# **Attention Deficit Hyperactivity Disorder**

Attention Deficit Hyperactivity Disorder (ADHD) is a condition that becomes apparent in some children in the preschool and early school years. It is hard for these children to control their

- 5 behavior and/or pay attention. It is estimated that between 3 and 5 percent of children have ADHD, or approximately 2 million children in the United States. This means that in a classroom of 25 to 30 children, it is likely that at least one will have ADHD. ADHD was first described by Dr. Heinrich Hoffman, a physician who wrote books on medicine
- and psychiatry. Dr. Hoffman published in 1845 "The Story of Fidgety Philip," an accurate 10 description of a little boy who had attention deficit hyperactivity disorder. Yet it was not until
- 1902 that Sir George F. Still published a series of lectures to the Royal College of Physicians in England in which he described a group of impulsive children with significant behavioral problems, caused by a genetic dysfunction and not by poor child rearing—children who today would be easily recognized as having ADHD. Since then, several thousand scientific papers on
- 15 the disorder have been published, providing information on its nature, course, causes, impairments, and treatments. A child with ADHD faces a difficult but not insurmountable task ahead. In order to achieve his

or her full potential, he or she should receive help, guidance, and understanding from parents, guidance counselors, and the public education system. ADHD often continues into adulthood.

#### 20 **Symptoms**

The principal characteristics of ADHD are inattention, hyperactivity, and impulsivity. These symptoms appear early in a child's life. Because many normal children may have these symptoms, but at a low level, or the symptoms may be caused by another disorder, it is important that the child receive a thorough examination and appropriate diagnosis by a wellqualified professional.

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Symptoms of ADHD will appear over the course of many months, often with the symptoms of impulsiveness and hyperactivity preceding those of inattention, which may not emerge for a year or more. Different symptoms may appear in different settings, depending on the demands the situation may pose for the child's self-control. A child who "can't sit still" or is otherwise

- 30 disruptive will be noticeable in school, **but** the inattentive daydreamer may be overlooked. The impulsive child who acts before thinking may be considered just a "discipline problem," while the child who is passive or sluggish may be viewed as merely unmotivated. Yet both may have different types of ADHD. All children are sometimes restless, sometimes act without thinking, sometimes daydream the time away. When the child's hyperactivity, distractibility, poor
- 35 concentration, or impulsivity begin to affect performance in school, social relationships with other children, or behavior at home, ADHD may be suspected. But **because** the symptoms vary so much across settings, ADHD is not easy to diagnose. This is especially true when inattentiveness is the primary symptom.
- There are three patterns of behavior that indicate ADHD. People with ADHD may show several 40 signs of being consistently inattentive. They may have a pattern of being hyperactive and impulsive far more than others of their age. Or they may show all three types of behavior. This means that there are three subtypes of ADHD recognized by professionals. These are the predominantly hyperactive-impulsive type (that does not show significant inattention); the predominantly inattentive type (that does not show significant hyperactive-impulsive
- 45 behavior) sometimes called ADD—an outdated term for this entire disorder; and the combined type (that displays both inattentive and hyperactive-impulsive symptoms). **Recent Studies on Causes of ADHD** Some knowledge of the structure of the brain is helpful in understanding the research scientists are doing in searching for a physical basis for attention deficit hyperactivity disorder. One part
- 50 of the brain that scientists have focused on in **their** search is the *frontal lobes of the cerebrum*. The frontal lobes allow us to solve problems, plan ahead, understand the behavior of others, and restrain our impulses. The two frontal lobes, the right and the left, communicate with each other through the *corpus callosum*, (nerve fibers that connect the right and left frontal lobes).

The basal ganglia are the interconnected gray masses deep in the cerebral hemisphere that serve as the connection between the cerebrum and the *cerebellum* and, with the cerebellum, are responsible for motor coordination. The cerebellum is divided into three parts. The middle part is called the *vermis*.

- 5 All of these parts of the brain have been studied through the use of various methods for seeing into or imaging the brain. By 2002 the researchers had studied 152 boys and girls with ADHD. The ADHD children showed 3-4 percent smaller brain volumes in all regions-the frontal lobes, temporal gray matter, caudate nucleus, and cerebellum. This study also showed that the ADHD children who were on medication had a white matter volume that did not differ from
- 10 that of controls. Those never-medicated patients had an abnormally small volume of white matter. The white matter consists of fibers that establish long-distance connections between brain regions. It normally thickens as a child grows older and the brain matures.

# **Disorders that Sometimes Accompany ADHD**

#### Learning Disabilities. 15

Many children with ADHD-approximately 20 to 30 percent-also have a specific learning disability (LD). In preschool years, these disabilities include difficulty in understanding certain sounds or words and/or difficulty in expressing oneself in words. In school age children, reading or spelling disabilities, writing disorders, and arithmetic disorders may appear. A type of

20 reading disorder, dyslexia, is quite widespread. Reading disabilities affect up to 8 percent of elementary school children.

### **Tourette Syndrome**

A very small proportion of people with ADHD have a neurological disorder called Tourette syndrome. People with Tourette syndrome have various nervous tics and repetitive mannerisms,

25 such as eye blinks, facial twitches, or grimacing. Others may clear their throats frequently, snort, sniff, or bark out words. These behaviors can be controlled with medication. While very few children have this syndrome, many of the cases of Tourette syndrome have associated ADHD. In such cases, both disorders often require treatment that may include medications.

# **Oppositional Defiant Disorder**

30 As many as one-third to one-half of all children with ADHD—mostly boys—have another condition, known as oppositional defiant disorder (ODD). These children are often defiant, stubborn, non-compliant, have outbursts of temper, or become belligerent. They argue with adults and refuse to obey.

### **Conduct Disorder**

- 35 About 20 to 40 percent of ADHD children may eventually develop conduct disorder (CD), a more serious pattern of antisocial behavior. These children frequently lie or steal, fight with or bully others, and are at a real risk of getting into trouble at school or with the police. They violate the basic rights of other people, are aggressive toward people and/or animals, destroy property, break into people's homes, commit thefts, carry or use weapons, or engage in
- 40 vandalism. These children or teens are at greater risk for substance use experimentation, and later dependence and abuse. They need immediate help.

# **Anxiety and Depression**

Some children with ADHD often have co-occurring anxiety or depression. If the anxiety or depression is recognized and treated, the child will be better able to handle the problems that

45 accompany ADHD. Conversely, effective treatment of ADHD can have a positive impact on anxiety as the child is better able to master academic tasks.

# **Bipolar Disorder**

Differentiating between ADHD and bipolar disorder in childhood can be difficult. In its classic form, bipolar disorder is characterized by mood cycling between periods of intense highs and

- 50 lows. But in children, bipolar disorder often seems to be a rather chronic mood dysregulation with a mixture of elation, depression, and irritability. Furthermore, there are some symptoms that can be present both in ADHD and bipolar disorder, such as a high level of energy and a reduced need for sleep. Of the symptoms differentiating children with ADHD from those with bipolar disorder, elated mood and grandiosity of the bipolar child are distinguishing
- 55 characteristics.