**Attention deficit hyperactivity disorder (ADHD)**

**ADD; ADHD; Childhood hyperkinesis**

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ADHD is a problem with inattentiveness, over-activity, impulsivity, or a combination. For these problems to be diagnosed as ADHD, they must be out of the normal range for a child's age and development.

**Causes, incidence, and risk factors**

ADHD is the most commonly diagnosed behavioral disorder of childhood. It affects about 3 - 5% of school aged children. ADHD is diagnosed much more often in boys than in girls.

ADHD may run in families, but it is not clear exactly what causes it. Whatever the cause may be, it seems to be set in motion early in life as the brain is developing. Imaging studies suggest that the brains of children with ADHD are different from those of other children.

Depression, lack of sleep, learning disabilities, tic disorders, and behavior problems may be confused with, or appear with, ADHD. Every child suspected of having ADHD should be carefully examined by a doctor to rule out possible other conditions or reasons for the behavior.

Most children with ADHD also have at least one other developmental or behavioral problem. They may also have a psychiatric problem, such as depression or [bipolar disorder](http://www.ncbi.nlm.nih.gov/pubmedhealth/n/pmh_adam/A000926/).

**Symptoms**

The symptoms of ADHD fall into three groups:

* Lack of attention (inattentiveness)
* Hyperactivity
* Impulsive behavior (impulsivity)

Some children with ADHD primarily have the inattentive type. Others may have a combination of types. Those with the inattentive type are less disruptive and are more likely to not be diagnosed with ADHD.

Inattentive symptoms

1. Fails to give close attention to details or makes careless mistakes in schoolwork
2. Has difficulty keeping attention during tasks or play
3. Does not seem to listen when spoken to directly
4. Does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace
5. Has difficulty organizing tasks and activities
6. Avoids or dislikes tasks that require sustained mental effort (such as schoolwork)
7. Often loses toys, assignments, pencils, books, or tools needed for tasks or activities
8. Is easily distracted
9. Is often forgetful in daily activities

Hyperactivity symptoms:

1. Fidgets with hands or feet or squirms in seat
2. Leaves seat when remaining seated is expected
3. Runs about or climbs in inappropriate situations
4. Has difficulty playing quietly
5. Is often "on the go," acts as if "driven by a motor," talks excessively

Impulsivity symptoms:

1. Blurts out answers before questions have been completed
2. Has difficulty awaiting turn
3. Interrupts or intrudes on others (butts into conversations or games)

**Signs and tests**

Too often, difficult children are incorrectly labeled with ADHD. On the other hand, many children who do have ADHD remain undiagnosed. In either case, related learning disabilities or mood problems are often missed. The American Academy of Pediatrics (AAP) has issued guidelines to bring more clarity to this issue.

The diagnosis is based on very specific symptoms, which must be present in more than one setting.

* Children should have at least 6 attention symptoms or 6 hyperactivity/impulsivity symptoms, with some symptoms present before age 7.
* The symptoms must be present for at least 6 months, seen in two or more settings, and not caused by another problem.
* The symptoms must be severe enough to cause significant difficulties in many settings, including home, school, and in relationships with peers.

In older children, ADHD is in partial remission when they still have symptoms but no longer meet the full definition of the disorder.

The child should have an evaluation by a doctor if ADHD is suspected. Evaluation may include:

* Parent and teacher questionnaires (for example, Connors, Burks)
* Psychological evaluation of the child AND family, including [IQ testing](http://www.ncbi.nlm.nih.gov/pubmedhealth/n/pmh_adam/A001912/) and psychological testing
* Complete developmental, mental, nutritional, physical, and psychosocial examination

**Treatment**

Treating ADHD is a partnership between the health care provider, parents or caregivers, and the child. For therapy to succeed, it is important to:

* Set specific, appropriate target goals to guide therapy.
* Start medication and behavior therapy.
* Follow-up regularly with the doctor to check on goals, results, and any side effects of medications. During these check-ups, information should be gathered from parents, teachers, and the child.

If treatment does not appear to work, the health care provider should:

* Make sure the child indeed has ADHD
* Check for other, possible medical conditions that can cause similiar symptoms
* Make sure the treatment plan is being followed

MEDICATIONS

A combination of medication and behavioral treatment works best. There are several different types of ADHD medications that may be used alone or in combination.

Psychostimulants (also known as stimulants) are the most commonly used ADHD drugs. Although these drugs are called stimulants, they actually have a calming effect on people with ADHD.

These drugs include:

* Amphetamine-[dextroamphetamine](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000310/) (Adderall)
* [Dexmethylphenidate](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000223/) (Focalin)
* [Dextroamphetamine](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000310/) (Dexedrine, Dextrostat)
* [Lisdexamfetamine](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000397/) (Vyvanse)
* [Methylphenidate](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000606/) (Ritalin, Concerta, Metadate, Daytrana)

A nonstimulant drug called [atomoxetine](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000222/) (Strattera) may work as well as stimulants, and may be less likely to be misused.

Some ADHD medicines have been linked to rare sudden death in children with heart problems. Talk to your doctor about which drug is best for your child.

BEHAVIOR THERAPY

Talk therapy for both the child and family can help everyone understand and gain control of the stressful feelings related to ADHD.

Parents should use a system of rewards and consequences to help guide their child's behavior. It is important to learn to handle disruptive behaviors. Support groups can help you connect with others who have similar problems.

Other tips to help your child with ADHD include:

* Communicate regularly with the child's teacher.
* Keep a consistent daily schedule, including regular times for homework, meals, and outdoor activities. Make changes to the schedule in advance and not at the last moment.
* Limit distractions in the child's environment.
* Make sure the child gets a healthy, varied diet, with plenty of fiber and basic nutrients.
* Make sure the child gets enough sleep.
* Praise and reward good behavior.
* Provide clear and consistent rules for the child.

Alternative treatments for ADHD have become popular, including herbs, supplements, and chiropractic treatments. However, there is little or no solid evidence that these work.

**Expectations (prognosis)**

ADHD is a long-term, chronic condition. If it is not treated appropriately, ADHD may lead to:

* Drug and alcohol abuse
* Failure in school
* Problems keeping a job
* Trouble with the law

About half of children with ADHD will continue to have troublesome symptoms of inattention or impulsivity as adults. However, adults are often more capable of controlling behavior and masking difficulties.

**Calling your health care provider**

Call your doctor if you or your child's school personnel suspect ADHD. You should also tell your doctor about any:

* Difficulties at home, school, and in relationships with peers
* Medication side effects
* Signs of depression

**Prevention**

Although there is no proven way to prevent ADHD, early identification and treatment can prevent many of the problems associated with ADHD.

**References**

1. Pliszka S; AACAP Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*. 2007 Jul;46(7):894-921. [[PubMed: 17581453](http://www.ncbi.nlm.nih.gov/pubmed/17581453)]
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