Chronic Obstructive Pulmonary Disease (COPD)

General Overview of COPD: COPD is a chronic lung disease, typically caused by smoking. Smoking destroys the air sacs in the lungs which causes air to get trapped in the lungs—this is referred to as airways obstruction. Its airflow limitation is not fully reversible. COPD also prevents air that is in the lungs from getting into the blood stream—this is known as diffusion defect. The end result is that your body does not get the oxygen that it needs. There are two main forms of COPD. It should be noted that most people with COPD have a combination of both conditions.

Chronic bronchitis: defined by a long term cough with mucus production.

Emphysema: defined by destruction of the air sacs and lungs over time.

Causes of COPD: Smoking is the leading cause of COPD. The more a person smokes, the more likely that person will develop COPD although some people smoke for years and never get COPD.
In rare cases, nonsmokers who lack a protein called alpha-1 antitrypsin can develop emphysema.
Other risk factors for COPD are:

- Exposure to certain gases or fumes in the workplace
- Exposure to heavy amounts of secondhand smoke and pollution
- Frequent use of cooking gas without proper ventilation

Symptoms: Symptoms of COPD develop very slowly over years, so some people may be unaware that they are even getting sick. Symptoms include the following: cough with mucus, shortness of breath that gets worse with physical exertion, fatigue, frequent respiratory infections, and wheezing.

Treatment Options: **The only known way to prevent the progression of COPD is to stop smoking**.
There are several things you can do to feel better (medications, rehabilitation, etc.) but none of these treatment modalities prevents disease progression. Treatment options include:

*__Smoking cessation__: Patients with COPD must stop smoking to prevent ongoing damage to the lungs. Ask your doctor or healthcare provider about quit-smoking programs. Medicines are also available to help kick the smoking habit and the medicines are most effective if a person is motivated to quit.

*__Medications__ that may be prescribed:

1. Inhaled bronchodilators to open the airways, such as ipratropium bromide (Atrovent); tiotropium (Spiriva); salmeterol (Serevent); formoterol (Foradil); umeclidinium (Incruse Ellipta); olodaterol (Striverdi Respimat).
2. Combination of short acting and anticholinergics – Fenoterol/Ipratropium (Respimat)
3. Medications that also open airways include: Combination of long acting and anticholinergic - Vilanterol/Umeclidinium (Anoro Ellipta); tiotropium bromide/olodaterol (Stiolto Respimat); indacaterol/glycopyrrolate (Utibron neohaler); Salbutamol/Ipratropium (Duoneb); PDE- 4.
4. Inhaled steroids are frequently used to reduce lung inflammation.
5. For severe COPD – Roflumilast (Daliresp).
6. Combinations of bronchodilators and inhaled steroids are frequently used, such as Advair, Symbicort, Dulera, and Breo.
7. During flare-ups, you may need to receive steroids by mouth or through a vein (intravenously).
8. Antibiotics are prescribed during symptom flare ups, because infections can make COPD worse.

Oxygen therapy at home may be needed if a person has a low level of oxygen in their blood.

Pulmonary rehabilitation can teach you to breathe in a different way so you can stay active. Exercise programs such as pulmonary rehabilitation are also important to help maintain muscle strength in the legs so less demand is placed on the lungs when walking. These programs also teach people how to use their medicines most effectively.

Avoidance: Things you can do to make it easier for yourself around the home include, avoiding very cold air, making sure no one smokes in your home, reducing air pollution by eliminating fireplace smoke and other irritants.

Diet: Eat a healthy diet with fish, poultry, or lean meat, as well as fruits and vegetables. If it is hard to keep your weight up, talk to a doctor or dietitian about getting foods with more calories.

Surgery: In very severe cases, surgical treatments may include surgery to remove parts of the diseased lung or lung transplant.

Vaccinations: It is highly recommended that patients with COPD receive regular vaccinations to prevent lung infections. These include but are not limited to:

1. Yearly influenza (flu) shot.
2. Pneumococcal vaccination (pneumonia shot).

Tests & Diagnosis: To properly diagnose and stage COPD, your doctor will likely order pulmonary function testing. It may also be necessary to order pictures of the lungs, such as x-rays and/or CT scans. Finally, it is frequently necessary to do a blood gas test called an ABG to measure the amounts of oxygen and carbon dioxide in the blood.

Call your doctor or 911 immediately if you notice any of the following symptoms: change in amount or color of sputum, fever, chills, increased cough, or increased breathing problems. People with COPD may have a higher chance of pneumonia, which can be life threatening.

References: 2015 Gold Report (Global Initiative for Chronic Obstructive Lung Disease)