**Chronic Obstructive Pulmonary Disease (COPD)**

Chronic obstructive pulmonary disease (COPD) refers to a group of diseases that includes chronic bronchitis and emphysema. Over time, COPD makes it harder to breathe. You can’t reverse lung damage, but lifestyle changes and medication changes can help you manage the symptoms.

### What is COPD (chronic obstructive pulmonary disease)?

COPD is an umbrella term for a range of progressive lung diseases. Chronic bronchitis and emphysema can both result in COPD. A COPD diagnosis means you may have one of these lung-damaging diseases or symptoms of both. COPD can progress gradually, making it harder to breathe over time.

#### Chronic bronchitis

Chronic bronchitis irritates your bronchial tubes, which carry air to and from your lungs. In response, the tubes swell and mucus (phlegm or “snot”) builds up along the lining. The buildup narrows the tube’s opening, making it hard to get air into and out of your lungs.

Small, hair-like structures on the inside of your bronchial tubes (called cilia) normally move mucus out of your airways. But the irritation from chronic [bronchitis](https://my.clevelandclinic.org/health/diseases/3993-bronchitis) and/or smoking damages them. The damaged cilia can’t help clear mucus.

#### Emphysema

Emphysema is the breakdown of the walls of the tiny air sacs (alveoli) at the end of the bronchial tubes, in the “bottom” of your lung. Your lung is like an upside-down tree. The trunk is the windpipe or “trachea,” the branches are the “bronchi,” and the leaves are the air sacs or “alveoli.”

The air sacs play a crucial role in transferring oxygen into your blood and carbon dioxide out. The damage caused by [emphysema](https://my.clevelandclinic.org/health/diseases/9370-emphysema) destroys the walls of the air sacs, making it hard to get a full breath.

### What’s the difference between asthma and COPD?

Asthma and COPD are similar in many ways, including similar symptoms like shortness of breath and blocked airflow. However, COPD is chronic and progressive. Asthma is often set off by allergens. COPD’s main cause is smoking.

People with asthma don’t automatically develop COPD. People with COPD don’t always have asthma. However, it’s possible to have both of these respiratory conditions. If you do have both, you need to treat both.

### How common is COPD?

Statistics put the number of Americans diagnosed with COPD at about 15 million people in 2020 with another 12 million not yet diagnosed.

### Who gets COPD?

The primary, or main, cause of COPD is smoking. But not all smokers develop the disease. You may be at higher risk if you:

* Are someone who was assigned female at birth.
* Are over the age of 65.
* Have been exposed to air pollution.
* Have worked with chemicals, dust or fumes.
* Have alpha-1 antitrypsin deficiency (AAT), a genetic risk factor for COPD.
* Had many respiratory infections during childhood.

### What causes COPD?

Smoking tobacco causes up to 90% of COPD cases. Other causes include:

* Alpha-1 antitrypsin (AAT) deficiency, a genetic disorder.
* Secondhand smoke.
* Air pollution.
* Workplace dust and fumes.

#### Smoking

Tobacco smoke irritates airways, triggering inflammation (irritation and swelling) that narrows the airways. Smoke also damages cilia so they can’t do their job of removing mucus and trapped particles from the airways.

#### AAT deficiency

AAT ([alpha-1 antitrypsin deficiency](https://my.clevelandclinic.org/health/diseases/21175-alpha-1-antitrypsin-deficiency)) is an uncommon, inherited disorder that can lead to emphysema. Alpha-1 antitrypsin is an enzyme that helps protect your lungs from the damaging effects of inflammation. When you have AAT deficiency, you don’t produce enough of alpha-1 antitrypsin. Your lungs are more likely to become damaged from exposure to irritating substances like smoke and dust. It’s not possible to distinguish COPD related to alpha-1 antitrypsin deficiency from common COPD. Therefore, all people with COPD should get screened for AAT deficiency with a blood test.

### What are the signs and symptoms of chronic obstructive pulmonary disease?

* Cough with mucus that persists for long periods of time.
* Difficulty taking a deep breath.
* Shortness of breath with mild exercise (like walking or using the stairs).
* Shortness of breath performing regular daily activities.
* Wheezing.

### When should I call my healthcare provider if I have COPD symptoms?

If you’re having any of the signs or symptoms of COPD, don't wait for your next appointment to call your provider. Report these symptoms promptly, even if you don't feel sick. Don't wait for symptoms to become so severe that you need to seek emergency care. If you notice your symptoms early, your provider might change your treatment or medications to relieve your symptoms. (Never change or stop taking your medications without first talking to your healthcare provider.)

Note: Remember that warning signs or symptoms might be the same or different from one flare-up to another.

### Nonemergency care

Talk to your provider on the phone within 24 hours if you have these changes in your health:

#### Shortness of breath that has become worse or occurs more often

Examples include:

* Unable to walk as far as you usually could.
* You need more pillows or have to sit up to sleep because of breathing difficulty.
* You feel more tired because you're working harder to breathe.
* You need breathing treatments or inhalers more often than usual.
* You wake up short of breath more than once a night.

#### Sputum (mucus) changes

Examples include:

* Changes in color.
* Presence of blood.
* Changes in thickness or amount. You have more mucus than usual or more than you’re able to cough out.
* Odor.

#### Other signs and symptoms should prompt a call to your provider regarding COPD

These include:

* More coughing or wheezing.
* Swelling in your ankles, feet, or legs that is new or has become worse and doesn't go away after a night's sleep with your feet up.
* Unexplained weight loss or gain of 2 lbs. in a day or 5 lbs. in a week.
* Frequent morning headaches or dizziness.
* Fever, especially with cold or flu symptoms.
* Restlessness, confusion, forgetfulness, slurring of speech or irritability.
* Unexplained, extreme fatigue or weakness that lasts for more than a day.

## DIAGNOSIS AND TESTS

### How is COPD diagnosed?

To assess your lungs and overall health, your healthcare provider will take your medical history, perform a physical exam and order some tests, like breathing tests.

#### Medical history

To diagnose COPD, your provider will ask questions like:

* Do you smoke?
* Have you had long-term exposure to dust or air pollutants?
* Do other members of your family have COPD?
* Do you get short of breath with exercise? When resting?
* Have you been coughing or wheezing for a long time?
* Do you cough up phlegm?

#### Physical exam

To help with the diagnosis, your provider will do a physical exam that includes:

* Listening to your lungs and heart.
* Checking your blood pressure and pulse.
* Examining your nose and throat.
* Checking your feet and ankles for swelling.

#### Tests

Providers use a simple test called [spirometry](https://my.clevelandclinic.org/health/diagnostics/17833-spirometry) to see how well your lungs work. For this test, you blow air into a tube attached to a machine. This lung function test measures how much air you can breathe out and how fast you can do it.

Your provider may also want to run a few other tests, such as:

* **Pulse oximetry:**This test measures the oxygen in your blood.
* **Arterial blood gases (ABGs):**These tests checkyour oxygen and carbon dioxide levels.
* **Electrocardiogram** **(ECG or EKG):**This test checks heart function and rules out heart disease as a cause of shortness of breath.
* **Chest X-ray** or **chest CT scan:** Imaging tests look for lung changes that COPD causes.
* **Exercise testing:**Your provider uses this to determine if the oxygen level in your blood drops when you exercise.

### What are the stages of COPD?

COPD can gradually get worse. How fast it progresses from mild to severe varies from person to person.

#### Mild COPD (stage 1 or early stage)

The first sign of COPD is often feeling out of breath with light exercises, like walking up stairs. Because it’s easy to blame this symptom on being out of shape or getting older, many people don’t realize they have COPD. Another sign is a phlegmy cough (a cough with mucus) that’s often particularly troublesome in the morning. These are early warning signs of COPD.

#### Moderate to severe COPD (stages 2 and 3)

In general, shortness of breath is more evident with more advanced COPD. You may develop shortness of breath even during everyday activities. Also, exacerbations of COPD — times when you experience increased phlegm, discoloration of phlegm, and more shortness of breath — are generally more common in higher stages of COPD. You also become prone to lung infections like bronchitis and [pneumonia](https://my.clevelandclinic.org/health/diseases/4471-pneumonia).

#### Very severe COPD (stage 4)

When COPD becomes severe, almost everything you do can cause shortness of breath. This limits your mobility. You may need supplemental oxygen from a portable tank.

## MANAGEMENT AND TREATMENT

### How is chronic obstructive pulmonary disease managed?

COPD treatment focuses on relieving symptoms, such as coughing and breathing problems, and avoiding respiratory infections. Your provider may recommend:

* **Bronchodilators:**These medicines relax airways. You inhale a mist containing [bronchodilators](https://my.clevelandclinic.org/health/drugs/14316-fast-acting-bronchodilators-for-copd) that help you breathe easier.
* **Anti-inflammatory medications:** You inhale [steroids](https://my.clevelandclinic.org/health/drugs/14277-anti-inflammatory-medications-for-copd) or take them as a pill to lower inflammation in the lungs.
* **Supplemental oxygen:** If blood oxygen is low ([hypoxemia](https://my.clevelandclinic.org/health/diseases/17727-hypoxemia/diagnosis-and-tests)), you may need a portable oxygen tank to improve your oxygen levels.
* **Antibiotics:** COPD makes you prone to lung infections, which can further damage your weakened lungs. You may need to take [antibiotics](https://my.clevelandclinic.org/health/drugs/16386-antibiotics) to stop a bacterial infection.
* **Vaccinations:** Respiratory infections are more dangerous when you have COPD. It’s especially important to get shots to prevent [flu](https://my.clevelandclinic.org/health/diseases/4335-influenza-flu) and pneumonia.
* **Rehabilitation:** Rehabilitation programs teach effective breathing strategies to lessen shortness of breath and on conditioning. When maintained, fitness can increase the amount you can do with the lungs you have.
* **Anticholinergics:**These drugs relax the muscle bands that tighten around the airways and help clear mucus from the lungs. Relaxed muscles let more air in and out. With the airways open, the mucus moves more freely and can therefore be [coughed out](https://my.clevelandclinic.org/health/articles/controlled-coughing) more easily. Anticholinergics work differently and more slowly than fast-acting bronchodilators.
* **Leukotriene modifiers:**These medications affect [leukotrienes](https://my.clevelandclinic.org/health/articles/leukotriene-modifiers-for-copd), chemicals that occur naturally in the body that cause tightening of airway muscles and production of mucus and fluid. Leukotriene modifiers block the chemicals and decrease these reactions, helping improve airflow and reducing symptoms in some people.
* **Expectorants**: These products thin mucus in the airways so you can cough it out more easily. You should take these medications with about 8 ounces of water.
* **Antihistamines:**These medicines relieve stuffy heads, watery eyes, and sneezing. Although effective at relieving these symptoms, [antihistamines](https://my.clevelandclinic.org/health/articles/allergy-medications) can dry the air passages, making breathing difficult, as well as causing difficulty when coughing up excess mucus. Take these medications with food to reduce upset stomach.
* **Antivirals:** Your provider might prescribe these to treat or prevent illnesses caused by viruses, most frequently to treat or prevent [influenza ("the flu")](https://my.clevelandclinic.org/health/articles/influenza). Influenza is particularly dangerous for people who have COPD.

For severe COPD, your provider may suggest you consider a clinical trial (tests of new treatments) or lung surgery if you’re a candidate.

## PREVENTION

### How can I avoid COPD?

Not smoking is the best thing you can do to avoid developing COPD. If you’d like to quit, [smoking cessation programs](https://my.clevelandclinic.org/health/articles/8699-quitting-smoking) can help you. Also, avoid any environment that has poor air quality — air that has particles like dust, smoke, gases and fumes.

### Why should people with COPD watch for signs of infection?

People with [COPD](https://my.clevelandclinic.org/health/articles/understanding-copd) have difficulty clearing their lungs of bacteria, dusts and other pollutants in the air. This makes them at risk for lung infections that may cause further damage to the lungs.

Therefore, it is important to watch for signs of infection and follow these tips to help prevent infections. You probably won’t be able to avoid infections entirely, but these tips will help you prevent infections as much as possible.

### What are warning signs of an infection, especially if I have chronic obstructive pulmonary disease?

While you can treat most infections successfully, you must be able to recognize an infection's immediate symptoms for proper and effective care. These may include:

* Increased shortness of breath, difficulty breathing or [wheezing](https://my.clevelandclinic.org/health/articles/wheezing).
* Coughing up increased amounts of mucus.
* Yellow- or green-colored mucus (may or may not be present).
* [Fever](https://my.clevelandclinic.org/health/articles/fever) (temperature over 101°F) or chills (may or may not be present).
* Increased fatigue or weakness.
* Sore throat, scratchy throat or pain when swallowing.
* Unusual sinus drainage, nasal congestion, [headaches](https://my.clevelandclinic.org/health/diseases/9639-headaches-in-adults-overview) or tenderness along upper cheekbones.

If you have any of these symptoms, contact your healthcare provider right away, even if you don’t feel sick.

### What can I do to prevent infections, especially if I have COPD?

There are things you can do to help prevent infections, including the following items.

#### Hand washing

Frequently wash your hands with soap and warm water, especially before:

* Preparing food.
* Eating.
* Taking medications or breathing treatments.

Wash your hands thoroughly after:

* Coughing or sneezing.
* Using the bathroom.
* Touching soiled linens or clothes.
* After you've been around someone with a cold or the [flu](https://my.clevelandclinic.org/health/diseases/4335-influenza-flu).
* After you've been to a social gathering.

It is also good to carry waterless hand sanitizers with you to use when necessary.

#### Visitors

If visitors have [cold](https://my.clevelandclinic.org/health/articles/colds) or flu symptoms, ask them not to visit until they are feeling well.

#### Environment

* Keep your house clean and free from excess dust. Keep your bathrooms and sinks free from mold or mildew.
* Don’t work in or visit any form of a construction site. Dust can be harmful. If you absolutely must go near this type of area, wear a mask provided by your doctor.
* Avoid air pollution, including tobacco smoke, wood or oil smoke, car exhaust fumes and industrial pollution, which can cause inhaled irritants to enter your lungs. Also, avoid pollen.
* Make sure your cooking vent is working properly so it can draw cooking fumes out of your house.
* If possible, try to stay away from large crowds in the fall and winter when the flu season is at its peak.

#### Equipment care

* Keep breathing equipment clean.
* Don’t let others use your medical equipment, including your oxygen cannula, metered-dose[inhaler (MDI)](https://my.clevelandclinic.org/health/drugs/8694-inhalers), MDI spacer, nebulizer tubing and mouthpiece.

#### Diet

* [Try to eat a balanced diet](https://my.clevelandclinic.org/health/articles/nutritional-guidelines-for-people-with-copd).Good nutrition is important to help the body resist infection. Eat foods from all the food groups. Some people find that eating more fats and fewer carbohydrates helps them breathe better. This is due to the amount of carbon dioxide produced during food metabolism. Talk to a registered dietitian to make the smartest choices.
* Drink plenty of [fluids](https://my.clevelandclinic.org/health/treatments/9013-dehydration-avoidance-proper-hydration). Aim for at least six to eight 8-ounce glasses per day (unless your doctor gives you other guidelines). Water, juices and sports drinks are best.

#### Other general health guidelines

* Don’t rub your eyes, as this can transmit germs to your nasal passages via the tear ducts.
* [Quitting smoking](https://my.clevelandclinic.org/health/articles/quitting-smoking) and avoiding secondhand smoke (the smoke from a burning cigarette or cigar and the smoke exhaled by a smoker) are important steps you can take to protect your lungs from infection.
* Follow your doctor's medication guidelines.
* Get enough sleep and rest.
* [Manage your stress.](https://my.clevelandclinic.org/health/articles/stress-management-and-emotional-health)
* Talk to your doctor or healthcare provider about getting a flu shot every year and get the [pneumonia](https://my.clevelandclinic.org/health/articles/pneumonia) vaccine if you haven’t had one.
* Be careful to avoid infection when traveling. In areas where the water might be unsafe, drink bottled water or other beverages (order beverages without ice). Swim only in chlorinated pools.

## OUTLOOK / PROGNOSIS

### What is the outlook for chronic obstructive pulmonary disease?

COPD progresses at a different rate for every person. Once it progresses, you can’t reverse the lung damage from COPD but, by following a healthy lifestyle and getting treatment as early as possible, you can manage symptoms and feel much better.

Life expectancy for someone with COPD varies from person to person. It depends on how early your provider finds the disease, your general health (including other diseases you might have), and how you manage your treatment. Some people live quite a long time after diagnosis. Other people, with more severe disease, don’t fare as well.

## LIVING WITH

### When should I call my provider if I have COPD?

Call your provider if you experience any of the warning signs of an infection. Also, call your provider if you have any symptoms that cause concern.

### How can I manage COPD at home?

You can take several steps to make breathing easier and slow the progression of the disease:

* Quit smoking.
* Take prescribed medications as directed by your provider.
* Ask your doctor about a pulmonary rehabilitation program, which teaches you how to be active with less shortness of breath.
* Maintain a healthy weight.
* Get an annual flu shot.
* Avoid air polluted by chemicals, smoke, dust or fumes.

### How can I avoid irritants that might make COPD worse?

The lungs of people with COPD are sensitive to certain substances in the air, such as cigarette smoke, exhaust fumes, strong perfumes, cleaning products, paint/varnish, dust, pollen, pet dander and air pollution. Extreme cold or hot weather conditions can also irritate your lungs.

You can avoid some of these irritants by:

* Asking those around you not to smoke.
* Sitting in nonsmoking sections of public places.
* Requesting smoke-free hotel rooms and rental cars.
* Avoiding underground parking garages.
* Avoiding high traffic or industrialized areas.
* Not using perfumes, scented lotions or other highly scented products that may irritate your lungs.
* Using nonaerosol cleaning or painting products in well-ventilated areas and wearing a mask or handkerchief over your mouth when cleaning (dusting, vacuuming, sweeping) or working in the yard.
* Reducing exposure to dust by regularly changing filters on heaters and air conditioners and using a dehumidifier.
* Keeping pets out of the house, especially if you wheeze.
* Using an exhaust fan when cooking to remove smoke and odors.
* Staying indoors when the outside air quality is poor and pollen counts are high.
* Following weather reports and avoiding extreme weather. During cold weather, cover your face when going outdoors. During extreme humidity, try to stay in air-conditioned areas.

**A note from Cleveland Clinic**

Chronic obstructive pulmonary disease (COPD) causes lung damage that you can’t reverse. However, you can learn to manage symptoms. You’ll breathe easier if you take the necessary steps to support your lung capacity and fight lung irritation. By getting treatment early, you’ll have the best chance of continuing to do the things you love.