written by
Harvard Medical School

Asthma

Your Guide to Breathing Easier

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Patient Education Center

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Breathing is something most of us take for granted. But asthma can make breathing hard, even scary. Fortunately, with lifestyle changes and treatment, most people with asthma can lead full, active lives.

Your Lungs, in Health and in Asthma

The average person takes more than 20,000 breaths a day. With each breath, air travels down the windpipe, then through smaller tubes called *bronchi*. Finally, the air arrives at the lungs' 300 million tiny air sacs. Here, oxygen crosses into the blood, and carbon dioxide is removed.

Asthma is a disease of the bronchi. These small tubes must be open for air to pass. But in asthma, the muscles around the bronchi tighten, narrowing the passages. Also, tissue that lines the tubes becomes inflamed (or swollen), and bronchial glands produce too much mucus. This clogs the small airways and makes breathing hard. The problems wax and wane, so symptoms come and go.

Who Gets Asthma?

More than 20 million Americans have asthma. The disease is most common in children. It can also develop later in life. Some children "outgrow" asthma, but it's usually a chronic disease in adults. Many patients with asthma also have allergies.

Symptoms

The major symptoms of asthma are:

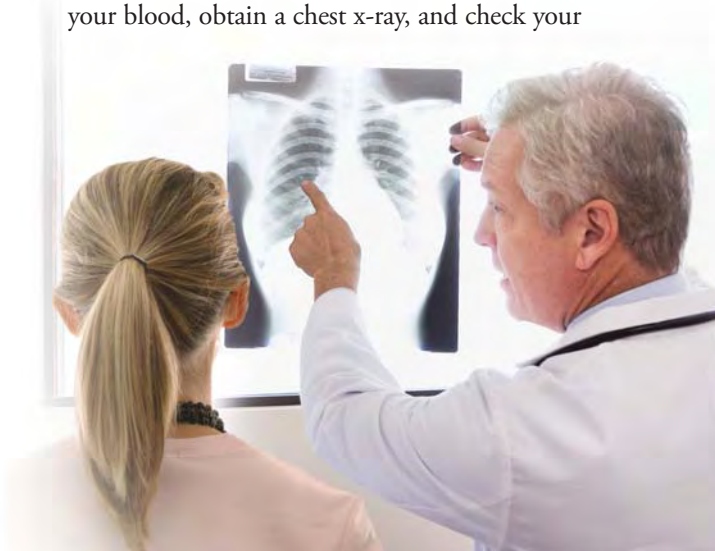
- Wheezing
- Coughing
- Shortness of breath
- Sputum *(phlegm)*
- Chest tightness

You can have these symptoms on their own or in various combinations. Attacks can begin abruptly or slowly, and they can be brief or prolonged. Asthma is usually mild or moderate. Sometimes, it develops into a life-threatening emergency. That's why asthma must always be taken seriously and treated.

Diagnosis

Your doctor will ask about your symptoms and what triggers them. Your family history is also important. If you are examined between attacks, your lungs will sound normal. During an attack, your doctor will hear wheezing. In a severe attack, your breathing will be fast and shallow, your pulse will be rapid, you'll be sweaty and anxious, and your lips may look bluish.

If you are having a moderate to severe attack, your doctor will want to check the amount of oxygen in your blood, obtain a chest x-ray, and check your



blood counts and sputum for signs of infection. But even between attacks, your doctor can use two tests to diagnose asthma:

1) Spirometry. You breathe into a device that measures the force, speed, and volume of your airflow. If you have active asthma, your numbers will be low. You may be given a bronchodilator drug to see if you improve, as do most people with asthma. But if your numbers are normal and your doctor still suspects asthma, you may be asked to take other tests to confirm if you have asthma.

2) Peak flow meter. You can use this small, hand-held device to check your own airflow. Simply take in a deep breath, put the device to your lips and blow out as hard as you can. Compare your reading with your personal best and with normal values. If your peak flow begins to decline, you'll need treatment. If you fall below 60% of normal, you're at risk for a severe attack, and you need prompt medical care.

Everyone with moderate or severe asthma should use a peak flow meter at least once a day. Some patients will also benefit from skin tests or blood tests to detect allergies that may trigger attacks.

Prevention

Many patients can reduce or even eliminate asthma attacks by avoiding triggers such as:

- Allergens *(dust mites, mold, animal dander, etc)*

- Smoke and other fumes
- Viruses and other respiratory infections *(avoid exposure to infections, wash hands carefully, get a flu shot each fall, and get vaccinated to prevent pneumonia)*

- Exercise in cold, dry air
- "Heartburn" *(gastroesophageal reflux)*

- Drugs that trigger attacks *(some patients are allergic to aspirin, others wheeze after taking beta-blockers)*

- Stress

Asthma Care

Asthma treatment is complex. Your doctor will choose medications that are best for you based on whether your asthma is mild, moderate, or severe. But a good result requires your full partnership. That means making the lifestyle changes you need, taking your medications as directed, using your peak flow meter, and recording your results. Above all, stay in touch with your doctor and report any severe flare ups in your symptoms right away.

Medications

There are two main types of asthma drugs: **quick relievers** (also known as "fast-acting" or "rescue" inhalers) and **controllers** (used to prevent flare ups and maintain airflow). These terms reflect how the drugs should be used.

In general, asthma drugs have 2 goals:

1) to prevent or reverse constriction of the bronchial muscles (bronchodilators)

2) to reduce inflammation of the bronchial tubes (anti-inflammatory drugs)

Bronchodilators and anti-inflammatory drugs work on very different schedules. The muscles that surround the breathing tubes can contract, or tighten up, in minutes. These muscles can be made to relax, with a quick reliever, in minutes.

Inflammation of the bronchial tubes comes on more slowly. It can take hours or days for inflammation to respond to anti-inflammatory drugs. Quick relievers can be used on and off for fast relief of symptoms. Anti-inflammatory drugs need to be taken regularly over many days and perhaps for the rest of your life. When you stop taking these drugs, asthmatic inflammation of bronchial tubes may come back within days.

For all but mild asthma, a good asthma management plan involves taking both types of medicine. You must take controller drugs every day, whether you have symptoms or not. You should still use your quick reliever as prescribed, whenever you have asthma symptoms. Everyone with asthma should have a quick reliever handy at all times, just in case.

Treatment Goals

The goals of good asthma therapy, as identified by the National Asthma Education and Prevention Program, are as follows:

- Prevent persistent and troublesome symptoms *(for example, recurrent coughing or waking at night out of breath)*.
- Maintain normal or near-normal lung function.
- Maintain normal activity levels *(including exercise and other physical activity)*.
- Prevent recurrent asthma attacks and minimize the need for emergency department visits or hospitalizations.
- Provide optimal treatment with minimal or no adverse effects.
- Satisfy your expectations of asthma care.

This doesn't mean that you'll never experience asthma symptoms. It does mean that your treatment plan should be good enough so that most of the time asthma doesn't interfere with your feeling well and with doing whatever you'd like to do.

Monitoring symptoms. Judging the severity of your asthma and how well it is controlled can be based on how much it affects your life. If you are having frequent asthma symptoms, are limited in your ability to exercise because of asthma, have impaired lung function, and often have attacks that require emergency care, your asthma is severe and out of control. If the opposite is true, then your asthma is under control.

A good asthma management plan involves taking both types of medicine.

To learn more about asthma, visit the **Pri-Med Patient Education Center** at **www.patientedu.org/asthma**

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