



Chronic Obstructive Pulmonary Disease (COPD)

A Guide to Symptoms, Stages, and Treatment for COPD

Chronic obstructive pulmonary disease (COPD) is an umbrella term for a range of progressive respiratory diseases, most commonly emphysema and chronic bronchitis. COPD is a long-term condition that progressively gets worse over time and is characterized by shortness of breath and a persistent cough. The primary causes of COPD are smoking and secondhand smoke exposure, but air pollution, industrial dust, and fumes can also contribute to the disease.

The Importance of Early Detection and Treatment

Since COPD is a progressive disease, early detection and treatment are critical in preventing its advancement. When you visit your physician for an assessment, they will determine the stage of COPD you may be experiencing based on certain tests and clinical symptoms.

Common Symptoms Observed:

- Persistent cough with mucus that doesn't go away
- Difficulty taking deep breaths
- Shortness of breath with mild exercise or daily activities
- Wheezing

Pulmonary Function Tests and COPD Diagnosis

Healthcare providers use pulmonary function tests (also called PFTs or lung function tests) to determine how well your lungs are functioning.

PFTs are accurate, painless, and noninvasive (meaning there's no introduction of objects into the body or cutting of the skin).

Your doctor may order a PFT if you have symptoms such as shortness of breath, coughing, or chest tightness. Sometimes, a PFT is just part of a routine physical. There are four widely used PFTs, the spirometry, lung volume test, gas diffusion test, and the cardiopulmonary exercise test.

Spirometry

The most basic and common of all pulmonary function tests, spirometry measures how much air you can inhale and how quickly you can blow it out.

Your doctor will place a soft clip on your nose, forcing you to breathe through your mouth. You place your lips around a mouthpiece that's connected to a device called a spirometer.

You then inhale and exhale deeply through the mouthpiece. The spirometer measures the results to help with your doctor's diagnosis.



Lung Volume Test (Body Plethysmography)

This is another common test—and more precise than spirometry. This test measures the total volume of air in your lungs, including the amount that remains after you completely exhale.

Your doctor attaches nose clips. You then sit in a see-through plastic box. You'll be instructed to breathe in and out through a mouthpiece. The test takes about 5 minutes.

Gas diffusion study

A gas diffusion study assesses how well your lungs deliver oxygen and other gases to your blood.

You wear a nose clip and breathe through a mouthpiece connected to a spirometer. You inhale a very small, safe amount of carbon monoxide gas and hold your breath for about 10 seconds.

As you exhale, the spirometer measures the amount of carbon dioxide, which reveals how much gas your lungs absorb and transfer into your blood.

Cardiopulmonary exercise test (CPET)

CPET measures how well your lungs, heart, and muscles function during exercise. It's often given to people with lung disorders or heart problems, which may occur when exercising.

Your doctor uses monitors that measure breathing, blood pressure, heart rate, and blood oxygen levels as you exercise.

COPD Stages

COPD is divided into four stages, based on how much it impacts your breathing and the frequency of flare-ups.

1. **Mild/Stage 1:** FEV1 is greater than 80%. You may feel out of breath during exercise and have a phlegmy cough, particularly in the morning. Many people do not realize they have COPD at this stage.
2. **Moderate/Stage 2:** FEV1 is between 50-79%. Symptoms become more noticeable, including wheezing, shortness of breath, trouble sleeping, and fatigue. Mucus production increases, and medical attention is often sought.
3. **Severe/Stage 3:** FEV1 is between 30-49%. Flare-ups are common and may require serious intervention. Symptoms include increased phlegm, discoloration of phlegm, higher chances of lung infection, extreme fatigue, swelling in ankles/feet, and chest tightness.
4. **Very Severe/Stage 4:** FEV1 is less than 30%. Almost any movement can cause shortness of breath; additional help may be required to maintain breath.

Common COPD Treatment and Medications

- Bronchodilators: These medications relax the airways, making it easier to breathe.
- Anti-inflammatory Medications: Inhaled or oral steroids reduce lung inflammation.



- Supplemental Oxygen: Portable oxygen tanks can improve oxygen levels if blood oxygen is low.
- Antibiotics: These are used to treat lung infections that can exacerbate COPD.
- Vaccinations: Preventative shots for flu and pneumonia are crucial for people with COPD.
- Rehabilitation: Programs teach effective breathing strategies and conditioning exercises.
- Anticholinergics: These drugs relax airway muscles and help clear mucus.
- Leukotriene Modifiers: These medications block chemicals that cause airway tightening and mucus production.
- Expectorants: These thin mucus in the airways, making it easier to cough out.
- Antihistamines: These are used to relieve symptoms like a stuffy head and watery eyes, though they can dry air passages and make breathing difficult.
- Antivirals: Prescribed to treat or prevent viral illnesses, such as influenza.

If you've been diagnosed with COPD (chronic pulmonary obstructive disease) your doctor has probably prescribed medications to help manage your condition. COPD medications can prevent you from experiencing excessive cough and shortness of breath and reduce mucus buildup.

But to ensure the medications work most effectively, you must take them as prescribed.

Side Effects of COPD Medication

Medications approved by the FDA (US Food and Drug Administration) are generally safe. But all medications carry the risk of causing side effects. For instance, some steroids and bronchodilators may cause blurry vision, dry mouth, tremors, or a fast heartbeat.

Side effects vary with each medication, so be sure to ask your doctor and pharmacist to explain them to you.

COPD Flare-Ups

Sometimes, the symptoms of COPD suddenly get worse. You find it even harder to breathe, you cough up more mucus, you have trouble sleeping. This condition is known as a COPD flare-up or COPD exacerbation.

Flare-ups can last for days or even weeks. Without the proper treatment, you may even have to go to the hospital. Research shows that the more flare-ups you have, the more hospitalizations you'll need. And flare-ups in people in the later stages of COPD may cause irreversible lung damage.

Symptoms of Flare-Ups



It's important to be aware of your day-to-day COPD symptoms and to recognize the symptoms specifically of a flare-up. These may include:

- More coughing, wheezing, or breathlessness than usual
- Increased production of mucus, which may be green, yellow, or brown
- Fatigue or trouble sleeping
- Morning headaches
- Abdominal pain
- Anxiety
- Swelling of the legs or ankles
- Gray or pale skin
- Confusion and memory lapses
- Fever, scratchy throat, or other cold or flu symptoms

Some symptoms may indicate a more serious flare-up. You should call your doctor or 911 immediately if you experience the following:

- Extreme shortness of breath
- Chest pains
- Blue or purple lips or fingernails
- Confusion, inability to think clearly
- Extreme drowsiness

Triggers of a Flare-Up

Causes of a COPD flare-up include:

- Certain illnesses and lung infections due to bacteria or viruses
- Exposure to pollen, dust, and allergens such as ragweed
- Cigarette or cigar smoke
- Smog and other kinds of air pollution
- Strong scents such as perfumes
- Anxiety or stress
- Being overly active
- Changes in the weather or season
- Hot, cold, or humid air

What to Do During a Flare-Up

All COPD flare-ups aren't the same. Some are mild, where you are more breathless than usual. Some are moderate, where you cough up mucus more than usual. And some are severe, where your symptoms get



worse, even if you are taking your medication as prescribed. That's when it's time to call your doctor or 911.

Fortunately, most people recover from a flare-up with proper and timely treatment.

Generally, here are some rules to follow to manage a COPD flare-up.

Be prepared. Have all your emergency information close at hand. That includes the names and numbers of your loved ones, your doctor, a list of medications you take, (including your oxygen prescription) and your healthcare insurance information.

Remain calm. Getting panicky may worsen your symptoms. Use a quick-acting rescue inhaler, which sends the medicine directly to your lungs. Rescue inhalers help relax your airways to allow you to breathe more easily. Other treatments include antibiotics or steroids taken by mouth, anti-anxiety medicines, or medicine taken through a nebulizer.

If prescribed by your doctor, take an oral corticosteroid. These reduce inflammation to allow air to flow more freely in and out of your lungs

Oxygen use. Again, if your doctor has prescribed oxygen, use it to get more oxygen into your body more quickly to help treat your symptoms.

If symptoms are severe, call 911. If the rescue inhaler, corticosteroids, or oxygen therapy don't bring your symptoms under control, call 911; an ambulance will come and take you to the hospital. The doctors there will decide on the best treatment for you, which may be either non-invasive or invasive mechanical intervention (where a machine helps you breathe), an intravenous (IV, meaning "into the vein") bronchodilator, or an IV to deliver antibiotics and fluids to ensure you are well hydrated.

How to Prevent Flare-Ups

There are many things you can do to reduce your risk of having a COPD flare-up:

- Speak with your doctor about beginning a pulmonary rehabilitation program
- Take your medicines as directed
- Use oxygen if prescribed by your doctor
- Use Bi-level or Non-Invasive Ventilation (NIV) if prescribed by your doctor
- Go to all your regular health checkups
- Get all your recommended vaccines, including flu shots
- Ask your doctor about a shot to protect you from pneumonia
- Get plenty of sleep



- Eat a nutritious, well-balanced diet rich in lean proteins, fish, fruits, and vegetables
- Exercise—talk to your doctor about a routine right for you
- Stay away from people with colds and other contagious viral infections
- Wash your hands often
- Refrain from touching your mouth, nose, or eyes to prevent germs from entering your body
- Quit smoking and avoid secondhand smoke, pollutants, or strong scents or odors
- Throughout the day, take breaks during activity
- Stay away from crowds, especially during cold and flu season
- Be careful outdoors. If it's too cold, wear a scarf over your mouth or nose. If it's hot and humid, remain inside with air conditioning
- Practice breathing exercises and other relaxation techniques

Breathing Techniques to Help Manage Your Symptoms

There is a proven way to better manage your symptoms, particularly during flare-ups: practicing COPD breathing exercises.

Studies demonstrate that these techniques can help you manage your breathing, even during an attack. Breathing exercises make your lungs work more efficiently. \

Pursed-lip Breathing

This is an excellent technique to help you slow down breathing and remain calm, especially when you experience shortness of breath. Pursed-lip breathing should be performed before and after you exercise or whenever you engage in any strenuous activity.

Here's how to perform pursed-air breathing:

- Sit comfortably and relax your neck and shoulders
- Breathe in slowly through your nose with your mouth closed for about two seconds. Use your abdominal muscles to help fill your lungs with air
- Purse or pucker your lips like you're about to whistle or blow out birthday candles, then exhale slowly through your mouth
- Breathe out twice as long as you breathed in. Make a quiet hissing sound as you exhale
- Don't force air out
- Repeat several times

Try to practice this technique 4-5 times every day until it becomes second nature.

Studies show that pursed-lip breathing may help people with COPD become more active.

Diaphragmatic Breathing

The diaphragm is a large, dome-shaped muscle that's critical to breathing. It helps your lungs inflate and empty. In people with COPD, the diaphragm doesn't function to its fullest capacity. The result: shortness of breath.



Diaphragmatic breathing (also called abdominal breathing or belly breathing) helps retrain this important muscle to work more effectively so you can breathe more freely.

Diaphragmatic breathing also helps increase oxygen blood levels, reduce blood pressure and heart rate, and improve muscle function when you exercise.

Here's how to perform diaphragmatic breathing:

- Sit or lie down comfortably
- Relax the muscles in your neck and shoulders
- Place one hand on your stomach and one on your chest
- Breathe in slowly through your nose for 2 seconds, keeping your mouth closed
- Breathe out slowly through pursed lips for at least two to three times as long as your inhale
- Focus your breathing on your stomach: as you inhale, the hand on your abdomen should rise; as you exhale, it should lower
- If your stomach moves more than your chest, you are performing the exercise correctly
- Repeat

You can use diaphragmatic breathing with your daily activities, such as climbing stairs, taking long walks, and exercising.

Deep Breathing

This simple technique helps your body take in more fresh air while preventing air from getting trapped in your lungs. This reduces your risk of experiencing shortness of breath.

Here's how to perform deep breathing:

- Sit or stand in a comfortable position
- Position your elbows slightly back. This helps your chest expand more fully
- Take a deep breath through your nose
- Hold your breath and count to 5
- Slowly exhale through your nose until all the inhaled air has been released

For best results, perform deep breathing with other breathing exercises for 10 minutes at a time, 3 to 4 times per day.

You Can Manage Your COPD

COPD progresses at different rates for everyone. While the damage to lung function cannot be reversed, steps can be taken to slow the progression. Following a healthy lifestyle, receiving medical treatment as early as possible, and engaging in activities like exercise regimes tailored for COPD can help you manage the disease and maintain the best possible quality of life. With the proper treatment and lifestyle adjustments, living well with COPD and mitigating its impact on your daily life is possible.



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