

The Allergy & Asthma Center

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Asthma - pediatric

Definition

Asthma is a disease of the respiratory system, which causes swelling and narrowing of the airways. Pediatric asthma refers to asthma in children.

Alternative Names

Pediatric asthma

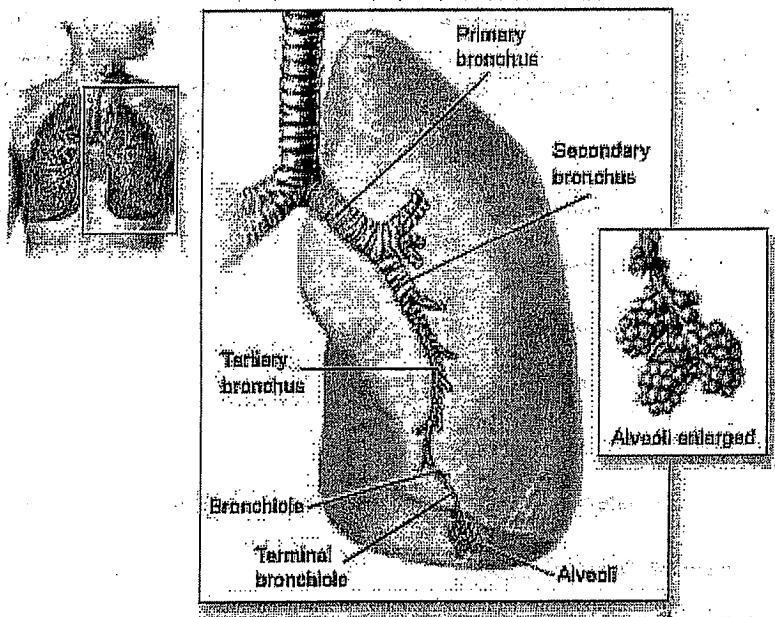
Causes

This article discusses asthma in children. For a more general discussion about the disease, please see asthma.

Asthma is commonly seen in children. It is a leading cause of hospital stays and school absences. Children with asthma may be able to breathe normally most of the time. When they encounter a substance that can cause problems (a "trigger"), an asthma attack (exacerbation) can occur.

Common asthma triggers include:

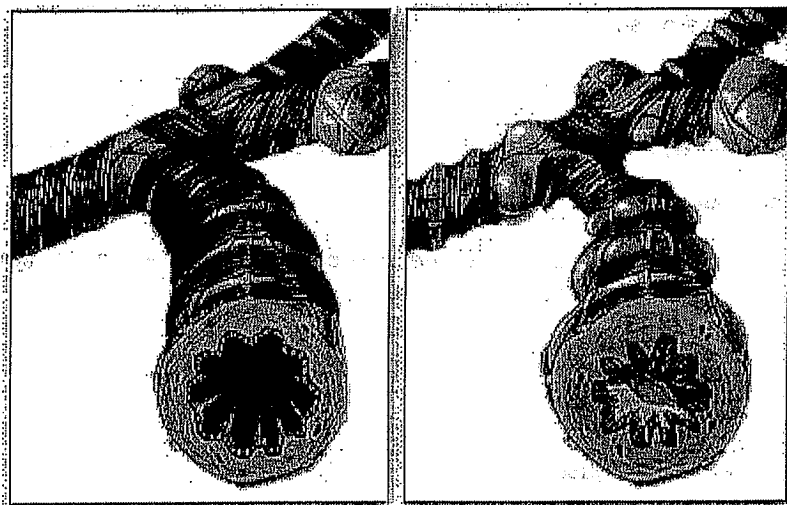
- Animals (hair or dander)
- Aspirin and other medications
- Changes in weather (most often cold weather)
- Chemicals in the air or in food
- Dust
- Exercise
- Mold



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Normal bronchiole

Asthmatic bronchiole



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- Pollen
- Strong emotions
- Tobacco smoke
- Viral infections, such as the common cold

In recent years, there has been a worldwide increase in the number of children with asthma. This trend has been linked to environmental factors, including air pollution. However, it is important to understand that indoor triggers can play just as much of a role as outdoor triggers in bringing on an asthma attack.

Children's airways are narrower than those of adults. This means that triggers that may cause only a slight problem in an adult can create more serious problems in children. In children, an asthma attack can appear suddenly with severe symptoms. For this reason, it is important that asthma be diagnosed and treated correctly. Some children may need to take medicine every day, even when they do not have symptoms.

Symptoms

- Difficulty breathing
- Fast (rapid) breathing
- Shortness of breath, even at rest
- Tightness in the chest
- Cough

Note: A persistent night-time cough is one common sign of asthma, even in children without other symptoms.

Emergency symptoms:

- Difficulty breathing
- Bluish color to the lips and face
- Severe anxiety due to shortness of breath
- Rapid pulse
- Sweating
- Decreased level of alertness, such as severe drowsiness or confusion

Exams and Tests

The doctor will use a stethoscope to listen to the lungs. Asthma-related sounds may be heard. However, lung sounds are usually normal between asthma episodes.

Tests may include:

- Lung function tests
- Peak flow measurements
- Chest x-ray
- Allergy skin or blood tests

- Arterial blood gas
- Eosinophil count (a type of white blood cell)

Treatment

You and your child's pediatrician or allergist should work together as a team to create and carry out an asthma action plan. This plan should outline how to

- Avoid asthma triggers
- Monitor symptoms
- Take medicines

The plan should also tell you when to call the nurse or doctor.

You should also have an emergency plan that outlines what to do when your child's asthma flares up. If your child is in school, make sure teachers, school nurses, physical education teachers, and coaches know about your child's need to take asthma medicine. Find out what you need to do to let your child take his medicine during school hours. (You may need to sign a consent form.) Make sure the school has a copy of your child's asthma action plan.

MEDICATIONS

There are two basic kinds of medication for the treatment of asthma:

- Long-term control medications
- Quick relief or "rescue" medications

Long-term control medications are used on a regular basis to prevent asthma symptoms, not for treatment during an attack. They should be taken every day, even when you do not have symptoms. Some people may need more than one long-term control medication.

Types of long-term control medications include:

- Inhaled steroids (such as Azmacort, Vanceril, AeroBid, Flovent) prevent swelling in your airways - these are almost the first choice of treatment
- Leukotriene inhibitors (such as Singulair and Accolate)
- Long-acting bronchodilators (such as Serevent) help open airways
- Cromolyn sodium (Intal) or nedocromil sodium
- Aminophylline or theophylline (not used as frequently as in the past)

Quick relief, or rescue, medications are used to relieve symptoms during an attack. These include:

- Short-acting bronchodilators (inhalers), such as Proventil, Ventolin, Xopenex, and others.
- Corticosteroids, such as prednisone or methylprednisolone) given by mouth or into a vein

Although these are the same medications used to treat adults, there are different inhalers and dosages especially for children. In fact, children often use a nebulizer to take their medicine rather than an inhaler, because it can be difficult for them to use an inhaler properly. Children who use an inhaler should also use a "spacer" device, which helps them to get the medicine into the lung properly.

Children with mild asthma (do not have symptoms very often) may only need quick relief medication as needed. Those with more severe asthma need to take control medications on a regular basis to prevent symptoms.

A child who is having a severe asthma attack should be immediately seen by a doctor. The child may need to stay in the hospital, and may be given oxygen and medicines by an intravenous line (IV).

ELIMINATING TRIGGERS

You and your family can help control a child's asthma by helping get rid of the indoor triggers that make symptoms worse.

If possible, keep pets outdoors, or at least away from the child's bedroom.

No one should smoke in a house or around a child with asthma. Eliminating tobacco smoke from the home is the single most important thing a family can do to help a child with asthma. Smoking outside the house is not enough. Family members and visitors who smoke carry smoke residue in and on their clothes and hair -- this can trigger asthma symptoms.

Keeping humidity levels low and fixing leaks can reduce growth of organisms such as mold. Keep the house clean and keep food in containers and out of bedrooms -- this helps reduce the possibility of cockroaches, which can trigger asthma attacks. Bedding can be covered with "allergy proof" polyurethane-coated casings to reduce exposure to dust mites. Detergents and cleaning agents in the home should be unscented.

All of these efforts can make a significant difference to the child with asthma, even though it may not be obvious right away.

KEEPING AN EYE ON YOUR CHILD'S ASTHMA

A peak flow meter is a simple device that you and your child can use at home to monitor lung function. The meter can help you see if an attack is coming, sometimes even before any symptoms appear. This allows you to take preventative measures. Peak flow measurements can help show when medication is needed, or other action needs to be taken. Peak flow values of 50-80% of the child's personal best results mean a moderate asthma attack is occurring or going to occur, while values below 50% suggest a severe attack.

Children under age 5 may not be able to use a peak flow meter well enough to make the numbers useful. An adult should always watch carefully for a child's asthma symptoms. It's a good idea to start using peak flow meters before age 5 to get the child used to them.

Outlook (Prognosis)

With proper treatment and a team approach to managing asthma, most children with asthma can live a normal life. Asthma, however, can be a life-threatening disease. It is important for families to work together with health care professionals to develop a plan to properly care for the child.

Possible Complications

The complications of asthma can be severe. Some include:

- Persistent cough
- Lack of sleep due to nighttime symptoms
- Decreased ability to exercise and take part in other activities
- Missed school
- Missed work for parents

- Emergency room visits and hospital stays
- Trouble breathing that requires breathing assistance (ventilator)
- Permanent changes in the function of the lungs
- Death

When to Contact a Medical Professional

Call your health care provider if you think that a child has symptoms of asthma. It is very important for asthma to be diagnosed and treated early in order to reduce the risk of complications. If your child is having trouble breathing or having an asthma attack, seek medical attention immediately.

Prevention

There is no fool-proof method to prevent asthma attacks. The best way to reduce the number of attacks is to eliminate triggers (especially cigarette smoke) and follow the asthma plan that you develop with your doctor. When families take control of their home environment, asthma symptoms and attacks can be significantly decreased.

References

National Asthma Education and Prevention Program Expert Panel Report 3: *Guidelines for the Diagnosis and Management of Asthma*. Rockville, MD. National Heart, Lung, and Blood Institute, US Dept of Health and Human Services; 2007. NIH publications 08-4051.

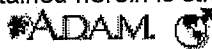
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