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Childhood asthma

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Diagnosis

Asthma can be hard to diagnose. Your child's health care provider considers the symptoms and their frequency and your child's medical history. Your child might need tests to rule out other conditions and to identify the most likely cause of the symptoms.

A number of childhood conditions can have symptoms similar to those caused by asthma. To complicate the diagnosis further, these conditions also commonly occur with asthma. So your child's provider will have to determine whether your child's symptoms are caused by asthma, a condition other than asthma, or both asthma and another condition.

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- Rhinitis.
- Sinusitis.
- Acid reflux or gastroesophageal reflux disease (GERD).
- Airway problems.
- Dysfunctional breathing.
- Respiratory tract infections such as bronchiolitis and respiratory syncytial virus (RSV).

Your child may need the following tests:

- **Lung function tests, also called spirometry.** Health care providers diagnose asthma in children with the same tests used to identify the disease in adults. Spirometry measures how much air your child can exhale and how quickly. Your child might have lung function tests at rest, after exercising and after taking asthma medicine.

Another lung function test is bronchoprovocation. Using spirometry, this test measures how the lungs react to certain provocations, such as exercise or exposure to cold air.

- **Exhaled nitric oxide test.** If the diagnosis of asthma is uncertain after lung function tests, your health care provider might recommend measuring the level of nitric oxide in an exhaled sample of your child's breath. Nitric oxide testing also can help determine whether steroid medicines might be helpful for your child's asthma.

These asthma tests aren't accurate before 5 years of age, however. For younger children, your provider will rely on information you and your child provide about symptoms. Sometimes a diagnosis can't be made until later, after months or even years of observing symptoms.

Allergy tests for allergic asthma

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pricked with extracts of common allergy-causing substances, such as animal dander, mold or dust mites, and observed for signs of an allergic reaction.

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Treatment

Initial treatment depends on the severity of your child's asthma. The goal of asthma treatment is to keep symptoms under control, meaning that your child has:

- Minimal or no symptoms.
- Few or no asthma flare-ups.
- No limitations on physical activities or exercise.
- Minimal use of quick-relief inhalers, such as albuterol (ProAir HFA, Ventolin HFA, others). These also are called rescue inhalers.
- Few or no side effects from medicines.

Treating asthma involves both preventing symptoms and treating an asthma attack in progress. The right medicine for your child depends on a few things, including:

- Age.
- Symptoms.
- Asthma triggers.

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of asthma medicine in infants and young children aren't clear.

However, if an infant or toddler has frequent or severe wheezing episodes, a health care provider might prescribe a medicine to see if it improves symptoms.

Long-term control medicines

Preventive, long-term control medicines reduce the inflammation in your child's airways that leads to symptoms. In most cases, these medicines need to be taken daily.

Types of long-term control medicines include:

- **Inhaled corticosteroids.** These medicines include fluticasone (Flovent Diskus), budesonide (Pulmicort Flexhaler), mometasone (Asmanex HFA), ciclesonide (Alvesco), beclomethasone (Qvar Redihaler) and others. Your child might need to use these medicines for several days to weeks before getting the full benefit.

Long-term use of these medicines has been associated with slightly slowed growth in children, but the effect is minor. In most cases, the benefits of good asthma control outweigh the risks of possible side effects.

- **Leukotriene modifiers.** These oral medicines include montelukast (Singulair), zafirlukast (Accolate) and zileuton (Zyflo). They help prevent asthma symptoms for up to 24 hours.
- **Combination inhalers.** These medicines contain an inhaled corticosteroid plus a long-acting beta agonist (LABA). They include fluticasone and salmeterol (Advair Diskus), budesonide and formoterol (Symbicort), fluticasone and vilanterol (Breo Ellipta), and mometasone and formoterol (Dulera).

In some situations, long-acting beta agonists have been linked to severe asthma attacks. For this reason, long-acting beta agonist (LABA) medicines should always be given to a child with an inhaler that also contains a corticosteroid. These combination inhalers should be used only for asthma.

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- **Theophylline (Theo-24).** This is a daily pill that helps keep the airways open. Theophylline relaxes the muscles around the airways to make breathing easier. It's mostly used with inhaled steroids. Children who take this medicine need to have their blood checked regularly.
- **Immunomodulatory agents.** Mepolizumab (Nucala), dupilumab (Dupixent) and benralizumab (Fasenra) might be appropriate for children over the age of 12 who have severe eosinophilic asthma. Omalizumab (Xolair) can be considered for children age 6 or older who have moderate to severe allergic asthma.

Quick-relief medicines

Quick-relief medicines quickly open swollen airways. Also called rescue medicines, quick-relief medicines are used as needed for rapid, short-term symptom relief during an asthma attack — or before exercise if your child's health care provider recommends it.

Types of quick-relief medicines include:

- **Short-acting beta agonists.** These inhaled bronchodilator medicines can rapidly ease symptoms during an asthma attack. They include albuterol and levalbuterol (Xopenex HFA). These medicines act within minutes, and effects last several hours.
- **Oral and intravenous corticosteroids.** These medicines relieve airway inflammation caused by severe asthma. Examples include prednisone and methylprednisolone. They can cause serious side effects when used long term, so they're only used to treat severe asthma symptoms on a short-term basis.

Treatment for allergy-induced asthma

If your child's asthma is triggered or worsened by allergies, your child might benefit from allergy treatment, such as the following, as well:

- **Omalizumab.** This medicine is for people who have allergies and severe

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- **Allergy medicines.** These include oral and nasal spray antihistamines and decongestants as well as corticosteroid, cromolyn and ipratropium nasal sprays.
- **Allergy shots, also called immunotherapy.** Immunotherapy injections are generally given once a week for a few months, then once a month for a period of 3 to 5 years. Over time, they gradually reduce your child's immune system reaction to specific allergens.

Don't rely only on quick-relief medicines

Long-term asthma control medicines such as inhaled corticosteroids are the cornerstone of asthma treatment. These medicines keep asthma under control and make it less likely that your child will have an asthma attack.

If your child does have an asthma flare-up, a quick-relief, also called rescue, inhaler can ease symptoms right away. But if long-term control medicines are working properly, your child shouldn't need to use a quick-relief inhaler very often.

Keep a record of how many puffs your child uses each week. If your child frequently needs to use a quick-relief inhaler, see a health care provider. You'll probably need to adjust your child's long-term control medicine.

Inhaled medicine devices

Inhaled short- and long-term control medicines are used by inhaling a measured dose of medicine.

- **Older children and teens** might use a small, hand-held device called a pressurized metered dose inhaler or an inhaler that releases a fine powder.
- **Infants and toddlers** need to use a face mask attached to a metered dose inhaler or a nebulizer to get the correct amount of medicine.
- **Babies** need to use a device that turns liquid medication into fine droplets, called a nebulizer. Your baby wears a face mask and breathes regularly while the nebulizer delivers the correct dose of medicine.

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Work with your child's health care provider to create a written asthma action plan. This can be an important part of treatment, especially if your child has severe asthma. An asthma action plan can help you and your child:

- Recognize when you need to adjust long-term control medicines.
- Determine how well treatment is working.
- Identify the signs of an asthma attack and know what to do when one occurs.
- Know when to call a health care provider or seek emergency help.

Children who have enough coordination and understanding might use a hand-held device to measure how well they can breathe. This device is called a peak flow meter. A written asthma action plan can help you and your child remember what to do when peak flow measurements reach a certain level.

The action plan might use peak flow measurements and symptoms to categorize your child's asthma into zones, such as a green zone, a yellow zone and a red zone. These zones correspond to well-controlled symptoms, partly controlled symptoms and poorly controlled symptoms. This makes tracking your child's asthma easier.

Your child's symptoms and triggers are likely to change over time. Observe symptoms and work with your child's health care provider to adjust medicines as needed.

If your child's symptoms are completely controlled for a time, your child's provider might recommend lowering doses or stopping asthma medicines. This is known as step-down treatment. If your child's asthma isn't as well controlled, the provider might want to increase, change or add medicines. This is known as step-up treatment.

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[Treating asthma in children ages 5 to 11](#)

Clinical trials

[Explore Mayo Clinic studies](#) testing new treatments, interventions and tests as a means to prevent, detect, treat or manage this condition.

Self care

Taking steps to reduce your child's exposure to asthma triggers will lessen the possibility of asthma attacks. Steps to help avoid triggers vary depending on what triggers your child's asthma. Here are some things that may help:

- **Maintain low humidity at home.** If you live in a damp climate, talk to your child's doctor about using a device to keep the air drier, called a dehumidifier.
- **Keep indoor air clean.** Have a heating and air conditioning professional check your air conditioning system every year. Change the filters in your furnace and air conditioner according to the manufacturer's instructions. Also consider installing a small-particle filter in your ventilation system.
- **Reduce pet dander.** If your child is allergic to dander, it's best to avoid pets with fur or feathers. If you have pets, regularly bathing or grooming them also might reduce the amount of dander. Keep pets out of your child's room.
- **Use your air conditioner.** Air conditioning helps reduce the amount of airborne pollen from trees, grasses and weeds that finds its way indoors. Air conditioning also lowers indoor humidity and can reduce your child's exposure to dust mites. If you don't have air conditioning, try to keep your windows closed during pollen season.
- **Keep dust to a minimum.** Reduce dust that can aggravate nighttime symptoms by adjusting certain items in your child's bedroom. For example,

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- **Clean regularly.** Clean your home at least once a week to remove dust and allergens.
 - **Reduce your child's exposure to cold air.** If your child's asthma is worsened by cold, dry air, wearing a face mask outside can help.
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Alternative medicine

While some alternative remedies are used for asthma, in most cases more research is needed to see how well they work and to determine possible side effects. Alternative treatments to consider include:

- **Breathing techniques.** These include structured breathing programs, such as the Buteyko breathing technique, the Papworth method and yoga breathing exercises, known as pranayama.
- **Relaxation techniques.** Techniques such as meditation, biofeedback, hypnosis and progressive muscle relaxation might help with asthma by reducing tension and stress.
- **Herbal remedies and supplements.** A few herbal remedies have been tried for asthma, including black seed, fish oil and magnesium. However, further studies are needed to assess their benefit and safety.

Herbs and supplements can have side effects and can interact with other medicines your child is taking. Talk to your child's health care provider before trying any herbs or supplements.

Coping and support

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- **Make treatment a regular part of life.** If your child has to take daily medicine, don't make a big deal out of it — it should be as routine as eating breakfast or brushing teeth.
- **Use a written asthma action plan.** Work with your child's health care provider to develop your child's action plan, and give a copy to all of your child's caregivers, such as child care providers, teachers, coaches and the parents of your child's friends.

Following a written plan can help you and your child identify symptoms early, providing important information on how to treat your child's asthma from day to day and how to deal with an asthma attack.

- **Be encouraging.** Focus attention on what your child can do, not on limitations. Involve teachers, school nurses, coaches, relatives and friends in helping your child manage asthma.

Encourage typical play and activity. Don't limit your child's activities out of fear of an asthma attack — work with your child's provider to control exercise-induced symptoms.

- **Be calm and in control.** Don't get rattled if asthma symptoms worsen. Focus on your child's asthma action plan, and involve your child in each step so your child understands what's happening.
- **Talk to other parents of children with asthma.** Chatrooms and message boards on the internet or a local support group can connect you with parents facing similar challenges.
- **Help your child connect with others who have asthma.** Send your child to "asthma camp" or find other organized activities for children with asthma. This can help your child feel less isolated and gain a better understanding of asthma and its treatment.

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You're likely to start by taking your child to your primary health care provider or your child's pediatrician. However, when you call to set up an appointment, you may be referred to an allergist, a lung doctor, called a pulmonologist, or another specialist. Here's some information to help you get ready for your child's appointment.

What you can do

Make a list of:

- **Your child's symptoms**, how severe they are and when they occur. Note when symptoms bother your child most — for example, if symptoms tend to get worse at certain times of the day; during certain seasons; when your child is exposed to cold air, pollen or other triggers; or when your child is playing hard or playing sports.
- **Key personal information**, including any major stresses or recent life changes your child has had.
- **All medicines**, vitamins and supplements your child takes, including doses.
- **Questions to ask** during the appointment.

For asthma or asthma-like symptoms, questions to ask include:

- Is asthma the most likely cause of my child's breathing problems?
- What else could be causing my child's symptoms?
- What tests does my child need?
- Is my child's condition likely temporary or chronic?
- What treatment do you suggest?
- My child has other health conditions. How can we best manage them together?
- Are there restrictions my child needs to follow?

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- Are there brochures or other printed materials I can have? What websites do you recommend?

Don't hesitate to ask other questions.

What to expect from your child's doctor

Your child's health care provider is likely to ask questions, including:

- When did you notice your child's symptoms?
- Does your child have difficulty breathing most of the time or only at certain times or in certain situations?
- Does your child have allergies such as hay fever?
- What, if anything, appears to worsen your child's symptoms?
- What, if anything, seems to improve your child's symptoms?
- Do allergies or asthma run in your child's family?

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By Mayo Clinic Staff

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