



## Chronic Obstructive Pulmonary Disease (COPD)

Chronic obstructive pulmonary disease or COPD refers to respiratory (lung) diseases that cause breathing difficulties and block airflow from the lungs. Chronic bronchitis (inflammation and narrowing of the bronchial tubes) and emphysema (damage to the lining of the air sacs in the lungs) are the two most common types.

Your doctor may perform pulmonary function testing (spirometry) or arterial blood gas analysis to help diagnose your condition. Chest x-ray or chest CT may be used to measure the extent of your disease. While there is no cure for COPD, your doctor may recommend lifestyle changes, therapies, medication and/or surgery to help relieve your symptoms.



- What is Chronic Obstructive Pulmonary Disease (COPD)?
- How is COPD diagnosed and evaluated?
- How is COPD treated?

## What is Chronic Obstructive Pulmonary Disease (COPD)?

Chronic obstructive pulmonary disease (COPD) refers to pulmonary diseases that cause breathing difficulties and block airflow from the lungs. The two most common types of COPD are chronic bronchitis and emphysema.

Chronic bronchitis is the inflammation and narrowing of the bronchial tubes. It also creates excess mucus, blocking airflow. You may develop a chronic cough, which occurs in order to clear the mucus from the airways. In order for bronchitis to be considered chronic, you must have a cough that lasts at least three months of the year for two years.

Emphysema occurs when the linings of the air sacs are damaged and air pockets develop in the lungs. Once the air becomes trapped, the lungs slowly increase in size and lose their elasticity, which makes breathing difficult because the lungs cannot exhale completely.

There are many factors that contribute to the development of COPD. The leading cause is long-term tobacco smoking. Others include:

- Secondhand smoke
- Air pollution
- Long-term exposure to harmful fumes or dust in the workplace

In rare cases, non-smokers or children may develop COPD as a result of alpha-1 antitrypsin deficiency (A1AD). A1AD is a genetic disorder caused by low levels of a protein called alpha-1 antitrypsin. These patients develop emphysema that is located at the base of the lungs.

Symptoms of COPD include:

- Shortness of breath
- Chronic cough, often with excess mucus
- Recurrent respiratory infections
- Wheezing
- Tightness in the chest
- Cyanosis, or a blue discoloration of the lips or fingernail beds
- Fatigue

## How is COPD diagnosed and evaluated?

Your primary care doctor will begin by taking your medical history and asking about symptoms. You will also undergo a physical exam.

If your doctor suspects you are suffering from COPD, the following tests may be performed:

- **Spirometry:** This lung function test involves the use of a machine called a spirometer that measures how much air you are able to inhale and exhale and how quickly you are able to do so.
- **Arterial blood gas analysis:** This test measures how much oxygen and carbon dioxide are present in the blood. A high percentage of carbon dioxide in the blood can be a sign of poorly functioning lungs caused by COPD.

Your doctor may also order the following imaging tests:

- **Chest x-ray:** This exam can help support the diagnosis of COPD by producing images of the lungs to evaluate symptoms of shortness of breath or chronic cough. While chest x-rays may not show COPD until it is severe, the images may show enlarged lungs, irregular air pockets ( bullae) or a flattened diaphragm. A chest x-ray may also be used to determine if another condition may be causing symptoms similar to COPD. See the Safety section for more information about x-rays.
- **Chest computed tomography (CT) scan:** This exam may be performed to help support the diagnosis of COPD or determine if the disease has worsened. It combines special x-ray equipment with sophisticated computers to produce multiple images or pictures of the inside of the lungs. These images can identify emphysema better and at an earlier stage than a chest x-ray. They can also identify other changes of COPD such as enlarged arteries in the lungs. CT is sometimes used to measure the extent of emphysema within the lungs. It can also help determine if the symptoms are

the result of another disease of the chest. See the Safety section for more information about CT.

## How is COPD treated?

While there is no cure for COPD, your doctor may recommend one or more of the following to help relieve symptoms:

- **Lifestyle changes:** Discontinuing the use of tobacco and increasing physical activity.
- **Therapies:** Oxygen therapy involves the use of a device that brings additional oxygen to your lungs. Pulmonary rehabilitation is a program that uses counseling, diet advice and physical activities to educate you on how to manage your COPD.
- **Medications:** Steroids, inhalers and antibiotics may be prescribed in an effort to treat symptoms of COPD.
- **Surgery:** In severe cases, major surgery, such as a lung transplant or lung volume reduction surgery, may be needed when symptoms have not improved by way of medication or therapies.

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