twins show that ADHD often runs in families. Researchers are looking at several genes that may make people more likely to develop the disorder. Knowing the genes involved may one day help researchers prevent the disorder before symptoms develop. Learning about specific genes could also lead to better treatments. Children with ADHD who carry a particular version of a certain gene have thinner brain tissue in the areas of the brain associated with attention. This NIMH research showed that the difference was not permanent, however, and as children with this gene grew up, the brain developed to a normal level of thickness. Their ADHD symptoms also improved.

**Environmental factors.** Studies suggest a potential link between cigarette smoking and alcohol use during pregnancy and ADHD in children. In addition, preschoolers who are exposed to high levels of lead, which can sometimes be found in plumbing fixtures or paint in old buildings, may have a higher risk of developing ADHD.

**Brain injuries.** Children who have suffered a brain injury may show some behaviors similar to those of ADHD. However, only a small percentage of children with ADHD have suffered a traumatic brain injury.

**Sugar.** The idea that refined sugar causes ADHD or makes symptoms worse is popular, but more research discounts this theory than supports it. In one study, researchers gave children foods containing either sugar or a sugar substitute every other day. The children who received sugar showed no different behavior or learning capabilities than those who received the sugar substitute. Another study in which children were given higher than average amounts of sugar or sugar substitutes showed similar results.

**Food additives.** Recent British research indicates a possible link between consumption of certain food additives like artificial colors or preservatives, and an increase in activity. Research is under way to confirm the findings and to learn more about how food additives may affect hyperactivity.

Children mature at different rates and have different personalities, temperaments, and energy levels. Most children get distracted, act impulsively, and struggle to concentrate at one time or another. Sometimes, these normal factors may be mistaken for ADHD. ADHD symptoms usually appear early in life, often between the ages of 3 and 6, and because symptoms vary from person to person, the disorder can be hard to diagnose. Parents may first notice that their child loses interest in things sooner than other children, or seems constantly "out of control." Often, teachers notice the symptoms first, when a child has trouble following rules, or frequently "spaces out" in the classroom or on the playground.

No single test can diagnose a child as having ADHD. Instead, a licensed health professional needs to gather information about the child, and his or her behavior and environment. Some pediatricians can assess the child themselves, but many will refer the family to a mental health specialist with experience in childhood mental disorders such as ADHD. The pediatrician or mental health specialist will first try to rule out other possibilities for the symptoms. For example, certain situations, events, or health conditions may cause temporary behaviors in a child that seem like ADHD.

Between them, the referring pediatrician and specialist will determine if a child:

- Is experiencing undetected seizures that could be associated with other medical conditions
- Has a middle ear infection that is causing hearing problems
- Has any undetected hearing or vision problems
- Has any medical problems that affect thinking and behavior
- Has any learning disabilities
- Has anxiety or depression, or other psychiatric problems that might cause ADHD-like symptoms
- Has been affected by a significant and sudden change, such as the death of a family member, a divorce, or parent's job loss.

A specialist will also check school and medical records for clues, to see if the child's home or school settings appear unusually stressful or disrupted, and gather information from the child's parents and teachers. Coaches, babysitters, and other adults who know the child well also may be consulted.

The specialist also will ask:

- Are the behaviors excessive and long-term, and do they affect all aspects of the child's life?
- Do they happen more often in this child compared with the child's peers?
- Are the behaviors a continuous problem or a response to a temporary situation?
- Do the behaviors occur in several settings or only in one place, such as the playground, classroom, or home?

The specialist pays close attention to the child's behavior during different situations. Some situations are highly structured, some have less structure. Others would require the child to keep paying attention. Most children with ADHD are better able to control their behaviors in situations where they are getting individual attention and when they are free to focus on enjoyable activities. These types of situations are less important in the assessment. A child also may be evaluated to see how he or she acts in social situations, and may be given tests of intellectual ability and academic achievement to see if he or she has a learning disability.

Finally, if after gathering all this information the child meets the criteria for ADHD, he or she will be diagnosed with the disorder.

Currently available treatments focus on reducing the symptoms of ADHD and improving functioning. Treatments include medication, various types of psychotherapy, education or training, or a combination of treatments.

### **Can adults have ADHD?**

Some children with ADHD continue to have it as adults. And many adults who have the disorder don't know it. They may feel that it is impossible to get organized, stick to a job, or remember and keep appointments. Daily tasks such as getting up in the morning, preparing to leave the house for work, arriving at work on time, and being productive on the job can be especially challenging for adults with ADHD.

These adults may have a history of failure at school, problems at work, or difficult or failed relationships. Many have had multiple traffic accidents. Like teens, adults with ADHD may seem restless and may try to do several things at once, most of them unsuccessfully. They also tend to prefer "quick fixes," rather than taking the steps needed to achieve greater rewards.

### **How is ADHD diagnosed in adults?**

Like children, adults who suspect they have ADHD should be evaluated by a licensed mental health professional. But the professional may need to consider a wider range of symptoms when assessing adults for ADHD because their symptoms tend to be more varied and possibly not as clear cut as symptoms seen in children.

To be diagnosed with the condition, an adult must have ADHD symptoms that began in childhood and continued throughout adulthood. Health professionals use certain rating scales to determine if an adult meets the diagnostic criteria for ADHD. The mental health professional also will look at the person's history of childhood behavior and school experiences, and will interview spouses or partners, parents, close friends, and other associates. The person will also undergo a physical exam and various psychological tests.

For some adults, a diagnosis of ADHD can bring a sense of relief. Adults who have had the disorder since childhood, but who have not been diagnosed, may have developed negative feelings about themselves over the years. Receiving a diagnosis allows them to understand the reasons for their problems, and treatment will allow them to deal with their problems more effectively.

### **How is ADHD treated in adults?**

Much like children with the disorder, adults with ADHD are treated with medication, psychotherapy, or a combination of treatments.

**Medications.** ADHD medications, including extended-release forms, often are prescribed for adults with ADHD, but not all of these medications are approved for adults.<sup>16</sup> However, those not approved for adults still may be prescribed by a doctor on an "off-label" basis.

Although not FDA-approved specifically for the treatment of ADHD, antidepressants are sometimes used to treat adults with ADHD. Older antidepressants, called tricyclics, sometimes are used because they, like stimulants, affect the brain chemicals norepinephrine and dopamine. A newer antidepressant, venlafaxine (Effexor), also may be prescribed for its effect on the brain chemical norepinephrine. And in recent clinical trials, the antidepressant bupropion (Wellbutrin), which affects the brain chemical dopamine, showed benefits for adults with ADHD.

Adult prescriptions for stimulants and other medications require special considerations. For example, adults often require other medications for physical problems, such as diabetes or high blood pressure, or for anxiety and depression. Some of these medications may interact badly with stimulants. An adult with ADHD should discuss potential medication options with his or her doctor. These and other issues must be taken into account when a medication is prescribed.

**Education and psychotherapy.** A professional counselor or therapist can help an adult with ADHD learn how to organize his or her life with tools such as a large calendar or date book, lists, reminder notes, and by assigning a special place for keys, bills, and paperwork. Large tasks can be broken down into more manageable, smaller steps so that completing each part of the task provides a sense of accomplishment. Psychotherapy, including cognitive behavioral therapy, also can help change one's poor self-image by examining the experiences that produced it. The therapist encourages the adult 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.

*If you or a family member is experiencing a mental health or an alcohol or other drug-related emergency, seek immediate assistance by calling the 24-hour Suicide Prevention, Mental Health Crisis, Information and Referral Hotline: (216) 623-6888 or the United Way's First Call for Help, 211 or (216) 436-2000.*