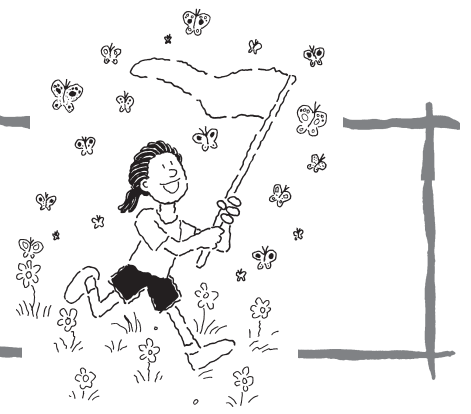


Asthma and Your Child



This publication was written by the American Academy of Pediatrics to inform parents about asthma. It includes information about asthma symptoms, triggers, treatments, medicines, and how to communicate with your child's school.

What is asthma?

Asthma is a chronic disease of the airways in the lungs. The airways are very sensitive and may be inflamed even though symptoms are not always present. The degree and severity of airway irritation varies over time. One of the most important goals of asthma treatment is to control the irritation in the airways and the symptoms that result.

In an asthma "attack," the airways become narrowed or blocked. The inner lining of the airways becomes inflamed (swollen and irritated) and the outer muscles tighten around the airways, making breathing difficult. The good news is that this can be treated and controlled.

Who gets asthma?

Asthma is the most common serious chronic disease of childhood. It is one of the main reasons children miss school and the most frequent cause for hospitalization in children. In the United States, nearly 1 out of every 10 children has asthma.

Many things can influence the onset of asthma and include family history (children who have family members with allergies or asthma), infections, exposure to allergens, exposure to tobacco smoke, and exposure to air pollutants. Children with other types of allergic diseases (eczema, food allergy, hay fever) also are more likely to develop asthma.

The number of children with asthma has been increasing worldwide, and the amount of illness caused by asthma may also be increasing in some parts of the country. The reasons for these increases are not exactly known.

What are symptoms of asthma?

Symptoms of asthma can appear quickly or develop slowly. Some children have symptoms of asthma often enough that they have to take medicine every day. Other children may need medicine just once in a while. Every child is different.

A cough may be the first and sometimes only asthma symptom. Other symptoms may include

- Wheezing (a high-pitched whistling sound)
- Difficulty breathing or shortness of breath
- Tightness in the chest
- Decreased ability to exercise or self-limiting exercise

How is asthma diagnosed?

There is no simple test to diagnose asthma. It's often difficult to diagnose, especially in young children. Your child's doctor will need to ask you specific questions about your child's health and then a careful physical exam is done. The information that you provide will help your child's doctor determine if your child has asthma.

- Does your child have symptoms such as wheezing, coughing, or shortness of breath?
- How often do the symptoms occur and how bad do they get? For example, is your child missing school or unable to participate in sports or other activities because of breathing problems? Or is coughing or wheezing keeping your child up at night?
- What triggers the symptoms or makes them worse? (For example, with colds, exercise, smoke, allergens, or stress/emotions?)
- Is there a history of chronic runny nose or eczema?
- Which medicines have been tried? Did they help?
- Is there any family history of allergies or asthma?

If your child is old enough (usually older than 5 or 6 years), your child's doctor may test your child's lung function. One way to do this is with a machine called a *spirometer* (which is different from a peak flow meter). Spirometry measures the amount of air and how fast it can be blown out of the lungs. Your child's doctor may also want to retest your child's lung function after giving her some asthma medicine.

Some children don't feel better after using medicines. If medicines don't work, tests may be done to check for other conditions that can make asthma worse or have the same symptoms as asthma. These conditions include allergic rhinitis (hay fever), sinusitis (sinus infection), gastroesophageal reflux disease (GERD—heartburn), and vocal cord dysfunction (spasms of the vocal cords or voice box).

Keep in mind that asthma can be a difficult disease to diagnose, and the results of lung function testing may be normal even if your child has asthma. For some children, the tendency to wheeze with colds (or respiratory infections) goes away as their lungs grow.

How is asthma treated?

The goal of asthma treatment is to eliminate or reduce symptoms so children can fully participate in normal physical activities. This can be done by avoiding asthma triggers and providing asthma medicine. It's also important to prevent emergency department visits and hospital stays because of asthma attacks. If your child experiences asthma symptoms more than twice per week, let your child's doctor know.

What are asthma triggers?

Certain things cause asthma *attacks* or make asthma worse. These are called *triggers*. It is important to find out what those triggers are for your child and learn ways to help your child avoid them. Allergens and irritants are triggers that can be found in your home, school, child care, and relatives' homes.

Some common asthma triggers are

- **Allergens:** These are things to which your child might be allergic. Many children with asthma have allergies, and allergies can be a major cause of asthma symptoms.
 - House dust mites (tiny “bugs” you cannot see that are commonly found in bedding, carpet, and upholstered furniture)
 - Animals with fur or hair
 - Cockroaches
 - Mice
 - Pollens (trees, grass, weeds)
- **Infections of the lungs and sinuses**
 - Viral infections
 - Bacterial infections, such as pneumonia or sinus infections
- **Irritants in the environment** (air that you breathe)
 - Cigarette and other smoke
 - Air pollution (chemicals, smog, auto exhaust, etc)
 - Cold or dry air
 - Sudden changes in weather
 - Odors, fragrances, chemicals in sprays, and cleaning products
 - Unventilated space heaters (gas or kerosene) and fireplaces
 - Odors and gases released from new carpets, furniture, or materials in new buildings
- **Exercise** (About 80% of people with asthma develop wheezing, coughing, and a tight feeling in the chest when they exercise or may develop prolonged cough or wheeze on completion of exercise.)
- **Emotional stress** (laughing or crying hard)

How can triggers be avoided?

While you can't make your home completely allergen- or irritant-free, there are things you can do to reduce your child's exposure to triggers. This will help decrease symptoms as well as the need for asthma medicines. The following tips may help:

- **Don't smoke.** Don't let anyone smoke in your home or car or around your child (like at child care or at school).
- **Reduce exposure to dust mites if your child is allergic to dust mites.** Cover your child's mattress and pillows with special dust mite-proof covers. Wash your child's bedding in hot water every week. Remove stuffed toys from the bedroom. Vacuum and dust often. Use a dehumidifier to reduce indoor humidity to 30% to 50% (if possible). Remove carpeting in the bedroom; bedrooms in basements should not be carpeted.
- **Reduce exposure to pet allergens.** If your child is allergic to furry pets, remove the pets from the home. If this isn't possible, keep the pets out of your child's bedroom and keep the bedroom door closed. You may also consider a high-efficiency particulate air (HEPA) filter in the bedroom or on the furnace. Although these interventions may reduce pet allergen levels some, they are much less effective than finding the pet a new home.
- **Control cockroaches.** If you have a roach problem, always use the least toxic method to control them. For example, you should repair holes in walls or other entry points, set roach traps, and avoid leaving out exposed food, water, or garbage. Avoid bug sprays and bombs, as these could

trigger an asthma attack. If these measures fail, you may need to consult a licensed pest control professional.

- **Control mice.** If you have seen mice or signs of mice in your home, several steps can be taken to control them. Setting traps, sealing holes and cracks or other entry points, and storing dry goods in plastic, sealable containers can help. If these measures fail, you may need to consult a licensed pest control professional.
- **Prevent mold.** Mold in homes is often caused by excessive moisture indoors. This can result from water damage caused by flooding, leaky roofs, leaking pipes, or excessive humidity. Repair any sources of water leakage. Control indoor humidity by using exhaust fans in the bathrooms and kitchen and adding a dehumidifier in areas with high humidity. The Environmental Protection Agency (EPA) currently recommends cleaning existing mold with detergent and water (though there may be debris that can continue to contribute to allergic reactions). Some materials, such as wallboards with mold, have to be replaced.
- **Reduce pollen exposure if your child is allergic to pollen.** Use an air conditioner in your child's bedroom, with the fresh air vent closed, and leave doors and windows closed during high pollen times. Seasons with high pollen counts vary by region. Check with your allergist, local newspaper, or the Internet for local pollen counts.
- **Reduce indoor irritants.** Use unscented cleaning products and avoid mothballs, room deodorizers, and scented candles.
- **Check air quality reports.** When the air quality is very poor, keep your child indoors. Check weather forecasts or the Internet for air quality reports.

What types of medicines are used?

Asthma is different in every child, and symptoms can change over time. Your child's doctor will decide which asthma medicine is best for your child based on how severe and how often your child has symptoms. Medicines may also vary depending on your child's age.

Children with asthma whose symptoms occur once in a while are given medicines only as needed and usually for short periods. Children with asthma whose symptoms occur more often need to take a different kind of medicine every day to control their symptoms. (See “Groups of asthma medicines.”)

Sometimes it's necessary to take several medicines at the same time to control and prevent symptoms. Your child's doctor may give your child several medicines at first, to get the asthma symptoms under control, and then decrease the medicines as needed.

It usually helps to have an *asthma action plan* or *asthma home management plan* written down so you can refer to it from time to time. Such a plan should contain information on daily medicines your child takes as well as instructions on what to do when symptoms occur. A copy of the plan should also be provided to your child's school or child care provider.

An example of an asthma action plan is available on the National Heart, Lung, and Blood Institute (NHLBI) Web site at http://www.nhlbi.nih.gov/health/public/lung/asthma/asthma_actplan.pdf.

Forms of asthma medicine

Asthma medicines come in a variety of forms, including the following:

- Metered-dose inhalers (MDIs)
- Dry powder inhalers (DPIs)
- Liquids that can be used in nebulizers
- Liquids that are taken by mouth
- Pills

Inhaled forms are preferred because they deliver the medicine directly to the air passages with minimal side effects.

Groups of asthma medicines

There are 2 groups of asthma medicines: quick-relief medicines and controller medicines.

- **Quick-relief medicines** are for short-term use to open up narrowed airways and help relieve wheezing, breathlessness, and the feeling of tightness in the chest. They can also be used to prevent exercise-induced asthma. These medicines are taken only on an as-needed basis. The most common quick-relief medicine is albuterol. These medicines relax the muscles around the airways to open them up. Your child's doctor may also recommend having an oral corticosteroid medicine (pill or liquid) available should your child have a moderate to severe asthma attack.
- **Controller medicines** are used on a daily basis to control asthma and prevent symptoms. They act by reducing inflammation or by causing long-term relaxation of airway muscles. Controllers are NOT used for immediate relief of symptoms. Your child's symptoms will not get better immediately after taking a dose of a controller medicine. Instead, your child's symptoms should get better over a period of days to as long as 2 weeks after starting a controller medicine. Children with symptoms more than twice per week or who wake up from sleep more than twice per month should be on controllers.

Controller medicines include the following:

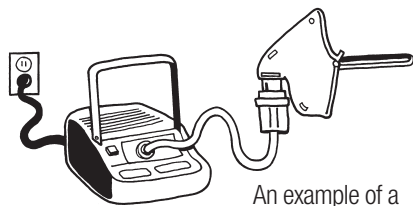
- Inhaled steroids (Inhaled steroids are the most effective and thus the preferred controller medicine for all ages. When used in recommended doses, they are safe.)
- Long-acting bronchodilators (for use only in combination products that contain inhaled steroids)
- Leukotriene receptor antagonists (available only in oral form)
- Other inhaled medicines such as cromolyn

Speak with your child's doctor about which controller medicine would be best for your child.

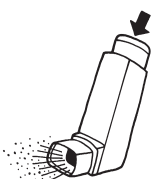
What devices are used to help deliver asthma medicines?

Medicines for asthma can be given to your child using a variety of devices including the following:

- **Nebulizer.** This device uses an air compressor and cup to change liquid medicine into a mist that can be inhaled. To be sure that the medicine gets into the lungs, controller medicines and quick-relief medicines must be given with a mouthpiece or mask.
- **Metered-dose inhaler (MDI).** This is the most commonly used device for asthma medicines. Spacers, with an attached mask or mouthpiece, should be used to help make it easier to use MDIs. Spacers should *always* be used with inhaled steroids.
As of January 1, 2009, MDIs no longer contain propellants that damage the ozone layer. The current inhalers use a propellant gas that is safe for the environment and gives a gentler, softer spray.



An example of a nebulizer machine with mask delivery.



A meter-dosed inhaler (MDI).

- **Dry powder inhaler (DPI).** This device is available for some medicines. You don't need to coordinate pressing with breathing with a DPI, but its use still requires some training. It may have less taste and does not require the use of a spacer. DPIs may be placed directly into the mouth for inhalation of the medication. These devices vary in shape and size. Because there are several different inhalers on the market, your child's doctor will suggest the one that is best for your child. There are important differences in the way they are used and amounts of medicines they deliver to the airways. You and your child will be taught how to use the inhaler, but *your child's technique should be checked regularly* to make sure your child is getting the right dose of medicine.

Peak flow meter

A *peak flow meter* is a handheld device that measures how fast a person can blow air out of the lungs. This device may be recommended by your child's doctor to help monitor your child's asthma; however, this handheld device does not give a detailed assessment of asthma like a spirometer does (described earlier).

Asthma and schools

Children spend many hours at school, which is why it is so important that asthma symptoms are well managed while they are there. It's also important that you are aware of your child's symptoms and any problems with how your child's asthma is managed in school. The following are other things to keep in mind:

1. **Good communication is important to asthma care and management in school.**
 - Consider meeting with your child's teachers, the school nurse, and coaches at the beginning of the school year. The school needs to know about your child's asthma, how severe it is, what medicines your child takes, and what to do in an emergency.
 - Ask your child's doctor to complete an asthma action plan for the school, as well as a medicine permission form that includes whether your child should be allowed to carry and use his or her own inhaler and instructions about use of a spacer with the inhaler.
 - Sign a release at school and your child's doctor's office to allow the exchange of medical information between you, the school, and your child's doctor.
 - Ask the school official or nurses about its policies on how your child will get access to his medicines and how they deal with emergencies, field trips, and after-school activities.
 - Ask for updates if necessary. The school should also inform you about any changes or problems with your child's symptoms while your child is at school.
2. **Check for triggers at school.** The environment at school is as important as the environment at home. Use the "How Asthma-Friendly Is Your School?" checklist to check your child's school and classroom. This checklist is available on the National Heart, Lung, and Blood Institute Web site at <http://www.nhlbi.nih.gov/health/public/lung/asthma/friendhi.htm>.
3. **Help your child cope with asthma at school.** Talk with your child about how well his asthma is being managed in school. Also talk with your child's teachers, school nurse, coaches, and other school personnel about how well your child is coping with asthma in school.

The following are some problems students with asthma may face at school:

- Missing school because of asthma symptoms or doctor visits.
- Avoiding school or school activities. Work with your child's doctor and school personnel to encourage your child to participate in school activities.
- Not taking medicine before exercise. Your child may avoid going to the school office or nurse's office to use his inhaler before exercise. Schools that allow children to carry their inhalers with them can help avoid this problem. This is a good idea only if your child always remembers to take his medicine and knows how to take it properly.

Remember

Asthma is a complex yet treatable condition. By using medicines, avoiding triggers and environments that can cause asthma attacks, and carefully managing symptoms, children with asthma can lead normal and healthy lives.

The following are some things to keep in mind:

- If you are concerned your child may have asthma, talk with your child's doctor. Your child's doctor may test your child's airway function. It is important to remember that asthma is a difficult disease to diagnose, and the results of lung function testing may be normal even if your child has asthma.

Exercise and asthma

Physical activity is important for your child's physical and mental health. Children with asthma should be able and encouraged to participate completely in physical education, sports, and other activities in school.

Exercise can often trigger symptoms in children with asthma. It can almost always be prevented with the use of quick-relief medicines taken 10 to 15 minutes before exercise. If it occurs often, however, it may mean your child's asthma isn't under control. Proper asthma control can make a great difference in your child's ability to exercise normally. It is important for parents to speak with their child's physical education teachers and coaches about their child's asthma management. If your child's asthma is interfering with your child's ability to participate in physical activity, tell your child's doctor.

- Decreasing your child's exposure to triggers will help decrease symptoms and the need for asthma medicines.
- There is no one magic medicine that controls all asthma. Sometimes several medicines need to be taken at the same time to control and prevent symptoms. Your child's doctor will choose the best medicines for your child and talk with you about when and how to use them.
- It's important that asthma symptoms are well managed while your child is at school.

If you have any questions about your child's health, symptoms of asthma, or how your child's asthma is being managed, talk with your child's doctor.

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From your doctor

