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In This Issue…

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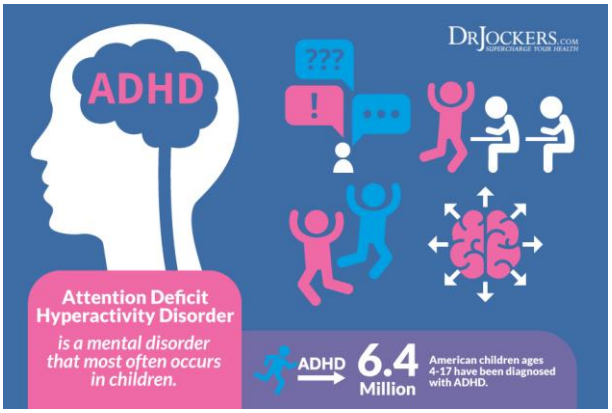
Attention Deficit /Hyperactivity Disorder (ADHD)



ADHD is one of the most common *neurodevelopmental* disorders of childhood, marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development.It is usually first diagnosed in childhood and often lasts into adulthood. Children with ADHD may have trouble paying attention, controlling impulsive behaviors, or be overly active.

ADHD affects an estimated 8 to 11% of school-aged children. However, many experts think ADHD is overdiagnosed, largely because criteria are applied inaccurately. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), there are 3 types: Predominantly inattentive, Predominantly hyperactive/impulsive or Combined.

Overall, ADHD is about twice as common in boys, although the ratios vary by type. The predominantly hyperactive/impulsive type occurs 2 to 9 times more frequently in boys; the predominantly inattentive type occurs with about equal frequency in both sexes. ADHD tends to run in families.

Signs and Symptoms

It is normal for children to have trouble focusing and behaving at one time or another. However, children with ADHD do not just grow out of these behaviors. The symptoms continue, can be severe, and can cause difficulty at school, at home, or with friends.
A child with ADHD might:

- daydream a lot
- forget or lose things a lot
- squirm or fidget
- talk too much
- make careless mistakes or take unnecessary risks
- have a hard time resisting temptation
- have trouble taking turns
- have difficulty getting along with others

Causes of ADHD

Scientists are studying cause(s) and risk factors in an effort to find better ways to manage and reduce the chances of a person having ADHD. The cause(s) and risk factors for ADHD are unknown, but current research shows that genetics plays an important role. Recent studies of twins link genes with ADHD.

In addition to genetics, other possible causes and risk factors are being studied including: brain injury, exposure to environmental toxins (e.g., lead) during pregnancy or at a young age, alcohol and tobacco use during pregnancy, premature delivery, and low birth weight.

Research does not support the popularly held views that ADHD is caused by eating too much sugar, watching too much television, parenting, or social and environmental factors such as poverty or family chaos. Of course, many things, including these, might make symptoms worse, especially in certain people. But the evidence is not strong enough to conclude that they are the main causes of ADHD.

Diagnosis

Deciding if a child has ADHD is a process with several steps. There is no single test to diagnose ADHD, and many other problems, like anxiety, depression, sleep problems, and certain types of learning disabilities, can have similar symptoms. Clinical criteria based on the **DSM-5 diagnostic criteria** for ADHD which include 9 symptoms and signs of inattention and 9 of hyperactivity and impulsivity. Diagnosis using these criteria requires that ≥ 6 symptoms and signs from at least one group. Also, the symptoms need to:

- Be present often for ≥ 6 mo
- Be more pronounced than expected for the child's developmental level
- Occur in at least 2 situations (eg, home and school)
- Be present before age 12 (at least some symptoms)
- Interfere with functioning at home, school, or work

Inattention symptoms:

Does not pay attention to details or makes careless mistakes in schoolwork or with other activities:

1. Has difficulty sustaining attention on tasks at school or during play
2. Does not seem to listen when spoken to directly
3. Does not follow through on instructions or finish tasks
4. Has difficulty organizing tasks and activities
5. Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort over a long period of time
6. Often loses things necessary for school tasks or activities
7. Is easily distracted
8. Is forgetful in daily activities

Hyperactivity and impulsivity symptoms:

1. Often fidgets with hands or feet or squirms
2. Often leaves seat in classroom or elsewhere
3. Often runs about or climbs excessively where such activity is inappropriate
4. Has difficulty playing quietly
5. Often on the go, acting as if driven by a motor
6. Often talks excessively
7. Often blurts out answers before questions are completed
8. Often has difficulty awaiting turn
9. Often interrupts or intrudes on others

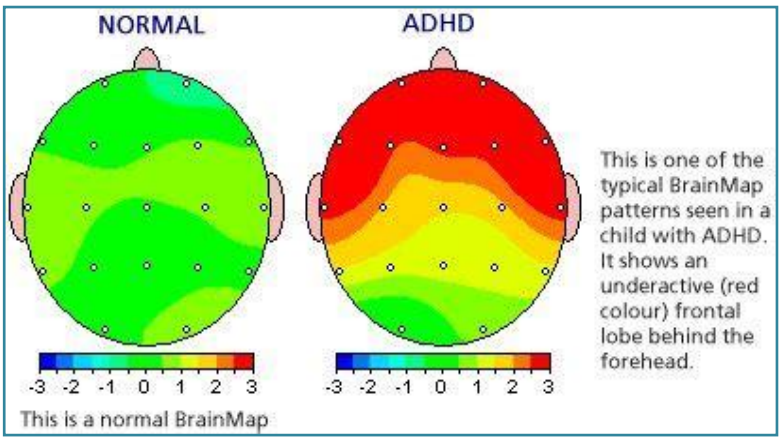
Diagnosis of the predominantly inattentive type requires ≥ 6 symptoms and signs of inattention. Diagnosis of the hyperactive/impulsive type requires ≥ 6 symptoms and signs of hyperactivity and impulsivity. Diagnosis of the combined type requires ≥ 6 symptoms and signs each of inattention and hyperactivity/impulsivity.

Treatment

Randomized, controlled studies show behavioral therapy alone is less effective than therapy with stimulant drugs alone for school-aged children, but behavioral or combination therapy is recommended for younger children. Although correction of the underlying neurophysiologic differences of patients with ADHD does not occur with drug therapy, drugs are effective in alleviating ADHD symptoms and they permit participation in activities previously inaccessible because of poor attention and impulsivity. Drugs often interrupt the cycle of inappropriate behavior, enhancing behavioral and academic interventions, motivation, and self-esteem.

Treatment of ADHD in adults follows similar principles, but drug selection and dosing are determined on an individual basis, depending on other medical conditions.

Stimulant drugs



Stimulant drugs that include **methylphenidate** or **amphetamine salts** are most widely used. Response varies greatly, and dosage depends on the severity of the behavior and the child's ability to tolerate the drug. Dosing is adjusted in frequency and amount until the optimal response is achieved.

Methylphenidate is usually started at 0.3 mg/kg po once/day (immediate-release form) and increased in frequency weekly, usually to about 3 times per day or every 4 h. If response is inadequate but the drug is tolerated, dose can be increased. Most children find an optimal balance between benefits and adverse effects at individual doses between 0.3 and 0.6 mg/kg. The dextro isomer of methylphenidate is the active moiety and is available for prescription at one half the dose.

Dextroamphetamine is typically started (often in combination with racemic amphetamine) at 0.15 to 0.2 mg/kg po once/day, which can then be increased to 2 or 3 times per day or every 4 h. Individual doses in the range of 0.15 to 0.4 mg/kg are usually effective. Dose titration should balance effectiveness against adverse effects. In general, dextroamphetamine doses are about two thirds those of methylphenidate doses.

For **methylphenidate** or **dextroamphetamine**, once an optimal dosage is reached, an equivalent dosage of the same drug in a sustained-release form is often substituted to avoid the need for drug administration in school. Long-acting preparations include wax matrix slow-release tablets, biphasic capsules containing the equivalent of 2 doses, and osmotic release pills and transdermal patches that provide up to 12 h of coverage. Both short-acting and long-acting liquid preparations are now available. Pure dextro preparations (e.g., dextromethylphenidate) are often used to minimize adverse effects such as anxiety; doses are typically half those of mixed preparations. Prodrug preparations are also sometimes used because of their smoother release, longer duration of action, fewer adverse effects, and lower abuse potential. Learning is often enhanced by low doses, but improvement in behavior often requires higher doses.

Dosing schedules of stimulant drugs can be adjusted to cover specific days and times (e.g., during school hours, while doing homework). Drug holidays may be tried on weekends, on holidays, or during summer vacations. Placebo periods (for 5 to 10 school days to ensure reliability of observations) are recommended to determine whether the drugs are still needed.

Common adverse effects of stimulant drugs include: sleep disturbances, depression, headache, stomachache, appetite suppression and elevated heart rate and blood pressure.

Some studies have shown slowing of growth over 2 yr of stimulant drug use, but results have not been consistent, and whether slowing persists over longer periods of use remains unclear. Some patients who are sensitive to stimulant drug effects appear overfocused or dulled; decreasing the stimulant drug dosage or trying a different drug may be helpful.

Nonstimulant drugs

Atomoxetine, a selective norepinephrine reuptake inhibitor, is also used. The drug is effective, but data are mixed regarding its efficacy compared with stimulant drugs. Some children have nausea, sedation, irritability, and temper tantrums; rarely, liver toxicity and suicidal ideation occur. A typical starting dose is 0.5 mg/kg po once/day, titrated weekly to 1.2

to 1.4 mg/kg once/day. The long half-life allows once/day dosing but requires continuous use to be effective. The maximum recommended daily dosage is 100 mg.

Antidepressants such as **bupropion**, alpha-2 agonists such as **clonidine** and **guanfacine**, and other psychoactive drugs are sometimes used in cases of stimulant drug ineffectiveness or unacceptable adverse effects, but they are less effective and are not recommended as first-line drugs. Sometimes these drugs are used in combination with stimulants for synergistic effects; close monitoring for adverse effects is essential.

Psychotherapy

Behavioral management

Counseling, including cognitive-behavioral therapy (e.g., goal-setting, self-monitoring, modeling, role-playing), is often effective and helps children understand ADHD.

Classroom behavior is often improved by environmental control of noise and visual stimulation, appropriate task length, novelty, coaching, and teacher proximity.

When difficulties persist at home, parents should be encouraged to seek additional professional assistance and training in behavioral management techniques **"Family and marital therapy"**. Adding incentives and token rewards reinforces behavioral management and is often effective. Children with ADHD in whom hyperactivity and poor impulse control predominate are often helped at home when structure, consistent parenting techniques, and well-defined limits are established.

Elimination diets, megavitamin treatments, use of antioxidants or other compounds, and nutritional and biochemical interventions have had the least consistent effects. Biofeedback can be helpful in some cases but is not recommended for routine use because evidence of sustained benefit is lacking.

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OTC Medicines Corner

Folic acid and multivitamin use may decrease autism risk

Maternal exposure to folic acid and/or multivitamins before and during pregnancy was associated with a lower risk of autism spectrum disorder in the child compared with no exposure, according to results of a case-control study published in *JAMA Psychiatry*. Maternal vitamin supplements were classified for folic acid (vitamin B9), multivitamin supplements (Anatomical Therapeutic Chemical A11 codes vitamins A, B, C, and D), and any combination thereof exposed in the intervals before and during pregnancy.

Source: Whetsel T**.** *Folic acid and multivitamin use may decrease autism risk.* [Internet]; Nov 2018 [cited Feb 25, 2019]. Available from: http://www.aphanet.org/otc-medicines-corner/folic-acid-and-multivitamin-use-may-decrease-autism-risk

ADHD or Autism?

ADHD and autism can look a lot like each other. Children with either condition can have problems focusing. They can be impulsive or have a hard time communicating. They may have trouble with schoolwork and with relationships.

Although they share many of the same symptoms, the two are distinct conditions. Autism spectrum disorders are a series of related developmental disorders that can affect language skills, behavior, social interactions, and the ability to learn. ADHD impacts the way the brain grows and develops. A patient can have both.

	ADHD	AUTISM
What is it?	A neurodevelopmental condition that makes it hard for kids to concentrate, pay attention, sit still and curbimpulsivity.	A range of neurodevelopmental conditions that causes challenges with social skills, communication and thinking. Repetitive behaviors are also part of autism spectrum disorder (ASD).
Signs you may notice, depending on your child	• Lose initial interest, and they dislike and avoid things they'll have to concentrate on. • Struggles with social skills. They may talk nonstop. They're more likely to interrupt when someone else is speaking or butt in and try to monopolize a conversation. • A child with ADHD doesn't like repitition, even if it helps them. • They'll become upset when routines change. A child with ADHD doesn't like doing the same thing again or for long times.	• Struggle to focus on things that they don't like, such as reading a book or doing a puzzle. And they may fixate on things that they do like, such as playing with a particular toy. • Struggles with social skills. They tend to be self-centered. They often have a hard time putting words to their thoughts and feelings, and they may not be able to point to an object to give meaning to their speech. They find it hard to make eye contact. However, some kids with autism can talk for hours about a topic that they're interested in. • An autistic child loves order and repetition. • A child with autism might want the same type of food at a favorite restaurant, for instance, or become overly attached to one toy or shirt.
Treatment	There's no one-size-fits-all way to deal with ADHD. Younger kids start with behaviortherapy, and the doctor may prescribemedication if symptoms don't improve enough. Older kids will usually get both. ADHD symptoms, and their treatment, may change over time.	Different kinds of therapy -- behavior, speech, sensory integration, and occupational, for example -- can help kids with autism communicate and get along better. Medicine can't cure autism, but it may make related symptoms like difficulty focusing or high energy easier to deal with.

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Test Your Knowledge

Mark the correct statement(s). More than one choice can be correct.

1) In young, insulin-dependent diabetic (type 1 diabetic) patients:

   a) There is good evidence that improved diabetic control reduces the incidence of microvascular complications.
   b) Blood glucose monitoring should be performed at home.
   c) Inhaled insulin should be tried before subcutaneous insulin.
   d) The dietary carbohydrate content should be 45–55%of total calories.
   e) A fibre-rich diet reduces peak plasma glucose after meals and reduces insulin requirements.

2) Acne vulgaris:

   a) Can be effectively treated with topical benzoyl peroxide.
   b) May be precipitated by oral methylprednisolone.
   c) Is caused by propionibacteria. d) Cold tar treatment reduces the severity of lesions.
   e) Can be exacerbated by oral acyclovir.

3) Helicobacter pylori:

   a) Is strongly linked to the development of carcinoma of the colon.
   b) Is a bacterium that is strongly linked to the development and recurrence of peptic ulcer.
   c) Is usually found in the gastric antrum. d) Is uncommon in asymptomatic patients.
   e) Colonization of the stomach is inhibited by corticosteroids.

Real Enquiries

At the "Drug Information Center", we respond to enquiries from the professional healthteam as well as from others. Here's one of the enquiries received at the center:

Enquiry received from: A.K.- *Clinical Pharmacist, Cardiac Hospital-Assiut University*
Enquiry: Why is the abdomen the preferred site for Clexan SC injection? What would happen if the injection was administered subcutaneously in the arm?

Summary of the answer:

Most publications agreed that the abdomen is the preferred site for low-molecular-weight heparins (LMWH) injection. The abdominal region holds a thicker subcutaneous tissue layer, an aspect that can minimize the risk of extravasation of the LMWH injection to the superficial tissue. In addition, the large abdominal wall area can receive more injections. Some care is essential though, like the maintenance of a five-centimeter distance from the umbilical scar to preserve the umbilical vein, as well as the avoidance of injections in scars or bruised areas.

The buttocks, thigh and arms may also be used with the correct needle length;however, the risk of IM injection is higher with the thighs and arms. The buttocks offer the slowest rate of absorption, and have a higher SC tissue depth, so injecting with a skin fold is generally not required.

In summary, the choice of injection site should take into consideration the requirements of different injectable medicines. However, the abdomen is the preferred injection site for most people due to its convenience, consistency and reproducible rates of absorption of injectable medicines.

References: 1) Franco J.D., et al. Subcutaneous administration technique of low- molecular-weight heparins: An integrative review. Clinical Nursing Studies. 2013;1(4): 36-44.
2) Kayrak M, Bacaksiz A and Yazici M. Is enoxaparin injection from the abdominal wall safe in elderly people? Current Practice. 2008;54:1246-48.
3) Australian Diabetes Educators Association (ADEA). Clinical Guiding Principles for Subcutaneous Injection Technique. Canberra: 2015.

Steam Inhalation for Upper Respiratory Tract Catarrh and Sinusitis

Sinusitis is an inflammatory process in the paranasal sinuses due to viral, bacterial, and fungal infections or allergic reactions.

Like the nasal passages, the sinuses are lined with mucous membranes that react to infection by producing mucus. This represents an attempt by the body to incapacitate the infecting bacteria. Because the openings from the nose into the sinuses are very narrow, they quickly become blocked when the mucous membranes swell during a cold, hay fever, or catarrh, trapping the infection inside the sinuses.

Chronic sinusitis may occur if one or more of the drainage passages from the sinuses to the nose become blocked. This can cause headaches or a dull pain across the face and temple and around the eyes. If the maxillary sinuses above the cheeks are infected, toothache may result. Once the lining of the sinuses becomes swollen, the cilia of the nasal cavity no longer operate. The lining of the sinuses can become permanently thickened, contributing to the retention of phlegm.

Anything that blocks the sinus openings or impedes the action of the cilia can cause a sinus infection. A buildup of mucus creates an ideal environment for microorganisms to thrive. Steam inhalation is an effective technique for treating upper respiratory catarrh and sinusitis.

Inhalation Ingredients

Compound tincture of benzoin 30 ml
Eucalyptus essential oil 2.5 ml
Peppermint essential oil 6 drops
Lavender essential oil 5 drops
Pine essential oil 5 drops

Combine ingredients in a bottle and shake well. Put a teaspoon of the mixture in a bowl and pour on 1/2 liter boiled water. Cover the head and the bowl with a towel or cloth and inhale. **Caution:** Keep the eyes closed.

Answers:

1. **a), b), d), and e) are True. c) is False.**
   In insulin-dependent diabetes mellitus (IDDM), in addition to tight diabetic control which can usually be achieved by education and insulin two or three times daily plus diet, there must be regular screening for microvascular complications. Laser therapy of early proliferative retinopathy prevents blindness.
2. **a), b), and c) are True. d) and e) are False.**
   Acne vulgaris occurs in at least 90% of adolescents. The topical use of peeling agents such as benzoyl peroxide or azelaic acid or topical retinoids on a regular basis is usually all that is necessary. In more severe cases oral antibacterial drugs are beneficial and if this is ineffective oral isotretinoin may be considered by specialists.
3. **b) and c) are True. a), d) and e) are False.**
   Helicobacter pylori is strongly linked to the development and recurrence of duodenal ulcer. Possible linkage to gastric carcinoma is under investigation.