ABOUT COPD

What is COPD?

COPD is short for Chronic Obstructive Pulmonary Disease, a term that is used to describe a variety of lung diseases. Usually caused by tobacco use or the inhalation of pollutants, the diseases are all related to blocked air flow and shortness of breath, and according to the COPD Foundation, include: emphysema; chronic bronchitis; refractory (non-reversible) asthma; and some forms of bronchiectasis.¹

What are the symptoms?

Symptoms for COPD include breathlessness, chronic coughing, tightness in the chest, and wheezing. The Mayo Clinic notes that people with COPD can have these symptoms for most of their life, and then often experience episodes called “exacerbations” or flare-ups, when their symptoms suddenly get much worse.²

What causes COPD?

The main cause for developing COPD is the inhalation of pollutants, usually from smoking. In fact, according to the *Journal of the American Medical Association* in 2008 it was estimated that 80 to 90 percent of COPD-related deaths are attributed to smoking cigarettes.³

However, the COPD Foundation notes that one in six individuals with COPD have never smoked, and that although smoking is a primary cause, there are additional factors. The inhalation of chemicals, dust, fumes, second hand smoke, or other irritants can cause COPD in some people.⁴

Additionally, some people have never experienced exposure to pollutants and still develop COPD. In these cases, a deficiency known as Alpha-1 Antitrypsin (AAT) is a genetic risk factor for emphysema. According to the Alpha-1 Foundation, Alpha-1-related COPD is caused by a deficiency of the AAT protein in the bloodstream.⁵

What are the risk factors?

The risk factors for COPD are directly related to the causes. Inhalation of pollutants is the biggest risk, and it most commonly occurs through the inhalation of tobacco products when individuals smoke. Exposure to harmful chemicals, most often found in the workplace, is another big risk.

³ [http://jama.ama-assn.org/content/300/20/2448.full.pdf](http://jama.ama-assn.org/content/300/20/2448.full.pdf)
⁵ [http://alpha-1foundation.org/alphas/?c=01-What-is-Alpha-1-Alphas](http://alpha-1foundation.org/alphas/?c=01-What-is-Alpha-1-Alphas)
Who is affected?
COPD affects millions of people all over the world, and according to the National Heart Lung and Blood Institute, one person dies from COPD every four minutes. The Centers for Disease Control and Prevention (CDC) state that COPD is the third leading cause of death in the United States.

In the United States, smokers are the most at risk to develop COPD, and most are usually over 40 years of age when symptoms begin. Also, according to the CDC, more women than men die from COPD related causes, but the death rate was higher for men compared with the rate for women in each year.

On a global scale, the CDC also suggests that COPD cases will be increasing in the coming years because of people’s continued exposure to COPD risk factors, and aging of the population. The World Health Organization adds that because almost three billion people worldwide use harmful materials such as biomass and coal that as their main source of energy for cooking and heating, prevalence will also continue to rise. In areas such as the Middle East region, where this is most common, indoor air pollution is responsible for a greater fraction of COPD risk than smoking or outdoor air pollution and is estimated to kill two million women and children each year.

Who should get tested for COPD?
Anyone experiencing the symptoms of COPD, such as chronic coughing, wheezing, and shortness of breath should talk to their doctor about being tested. Smokers, individuals with a history of smoking, and anyone over the age of 40 who has smoked should be tested in the hope to catch the disease early and plan effective treatment. Also, anyone who has had long-term exposure to air pollutants like second hand smoke, any chemicals or pollutants should talk to their doctors about getting tested.

How is COPD diagnosed?
The test for diagnosing COPD is a non-invasive test called spirometry. Spirometry tests are also known as Pulmonary Function Tests (PFTs) or Lung Function Tests.

Spirometry can even detect the presence of COPD before symptoms appear. Sometimes doctors may order additional tests such as a Bronchodilator Reversibility Testing, or a chest x-ray, to see if symptoms are caused by lung disorders other than COPD, but will most often use the spirometry test. The National Heart Lung and Blood Institute describes spirometry as “one of the best and most common lung function tests” and the Journal of the American Medical Association calls it “the most important test for COPD”.

The COPD Foundation explains the spirometry procedure, sometimes referred to by patients as a “breathing test,” as very a simple test. Spirometry requires an individual to blow all the air out of their lungs into a hose connected to a machine known as a spirometer. The spirometer will calculate two numbers: the amount of air one blows out in the first second, and the amount of air one blows out in six seconds. These numbers are represented in a Forced Expiratory Volume (FEV1) score which represents the amount of air

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7 http://www.lung.org/lung-disease/copd/
11 http://jama.ama-assn.org/content/300/20/2448.full.pdf
exhaled in the first second of blowing, and the Forced Vital Capacity (FVC) score which represents the amount of air that you exhaled in one entire breath.

Based on one’s scores in the spirometry test, it can show a doctor the severity of a patient’s COPD.\(^{12}\)

**Why is it important to get tested for COPD?**

The COPD Foundation emphasizes the fact that individuals who are developing COPD may not show symptoms until the disease is well-developed. It is important for current or former smokers, or anyone who has been exposed to harmful lung irritants, to ask their doctors about taking a spirometry test. This easy test will measure how well one’s lungs are working, and will easily see if anything is problematic. Without testing, symptoms left untreated or misdiagnosed may cause them to quickly worsen rather than if they were treated with proper medication and therapy. With a proper diagnosis and treatment plan, however, symptoms can be controlled and the progress of the disease can be delayed.\(^{13}\)

**What are the complications associated with having COPD?**

According to the Mayo Clinic, complications of COPD include:

- Respiratory infections: People with COPD are more likely to get frequent colds, the flu, or pneumonia. Any respiratory infection can make it much more difficult to breathe and can result in further permanent damage to lung tissue.
- High blood pressure: COPD can cause high blood pressure in the arteries that bring blood to the lungs, known as pulmonary hypertension. This puts a strain on the right ventricle of the heart and may cause one’s ankles and legs to swell.
- Heart problems: COPD also increases the risk of heart disease, including heart attack. For smokers, this is in addition to the adverse effects that nicotine has on the coronary arteries.
- Depression: Difficulty breathing can keep those diagnosed with COPD from participating in active events. Often it can be very difficult to deal with a disease that is progressive and incurable, and as a result many people develop depression.\(^{14}\)

The U.S. National Library of Medicine also highlights additional complications:

- Need for breathing machine and oxygen therapy
- Pneumonia
- Pneumothorax
- Severe weight loss and malnutrition
- Thinning of the bones (osteoporosis)\(^{15}\)

**Is there a cure for COPD?**

There is no cure for COPD. An individual with COPD can never undo the damage to the lungs, but individuals with COPD can control the symptoms and improve their lives with treatment.

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What is the treatment for COPD?

For people diagnosed with COPD who are current smokers, it is widely emphasized that the first, most successful and important form of treatment is to stop smoking. It is the only way to minimize symptoms and improve one’s condition. For the many who struggle with this, there are a variety of strategies that a doctor can recommend and help provide access to such as support groups, nicotine replacement products, and medications that might help. There are also numerous websites and groups that can help with the struggle to quit smoking such as:

- Quit Smoking Meetup Groups: [http://quitsmoke.meetup.com/](http://quitsmoke.meetup.com/)
- CDC’s Tips From Former Smokers: [http://www.cdc.gov/tobacco/campaign/tips/](http://www.cdc.gov/tobacco/campaign/tips/)

For the treatment of general COPD symptoms, doctors can prescribe any of the following:

- Physical Training: Doctors often recommend that patients with COPD learn to exercise in a way that is best for their condition. Known as pulmonary rehabilitation, or "rehab," the National Heart Lung and Blood Institute notes that these activities can help those affected with COPD make their everyday tasks easier by improving the strength of their arms and legs, and doing breathing exercises that will strengthen the muscles needed for breathing. [16]
- Bronchodilators: Most often found in the form of inhalers, these are used to open the lungs’ airways, by relaxing the muscles. According to the National Heart Lung and Blood Institute, inhalers can help relieve coughing and shortness of breath and make breathing easier. Depending on the severity of one’s COPD, doctors can prescribe short-acting bronchodilator for use before activities, or long-acting bronchodilators for use every day, or both. [17]
- Inhaled Steroids: Used to reduce lung inflammation, inhaled steroid medications can reduce airway inflammation and help individuals breathe better. According to the Mayo Clinic, prolonged use of these medications, however, can weaken bones and increase the risk of high blood pressure, cataracts, and diabetes. Often, because of the risks, they are usually given a test period or reserved for people with moderate or severe COPD. [18]

In severe cases or during flare-ups, doctors often prescribe:

- Antibiotics: When respiratory infections occur, such as acute bronchitis, pneumonia, and influenza, they aggravate COPD symptoms. The Mayo Clinic explains that antibiotics can help fight bacterial infections, but are recommended only when necessary. [19]

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Oxygen Therapy: The National Heart Lung and Blood Institute states that when COPD is severe, doctors might suggest oxygen therapy to help with shortness of breath. Some people might need oxygen all of the time, when sleeping, or just some of the time.\textsuperscript{20}

Surgery: Damaged lung tissue can be removed in order to help other areas work better, and sometimes a lung transplant is needed for severe cases. Surgery is considered risky, and not always beneficial.\textsuperscript{21}

\textsuperscript{20} http://www.nhlbi.nih.gov/health/public/lung/copd/breathing-better/treatment-options.htm

\textsuperscript{21} http://www.mayoclinic.com/health/copd/DS00916/DSECTION=treatments-and-drugs