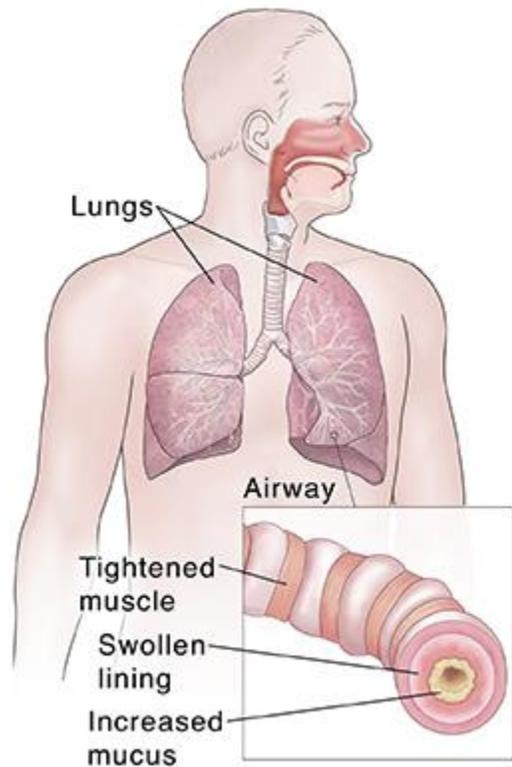


## Understanding Asthma



Asthma causes swelling and narrowing of the airways in your lungs. Medical experts are not exactly sure what causes asthma. It is believed to be caused by a mix of inherited and environmental factors.

### Healthy lungs

Inside the lungs there are branching airways made of stretchy tissue. Each airway is wrapped with bands of muscle. The airways become more narrow as they go deeper into the lungs. The smallest airways end in clusters of tiny balloon-like air sacs (alveoli). These clusters are surrounded by blood vessels. When you breathe in (inhale), air enters the lungs. It travels down through the airways until it reaches the air sacs. When you breathe out (exhale), air travels up through the airways and out of the lungs. The airways produce mucus that traps particles you breathe in. Normally, the mucus is then swept out of the lungs by tiny hairs (cilia) that line the airways. The mucus is swallowed or coughed up.

### What the lungs do

The air you inhale contains oxygen. When oxygen reaches the air sacs, it passes into the blood vessels surrounding the sacs. Your blood then delivers oxygen to all of your cells. As you exhale, carbon dioxide is removed in a similar way from the blood in the air sacs, and from the body.

### When you have asthma

People with asthma have very sensitive airways. This means the airways react to certain things called triggers (such as pollen, dust, or smoke) and become swollen and narrowed. Inflammation

makes the airways swollen and narrowed. This is a long-lasting (chronic) problem. The airways may not always be narrowed enough to notice breathing problems.

Symptoms of chronic inflammation:

- Coughing
- Chest tightness
- Shortness of breath
- Wheezing (a whistling noise, especially when breathing out)
- Low energy or feeling tired

In some people, over time chronic mild inflammation can lead to lasting (permanent) scarring of airways and loss of lung function.

### **Moderate flare-ups**

When sensitive airways are irritated by a trigger, the muscles around the airways tighten. The lining of the airways swells. Thick, sticky mucus increases and partly clogs the airways. All of this makes you work harder to keep breathing.

Symptoms of moderate flare-ups:

- Coughing, especially at night
- Getting tired or out of breath easily
- Wheezing
- Chest tightness
- Faster breathing when at rest

### **Severe flare-ups**

Severe flare-ups are life-threatening. In a severe flare-up, the muscle tightening, swelling, and mucus production are even worse. It's very hard to breathe. Your body can't get enough oxygen and can't remove carbon dioxide. Waste gas is trapped in the alveoli, and gas exchange can't occur. The body is not getting enough oxygen. Without oxygen, body tissues, especially brain tissue, begin to get damaged. If this goes on for long, it can lead to severe brain damage or death.

**Call 911** (or have someone call for you) if you have any of these symptoms and they are not relieved right away by taking your quick-relief medicine as prescribed:

- Severe trouble breathing
- Too short of breath to talk or walk
- Lips or fingers turning blue
- Feeling lightheaded or dizzy, as though you are about to pass out
- Peak flow less than 50% of your personal best, if you use peak flow monitoring

Asthma is a long-term condition. So it's important to work with your healthcare provider to manage it. If you smoke, get help to quit. Know your triggers and figure out how to avoid them. It's also very important to take your medicines as directed. That means taking them even when you feel good.