

Chronic Asthma Control

Asthma (az-muh) is a chronic lung disease that inflames and narrows the airways in the lungs. Inflammation makes the airways swollen and very sensitive. This swelling causes the muscles around the airways to tighten and narrow, allowing less air to flow into the lungs. As a result, the airways make more mucus than usual, making it even harder for air to flow through them. When this chain reaction results in intense asthma symptoms, you are having an *asthma attack*, also called a *flareup* or *exacerbation* (eg-zas-er-bay-shun).

More than 25 million people in the U.S. have asthma, including 7 million children. For some, asthma causes only minor symptoms and is easily managed. For others, asthma can be a major problem that interferes with daily activities and may lead to a life-threatening asthma attack.

What causes it?

Asthma can flare up in different situations. *Exercise-induced asthma* occurs during physical activity and can be made worse when the air is cold and dry. *Occupational (ock-you-pay-shun-uhl) asthma* is triggered by workplace irritants, such as chemical fumes, gases, or dust. *Allergy-induced asthma* is triggered by allergens, such as animal fur, mold, cockroaches, or pollen. Other triggers include:

- Lung infections, such as a cold or the flu
- Smoke inhalation
- Certain medications, including beta-blockers, aspirin, ibuprofen, and naproxen
- Strong emotions and stress
- Preservatives added to some types of foods and beverages
- Gastroesophageal reflux disease (GERD)
- Menstrual cycle in some women

How do I know if I'm at risk?

Most, but not all, people with asthma develop it during childhood. Children who wheeze or have respiratory infections are at the highest risk of developing

asthma that continues beyond age 6 years. Additional risk factors include:

- Having a blood relative with asthma
- Having another allergic condition
- Obesity
- Being a smoker
- Exposure to secondhand smoke
- Having a mother who smoked during pregnancy
- Exposure to certain types of pollution
- Exposure to chemicals, such as those used in farming, hairdressing, and manufacturing

What are the symptoms?

Symptoms vary based on the severity of your asthma and can change over time. Common asthma symptoms include:

- Coughing that is worse at night or in the morning
- Wheezing, which is a whistling or squeaky sound that occurs when you breathe
- Shortness of breath
- Chest tightness or chest pain

When do I need medical attention?

Seek immediate medical attention by calling your doctor, local emergency number, or 911 if you experience shortness of breath when you are doing minimal physical activity or if you have a rapid worsening of shortness of breath or wheezing with no improvement of symptoms, even after using a quick-relief inhaler. These are all signs of an asthma attack, which can be life-threatening.

If you have not been diagnosed with asthma but are having frequent coughing or wheezing that lasts more than a few days, make an appointment with your primary care doctor. Treating asthma early can help prevent long-term damage to your airways.

What tests will I need?

Your doctor will take your medical and family history, perform a physical examination, and conduct certain tests to determine the severity of your asthma.

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Tests your doctor may give you include:

- **Lung function tests.** A *spirometry* (spy-rom-eh-tree) test estimates the narrowing of your bronchial tubes by checking how much air you can exhale and how fast you can breathe out. A *peak flow meter* measures how hard you breathe out.
- **Allergy testing.** This test can be performed by a skin or blood test to determine any allergies.
- **Bronchoprovocation (brong-ko-prov-uh-kay-shun) test.** This measures your lung function during physical activity or after you receive doses of cold air or a special chemical to breathe in.
- **Chest X-ray or CT scan.** Imaging tests can identify any diseases or foreign objects in the lungs or sinuses that may worsen breathing problems.
- **Methacholine (meth-uh-koh-leen) challenge.** If you react after inhaling methacholine, you likely have asthma. This test may be performed if your first asthma test is normal.
- **Sputum eosinophils (spew-tum ee-oh-sin-oh-fils).** This test looks for certain white blood cells in the saliva/mucus that you discharge during coughing.

How is it treated?

Asthma cannot be cured, but with the right treatment, symptoms can be well controlled. Over time, your doctor may adjust your treatment to help you maintain the best control possible with the least amount of medicine necessary.

Medicines frequently prescribed for asthma control fall into 3 categories. The first is **long-term control medicines**, which help reduce airway inflammation and prevent asthma symptoms:

- **Inhaled corticosteroids (kor-tih-ko-stehr-oids)** are the most effective option for long-term relief of inflammation and swelling.
- **Leukotriene (loo-ko-try-een) modifiers** help relieve asthma symptoms for up to 24 hours.
- **Long-acting beta agonists** are inhaled and open the airways. These medications should only be used with inhaled corticosteroids and should not be used during an asthma attack.

- **Combination inhalers** contain a long-acting beta agonist and a corticosteroid.
- **Theophylline (thee-ohf-uh-lin)** is a pill that helps keep the airways open by relaxing the muscles around them.

The second category is **quick-relief medicines**, used as needed for symptom relief during an asthma attack or before physical exercise:

- **Short-acting beta agonists** can be taken using a portable, handheld inhaler or a nebulizer (a machine that converts medicines to a fine mist).
- **Ipratropium (ip-ruh-troh-pee-um)** can be used to immediately relax the airways.
- **Oral and IV corticosteroids** relieve airway inflammation caused by severe asthma.

The third category is **allergy medications**, prescribed if your symptoms are triggered or made worse by allergies (most people with asthma have allergies):

- **Allergy shots (immunotherapy)** gradually reduce your immune system's reaction to allergens.
- **Omalizumab (oh-ma-liz-you-mab)** is an injection that alters your immune system.
- **Allergy medications** include oral and nasal spray antihistamines (an-tie-his-tuh-meens) and decongestants (dee-cun-jes-tunts) as well as corticosteroid and cromolyn nasal sprays.

You should also work with your doctor to create an **asthma action plan**, which describes your daily treatments, the medicines to take, when to take them, and when you need to call your doctor or visit the emergency department.

It is important to track how well your asthma is controlled and to share this information with your doctor during regular asthma checkups. For more information on creating an asthma action plan, visit http://www.nhlbi.nih.gov/health/public/lung/asthma/asthma_actplan.pdf.

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