

**FACT SHEET
ATTENTION-DEFICIT HYPERACTIVITY DISORDER
(ADHD)**

Attention-Deficit Hyperactivity Disorder (ADHD) is the most commonly diagnosed childhood psychiatric illness, affecting about 3 - 5 percent of American children under the age of 13. Children with ADHD do not appear to have a deficit of attention so much as a lack of consistent direction and control. Two symptoms commonly identified with ADHD, impulsivity and hyperactivity, are not required for the diagnosis.

There are strong gender differences in ADHD – nearly 90 percent of children diagnosed with ADHD are boys. Differences in how boys and girls exhibit symptoms may play a role in the prevalence of ADHD in boys. Boys with ADHD are more likely to be hyperactive than girls and, therefore attract a great deal of attention. A girl with ADHD who daydreams at the back of a classroom may be unhappy and failing in school, but she does not attract the attention given to a boy who is constantly talking out of turn, jumping up from his desk, and pestering other children.

Physical and psychiatric illnesses can cause symptoms that resemble ADHD. These include:

- atypical depression
- anxiety disorder
- impaired speech or hearing
- mild retardation
- traumatic stress reaction

One-third to one-half of children with ADHD have major depression or anxiety disorders. They may also have learning disabilities with deficits in visual and auditory discrimination, reading, writing, or language development.

Often, ADHD is associated with a conduct disorder (lying, cheating, bullying, setting fires, deliberate cruelty, etc.). It has generally been believed that the

stimulant drugs used to treat attention deficits have no direct effect on this misbehavior. A recent study, however, found that the stimulant methylphenidate (Ritalin) improved unpleasant behavior of all kinds – even cheating and stealing – regardless of the severity of the child’s attention deficit.

SYMPTOMS OF ADHD

- Are easily distracted and often seem to be daydreaming
- Usually do not finish what they start and repeatedly make what appear to be careless mistakes
- Switch haphazardly from one activity to another
- Arriving on time, obeying instructions, and following rules are difficult for them
- Seem irritable and impatient, unable to tolerate delay or frustration
- Act before thinking and do not wait their turn
- In conversation, they interrupt, talk too much, too loud, and too fast, and blurt out whatever comes to mind
- Seem to be constantly pestering parents, teachers, and other children
- Cannot keep their hands to themselves, and often appear to be reckless, clumsy, and accident-prone
- Appear restless; if must remain still, they fidget and squirm, tap their feet, and shake their legs

Course of Illness

ADHD in adolescents varies more than in children and is marked by poor follow-through on tasks and failure to complete independent academic work. The ADHD adolescent is more likely to be restless than hyperactive, and engage in risky behaviors. They are at increased risk for school failure, poor social relationships, auto accidents, delinquency, substance abuse and poor vocational outcome.

In about 10 - 60 percent of the cases, ADHD can persist into adulthood. A diagnosis of ADHD in adults can only be made with a clear history of childhood attention deficit and distractibility, impulsivity or motor restlessness. ADHD does not have a new onset at adulthood, therefore an adult must have a childhood history of ADHD symptoms.

Differences in the Brains of Children with ADHD

Most experts agree that ADHD is a brain disorder with a biological basis. A genetic influence is suggested by studies comparing identical with fraternal twins and by the high rates of ADHD (as well as anti-social behavior and alcoholism) found in the families of children with the disorder.

Since there is evidence for a genetic component in at least some cases of ADHD, factors such as a predisposition to prenatal viral infections could be involved.

Smoking During Pregnancy and ADHD

It has been suggested that maternal smoking during pregnancy is a risk factor for ADHD. The mechanism for the positive association between maternal smoking and ADHD remains unknown but go along the "nicotinic receptor hypothesis of ADHD." This theory states that exposure to nicotine can affect a number of nicotinic receptors, which in turn affect the dopaminergic system. It is speculated that there is a dysregulation of dopamine in ADHD. Partial support for this hypothesis comes from basic science which has shown that exposure to nicotine leads to an animal model of hyperactivity in rats. More studies need to be done to conclusively pinpoint whether there is a connection between smoking and ADHD.

Treatment of ADHD

The effects of stimulants in treating ADHD are quite paradoxical because they make children calmer rather than more active with improved concentration and reduced restlessness. Stimulants have long been the mainstay of medication therapy for ADHD because they are safer and more effective than clonidine (Catapres) or the antidepressants, particularly tricyclics.

There is little danger of drug abuse or addiction with stimulants because children do not feel euphoria or develop tolerance or craving. They become dependent on stimulant drugs like a person with diabetes is dependent on insulin or a nearsighted person on eyeglasses. The main side effects, which include appetite loss, stomach aches, nervousness, and insomnia, usually subside within a week or can be eliminated by lowering the dose.

STIMULANTS FREQUENTLY USED TO TREAT ADHD

<i>Stimulant</i>	<i>Characteristics</i>
Dextroamphetamine (Dexedrine)	<ul style="list-style-type: none">• Rapid absorption and onset (within 30 minutes but can last up to 5 hours)
Methylphenidate (Ritalin)	<ul style="list-style-type: none">• Rapid absorption and onset (within 30 minutes but lasts 2 - 4 hours)
Pemoline (Cylert)	<ul style="list-style-type: none">• Effects felt in about 2 hours but can last up to 9 hours• Requires 3-6 weeks to see full effect

Stimulants can cause side effects that are of special concern for treating children. One of these is the reduction of growth speed (found to be temporary and mild) with children “catching up” to heights predictive from their parents’ heights. Cardiovascular effects such as palpitations, tachycardia and increased blood pressure are seen with dextroamphetamine and methylphenidate. Liver functioning can also be affected with the use of stimulants and, therefore a liver function test is required twice a year. The elevation of liver enzymes has been found in methylphenidate and pemoline to be temporary and returns to normal after these two stimulants are discontinued. Several other kinds of drugs are also used in treating ADHD when the patient does not improve on stimulants or cannot tolerate their side effects. Beta-blockers such as propranolol (Inderal) or nadolol (Corgard)

can be prescribed along with stimulants to reduce jitteriness.

Another alternative to the stimulants is the antidepressant bupropion (Wellbutrin). Recent studies have found it to be as effective as methylphenidate in treating children with ADHD. Bupropion appears to be a useful alternative for children who either do not respond to methylphenidate or who cannot take it due to allergy or side effects.

While ADHD core symptoms of inattention, hyperactivity and impulsivity can be reduced with medication, the social skills, work habits and motivation that have deteriorated along the course of the disorder require a multimodal treatment approach. Children with ADHD need structure and routine.

What Features Can Help Distinguish ADHD from Bipolar Disorder?

Below are symptoms that can help clarify the diagnostic confusion between bipolar and ADHD disorders:

- **Destructiveness:** Children who have ADHD often break things carelessly while playing, whereas the major destructiveness of children who are bipolar is not a result of carelessness but tends to occur in anger.
- **Duration of angry outbursts:** Children who have ADHD usually calm down in 20 to 30 minutes, whereas children who are bipolar may continue to feel and act angry for up to 4 hours.
- **Trigger for tantrums:** Children who have ADHD are typically triggered by sensory and emotional overstimulation, whereas children who have bipolar disorder typically react to limit setting, such as a parental “no.”
- **Irritability:** Children who are bipolar tend to be irritable in the morning on arousal. Children with ADHD tend to arouse quickly and attain alertness within minutes, but children with mood disorders may show overly slow arousal (including several hours of irritability or dysphoria, fuzzy thinking or “cobwebs,” and physical complaints such as stomachaches and headaches) upon awakening in the morning.
- **Learning Disabilities:** Children with ADHD often have co-existing learning disabilities, whereas learning in children who are bipolar is more likely compromised by motivational problems.
- **Misbehavior:** If ADHD children crash into a wall, it is often due to oblivious inattentiveness. The child who is bipolar is more likely to crash into a wall with intent, for the sake of challenging its presence.

From Popper C. Diagnosing Bipolar vs. ADHD: A Pharmacological Point of View. The Link. 13: 1996.

Especially when young, ADHD children often respond well to strict application of clear and consistent rules.

In addition to medication, treatment should include specific psychotherapy, vocational assessments and counseling, as well as cognitive-behavior therapy and behavior modification. Psychotherapy can support the transition away from ADHD behavioral patterns.

Vocational assessment and counseling can improve time management and organizational skills. Family counseling is needed to improve interpersonal communication and problem-solving skills, and cognitive-behavior therapy to instill means to manage stress.

NARSAD
RESEARCH

The National Alliance for Research on Schizophrenia and Depression

60 Cutter Mill Road, Suite 404

Great Neck, NY 11021

Fax: (516) 487-6930

1-800-829-8289

www.narsad.org

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