COPD—chronic obstructive pulmonary disease—is a chronic disease, which means it lasts for your lifetime. Currently, there is no cure. However, COPD can be treated with medicine and changes in lifestyle that can help control symptoms and stabilize your health. Treating COPD early can help you live better and longer.

More than 16 Million people in the U.S. have been diagnosed with COPD

COPD is the third-leading cause of death in the United States, after heart disease and cancer.

COPD causes 120,000 deaths each year in the U.S. alone

More than 16 million people in the United States have been diagnosed with COPD. Millions more have it and do not know. People who have this debilitating disease often are short of breath and cough frequently. These symptoms can worsen at times, causing flare-ups—called exacerbations—that can be serious, even life-threatening.

Because COPD develops slowly over many years, it’s easy for a person to think that shortness of breath and coughing are just part of aging or being out of shape. Smokers and former smokers have the greatest risk of developing COPD, but even people who have never smoked can develop COPD.

It’s important not to ignore shortness of breath and coughing because they may be warning signs of COPD. If you have COPD, you also likely have an increased risk of developing other medical conditions, or comorbidities, such as heart disease and even lung cancer.

Private and public institutions are investing billions of dollars to learn more about the causes of COPD and to develop better treatments. The best of this research is presented every year at the American Thoracic Society (ATS) International Conference. COPD Today, which is part of the ATS Patient Information series, presents information about the symptoms and treatments for COPD used by health care professionals today. It also includes new research presented at the ATS 2017 International Conference that could positively affect treatments options in the near future.
What Is COPD?

COPD is a disease of the lungs that occurs mainly in older adults. People with COPD have increasing breathlessness due to obstruction, or blockage, of the airways. As the disease worsens, airways in the lungs become narrowed, which causes obstruction—the “O” in COPD. Too much mucus production can also obstruct the airways.

COPD can be confused with asthma, but they are different medical conditions that have some similar symptoms. About 20 percent of people with COPD have or have had asthma.

Healthy lungs fill with air and empty during breathing, but people with COPD have difficulty emptying their lungs. When air becomes trapped in the lungs, more muscle strength and more energy are required to breathe, whether the person is resting or exercising.

COPD also can be associated with damage to the small air sacs—alveoli—that are located at the end of the airways. These air sacs are where the lungs exchange oxygen and carbon dioxide during breathing. As air sacs are damaged or destroyed, the lungs cannot work as well. They have an increasingly difficult time carrying out gas exchange, leading to low oxygen and/or elevated carbon dioxide levels in the blood.

Types of COPD

COPD is sometimes referred to by other terms such as emphysema and chronic bronchitis, each of which causes different symptoms.

Emphysema, which is the destruction of air sacs or alveoli, usually develops in heavy smokers over many years. One of the early signs of emphysema is shortness of breath during light physical activity or when lying down. As emphysema worsens, breathing becomes more difficult and patients often lose weight as their bodies use more and more energy just to breathe. Patients who have emphysema may cough, but the cough produces only small amounts of mucus.

Chronic bronchitis also occurs most often in smokers, but its main symptom is coughing with excessive amounts of mucus, also known as spumum. Shortness of breath occurs, but usually improves during rest. Lying down can make coughing worse, so patients often sleep sitting up. In the late stages of chronic bronchitis, the skin or mucous membranes can take on a blue color due to lack of oxygen.

Many people with COPD have problems sleeping or feel tired during the day because their breathing difficulties interfere with their sleep.

More than 75% of COPD cases are linked to lung damage caused by long-term cigarette smoking.

Other causes include:
- Cigar and pipe smoking
- Secondhand tobacco smoke
- Indoor and outdoor air pollution
- Toxic chemicals, dust, and fumes

These substances irritate the airways and the lungs, resulting in chronic inflammation and eventual scarring of the airways and alveoli.

Genetic susceptibility (inheritance) also plays a role in the development of COPD.

- Roughly 25% of COPD patients have never smoked*
- Only one-third of smokers develop COPD*
- Asthma and other factors, including those that are inherited, are linked to the development of COPD.

While there may be several genes that contribute to the development of COPD, only one has been clearly identified as an inherited risk factor. Alpha-1 anti-trypsin deficiency, known simply as Alpha-1 or ATTD, makes people more susceptible to lung damage from smoke and other environmental factors.

* National Institutes of Health
COPD Diagnosis

How do you know if you have COPD? “COPD Signs” lists the most common symptoms of COPD. Even if you just have one or two of the symptoms, it is important to see a health care provider to talk about COPD. The sooner you see a health care provider and receive treatment, the better you will feel. You may be referred to a lung specialist, known as a pulmonologist, for evaluation and management.

There are five common diagnostic tests that your doctor may recommend

1. **Pulmonary (lung) function tests** are breathing tests to find out how well you move air in and out of your lungs and how well oxygen enters your body. Spirometry is one of the main breathing tests, and it can detect COPD even before you notice symptoms of the disease. During spirometry, you will blow into a tube connected to a spirometer, a machine that measures how much air you can breathe out and how quickly you can push air out of your lungs. Other lung function tests measure how well oxygen in your lungs is absorbed by your blood (diffusion test), and how much air your lungs can hold and how much of that air they can push out (lung volume testing). Learn more at goo.gl/yqj8hV.

2. **Chest X-rays** show the shape and size of your lungs, which may suggest emphysema, and they can help rule out other lung problems that can cause similar symptoms.

3. **CT scans** show more detail than chest X-rays. A CT scan can show if you have emphysema and help detect lung cancer in appropriate patient populations. See more at goo.gl/BPa8dF.

4. **Arterial blood gas analysis** is a blood test that measures how well the oxygen and carbon dioxide gas exchange in the lungs is working.

5. **A six-minute walk test** measures how far you can walk in six minutes. The test helps to determine your exercise tolerance and whether you need supplemental oxygen when you exercise.

According to NIH statistics, those at higher risk of developing COPD include:

- Current or former smokers
- People aged 65-74 years
- Women
- Non-Hispanic whites
- Individuals with a history of asthma

**COPD Signs**

Patients with COPD don’t all have the same symptoms. Some patients have a dry cough. Others cough up sputum (a mixture of saliva and mucus), which can be clear, white, yellow, or green.

Common signs and symptoms of COPD:

- Shortness of breath, also called “dyspnea,” while doing everyday activities
- Constant coughing or wheezing, sometimes called a “smoker’s cough”
- Chest tightness or inability to take a deep breath
- Recurring respiratory infections
- Loss of energy
- A blue hue around the lips and fingernail beds called “cyanosis”
- Unintended weight loss

People with COPD usually have exacerbations or flare-ups, which are periods of several days where symptoms grow worse. Exacerbations are often linked to an infection from a virus or bacteria, such as a cold or bronchitis.
There is currently no cure for COPD. Treatment focuses on managing symptoms so COPD is less of a bother to you and does not get worse, or progress as quickly. Treatments include inhaled and oral medications, pulmonary rehabilitation, vaccines, supplemental oxygen, and, in some cases, surgery. It is essential to eliminate or reduce your exposure to pollutants and irritants linked to COPD, including tobacco smoke.

**Smoking Cessation**

The progression of COPD slows after you stop smoking cigarettes, and most people who stop smoking cough less and produce less mucus. You also should stop other forms of smoking, including cigar and pipe, and protect yourself from secondhand smoke. Most people need help quitting smoking. Your health care provider can provide information about medications and programs that can help you quit. See more at goo.gl/MxUowG.

**Inhaled Medications**

Two main classes of inhaled medications—bronchodilators and inhaled corticosteroids—are most commonly prescribed to treat COPD. Patients with COPD are usually prescribed one or more bronchodilators, which are usually inhaled. In some cases, either an inhaled corticosteroid or an oral medication—a phosphodiesterase 4 inhibitor (PDE4 inhibitor)—is added.

Inhaling bronchodilators and corticosteroids through the mouth is the most efficient way to deliver the medications to your airways and lungs. This is done using one of two devices, an inhaler or a nebulizer.

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Types of Inhaled Medications

Bronchodilators relax the muscles around your airways, making it easier for you to breathe. There are two types of bronchodilators, short-acting and long-acting.

A short-acting bronchodilator acts quickly in an emergency when you are short of breath. It is often called a “rescue inhaler.”

A long-acting bronchodilator is used every day to keep the airways open and is called a “maintenance medication.” There are many long-acting bronchodilators, and each acts differently. Your health care provider will help you choose the best long-acting bronchodilator for your individual symptoms. You may need to try several different long-acting bronchodilators to find the one that works best for you.

Inhaled corticosteroids are used to reduce airway inflammation and help people whose COPD symptoms flare up frequently. Inhaled corticosteroids are usually prescribed with a long-acting bronchodilator. The corticosteroids used for treating COPD are non-habit forming and are different from the illegal, muscle-building anabolic steroids taken by some athletes.
**Oral Medications**

People with COPD are sometimes treated with oral medications. These include pills, such as corticosteroids, antibiotics, and phosphodiesterase 4 inhibitors (PDE4 inhibitors).

Oral corticosteroids are used to treat severe exacerbations or sudden worsening of COPD symptoms. They are typically used for several consecutive days. Oral corticosteroids are non-habit forming but can have side effects if used often.

Oral antibiotics are used to treat bacterial respiratory infections that can worsen COPD symptoms. It’s important to take all of your antibiotics until you run out, even if you are feeling better. This helps prevent the development of resistant bacteria. Antibiotics may sometimes be used to help prevent exacerbations in patients with severe COPD. Antibiotics cannot help if you have a viral infection, such as the common cold.

PDE4 inhibitors are pills you take once a day. PDE4 inhibitors suppress inflammatory functions in several cell types involved in COPD.

**Other Treatments**

- Pulmonary rehabilitation is a structured program that provides education and support, as well as supervised exercise by specially-trained therapists. These programs can improve your quality of life and reduce COPD exacerbations and hospital visits. Pulmonary rehabilitation can be done in a variety of health care settings. Talk to your health care provider about whether a pulmonary rehab program might be beneficial for you. You can learn more by reading the ATS Patient Information Series fact sheet Pulmonary Rehabilitation at goo.gl/Ybijz9.

- Vaccines can reduce the risk of getting the flu or pneumonia, both of which can be dangerous for people with COPD. You can learn more by reading the ATS Patient Information Series fact sheet Influenza—“The Flu” at goo.gl/6CCEAB.

- Supplemental oxygen can help those who do not have enough oxygen in their blood. Some people with COPD use oxygen when they are physically active, others while sleeping, and still others use supplemental oxygen all of the time. You can learn more by reading the ATS Patient Information Series fact sheet Oxygen Therapy at goo.gl/6wzkds.

- Surgery is an option for very select patients with COPD. For people with severe emphysema, lung volume-reduction surgery removes damaged lung tissue, creating space in the chest for healthy lung tissue to expand. For people with large “bubbles” in their lungs—called bullae—surgery to remove the bullae also creates space in the chest, allowing healthy lung tissue to expand. Lung transplant, in which the damaged lung is replaced with a healthy lung, is another potential option, particularly for younger people with very severe lung disease. You can learn more by reading the ATS Patient Information Series fact sheet Surgery for Chronic Obstructive Pulmonary Disease at goo.gl/UNWoUF.

- Ongoing research investigating novel treatments in COPD include the use of valves or coils to deflate the damaged parts of the lungs. These options are still in clinical trials and have not been approved by the U.S. Food and Drug Administration.

- If you have COPD, it’s important to make sure that other diseases you may have, such as high blood pressure, heart disease, diabetes, and asthma, also are being treated.

Looking Ahead

Like other diseases, it is best to diagnose and treat COPD as early as possible. If you are over the age of 40 and are a smoker or former smoker who is often short of breath or coughs frequently, you should consult a health care provider to determine if you have COPD. If you have a family member or friend over 40 who shows signs of COPD, encourage him or her to see a health care provider.

If you do have COPD, remember that it cannot be cured, but it can be controlled. The key to control is to find out as early as possible if you have COPD, follow advice from health care professionals about your lifestyle, and take all medicines as directed. You can find detailed information and 2017 recommendations for COPD treatments from ATS at thoracic.org/statements/copd.php or at GOLD, the Global Initiative for Chronic Obstructive Lung Disease, at goldcopd.org/patients-advocacy-groups and in the ATS Patient Information Series fact sheet Chronic Obstructive Pulmonary Disease at goo.gl/N2aHcV.