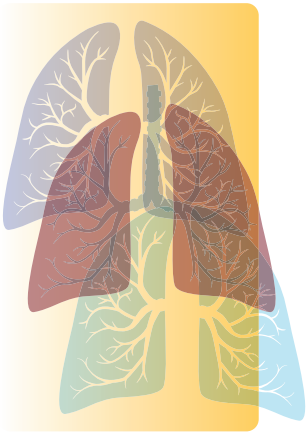
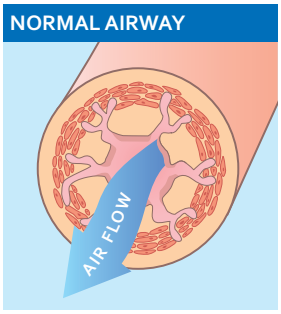
Chronic Obstructive Pulmonary Disease (COPD)

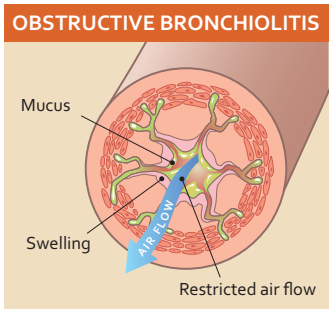
Chronic Obstructive Pulmonary Disease (COPD) is a preventable and treatable lung disease. People with COPD must work harder to breathe, which can lead to shortness of breath and/or feeling tired. Early in the disease, people with COPD may feel short of breath when they exercise. As the disease progresses, it can be hard to breathe out (exhale) or even breathe in (inhale). A person with COPD may have obstructive bronchiolitis (bron-kee-oh-lite-is), emphysema, or a combination of both conditions. The amount of each of these conditions differs from person to person. Asthma is another disease that causes narrowing of the airways, making it hard to breathe at times, but asthma is not included in the definition of COPD. Some people do have a mix of both COPD and asthma. Chronic bronchitis is no longer considered a type of COPD, although this term is still used by healthcare providers to describe a patient who has a productive cough for three months in two consecutive years.



What is obstructive bronchiolitis?

Obstructive bronchiolitis is a condition in which chronic inflammation and swelling cause the inside of the breathing tubes (airways) to be smaller than normal. This narrowing interferes with how well and how easily air empties out of the lungs (expiration).

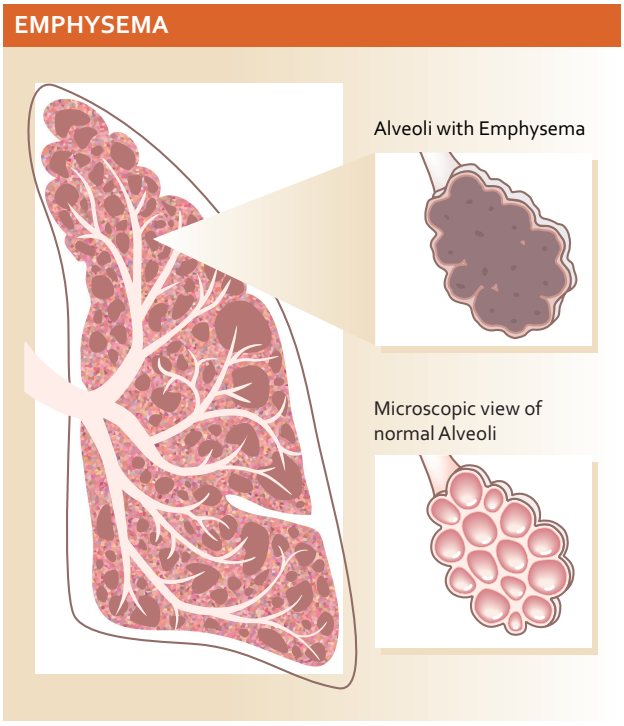




What is emphysema?

The lungs are made up of more than 300 million tiny air sacs called alveoli. These air sacs are normally stretchy and springy. When you breathe in, the airs sacs expand like tiny balloons. Breathing out usually is passive (takes no effort) as the alveoli "spring" back to their original size. In emphysema, the walls of the air sacs (alveoli) of the lung are damaged and lose their stretchiness. As a result, they do not empty easily. Emphysema can also contribute to narrowing of the airways.

The combination of non-stretchy alveoli due to emphysema and narrowed airways due to both obstructive bronchiolitis and emphysema, prevents the lungs from emptying normally. This causes air to become trapped in the lungs. "Air trapping" or the inability to fully exhale, leads to abnormal expansion or hyperinflation (hi-per-in-flay-shun) of the lungs. Constantly having trapped air in the lungs combined with the extra effort needed to breathe results in a person feeling short of breath.



What causes COPD?

Although the most common cause of COPD is tobacco smoke, there are several other factors that can cause or make COPD worse, including environmental exposures and genetic (inherited) risk. For example, heavy exposure to certain dusts at work, chemicals, and indoor or outdoor air pollution (including wood smoke or biomass fuels) can contribute to COPD. Some people have none of these exposures and still get COPD. We don't fully understand why some smokers never develop COPD and some

Am J Respir Crit Care Med Vol. 199, P1-P2, 2019

never smokers get COPD; but, hereditary (genetic) factors probably play a role in who develops COPD.

How do I know if I have COPD?

Common symptoms of COPD include feeling short of breath while resting or when doing physical activity, cough, wheezing, fatigue, and/or mucus production that does not go away. If you have these symptoms, you should talk to your healthcare provider. Some people with early COPD may not be aware of symptoms. Testing should be done in people who are at risk for COPD. Your healthcare provider may have you do a breathing test (lung function test) called spirometry. Spirometry measures your ability to exhale and can detect whether your airways are narrowed. (See ATS Patient Information Series fact sheets on Pulmonary Function Testing).

How does a healthcare provider know a person has COPD?

Healthcare providers diagnose COPD based upon the combination of symptoms and test results. The single most important test to determine if a person has COPD is spirometry. Changes of COPD can also be seen on a chest x-ray or a chest CT scan. Once your healthcare provider has determined that you have COPD, he or she may order other tests to assess how well you are breathing with sleep and with exercise. This includes looking at your oxygen saturation levels.

How is COPD treated?

The first and most important treatment of COPD in smokers is to stop smoking. Medications and other therapies are available to help treat nicotine addiction and to help you stop smoking. For more help on stopping smoking, see the ATS Patient information Series fact sheets on Tobacco.

Medications can also be prescribed to help relieve symptoms of COPD and to prevent symptom flares (called exacerbations) that can lead to further loss of lung function. Some general classes of medications include those that aim to widen the airways (bronchodilators), reduce swelling in the airways (anti-inflammatory drugs, such as steroids), and/or treat infections (antibiotics). Other than antibiotics, most COPD medications should be taken every day, usually for life. Stay as healthy as possible. Avoid contact with those who are sick, wash hands often, get a yearly flu vaccine, and get a pneumonia vaccine when recommended by your healthcare provider

In some people, COPD can also cause the oxygen level in the blood to be low. If this occurs, a person can be given supplemental oxygen. Breathlessness should not be confused with low oxygen levels. People with COPD can experience shortness of breath or have a hard time breathing even if they have good oxygen levels. Therefore, breathlessness is not always a good guide for whether you need to use oxygen (See ATS Patient Information Series fact sheet on Breathlessness).

Proper nutrition and staying in good physical shape are also important not just for symptom relief but also for your quality of life. Pulmonary rehabilitation programs offer supervised exercise and education for those with breathing problems and should be a part of a comprehensive treatment plan for anyone with COPD. Community support groups can provide education and opportunities for COPD patients and their caregivers to share their experience with other people with COPD and families. (See ATS Patient Information Series fact sheet on Pulmonary Rehabilitation).

In some cases, surgical procedures such as lung volume reduction surgery or lung transplantation may be options to consider (See ATS Patient Information Series fact sheets on Surgery for COPD and Lung Transplantation).

Will COPD ever go away?

The term chronic, in chronic obstructive pulmonary disease, means that it lasts for a long time. Symptoms of COPD sometimes improve when a person stops smoking, takes medication regularly, and/or attends pulmonary rehabilitation. However, the lungs are still damaged and can never fully return to normal. Therefore, COPD is a lifelong condition. Breathlessness and fatigue may never go away entirely, but people can learn to manage their condition and continue to lead a fulfilling life.

Authors: Suzanne C Lareau RN, MS, Bonnie Fahy RN, MN, Paula Meek PhD, RN, Angela Wang MD
Reviewers: Kevin Wilson MD, Richard ZuWallack MD, Marianna Sockrider MD, DrPH, Nicola Hanania, MD

Rx *Action Steps*

Stop smoking and avoid smoke exposure.

- ✔ See your healthcare provider for any unexplained chronic cough or shortness of breath.
- ✔ Ask your healthcare provider about having a spirometry lung function test to check your lungs.

Healthcare Provider's Contact Number:

_____

Resources

American Thoracic Society

- www.thoracic.org/patients
  www.livebetter.org (Live Better with Pulmonary Rehab)
- Fact sheets on:
  breathlessness, influenza, oxygen therapy, pulmonary function tests, pulmonary rehabilitation, pulse oximetry, surgery, tobacco, transplantation, tobacco.

COPD Foundation

- http://www.copdfoundation.org/What-is-COPD/Understanding-COPD/What-is-COPD.aspx

National Heart Lung & Blood Institute

- http://www.nhlbi.nih.gov/health/health-topics/topics/copd/

American Lung Association

- http://www.lung.org/lung-disease/copd/about-copd/understanding-copd.html

The Pulmonary Education and Research Foundation: PERF

- https://perf2ndwind.org/