

HEALTH IN OUR HANDS!

The Arkansas State University Wellness Program Newsletter
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Chronic Obstructive Pulmonary Disease

Lung Health

If asked about the importance of the heart, many people can give a brief or detailed reason why the function of the heart is vital for life. It is known that without our heart, there is no life. However, have you ever thought about how life would be if the lungs were impaired? Have you ever asked yourself or anyone else the role of the lungs?

Well, the lungs function to deliver oxygen from the air we inhale to blood and removes carbon dioxide from blood into the air when we exhale. When we breathe, this gas exchange takes place so that oxygenated blood can be delivered to oxygen dependent tissues via the heart. This mechanism helps our body to function properly. Therefore, if there was a problem within the lungs, there would be little oxygenated blood traveling from the lungs back to the heart. The heart would then send poorly oxygenated blood to muscles, the brain, and other organs. One condition that

affects the gas exchange, and thereby indirectly affecting other tissues, is chronic obstructive pulmonary disease (COPD).

What is COPD

COPD is a disease that affects the lungs by impairing respiration. The leading cause of COPD is smoking, but can also be triggered by prolonged exposure to airborne irritants such as: secondhand smoke and air pollution in heavy amounts, chemical fumes, and dust. This disease can also result from alpha-1-antitrypsin deficiency, which is a rare genetic disorder. Chronic obstructive pulmonary disease is the most common lung disease and has two main forms: chronic bronchitis and emphysema.

Chronic bronchitis is characterized by irritation and inflammation lining the airways. The main airway passage to the lungs is through the bronchi. If the lining of the bronchi is inflamed, it becomes thickened and makes air travel problematic resulting in difficulty breathing.

If chronic bronchitis is most prominent in COPD, one could expect a significant amount of mucus production.

The bronchi continue to course and branch into the lungs until they become grapelike sacs called alveoli. Capillaries coursing from blood vessels wrap around these alveoli and this is where the gas exchange occurs. In patients with emphysema, these tiny sacs are damaged and their surface area is reduced. The alveoli become less elastic, and may collapse with exhalation. Air cysts can also develop in the place of normal tissue in patients with emphysema. The function of the air sacs diminishes which, in turn, reduces the amount of gas exchange in the lungs.

Spirometry is the test commonly used to test patients for chronic obstructive pulmonary disease. It is a painless procedure that involves blowing into a machine and it yields results in a timely manner. The results are analyzed and

health professionals are able to evaluate lung function. COPD is a progressive disease and the symptoms may develop slowly. An individual may not know they have the disease until after damage is already done.

Symptoms of COPD include:

- Wheezing
- Shortness of Breath
- Chronic cough (with or without mucus)
- Fatigue
- Chest tightness

These symptoms produced by COPD can cause complications when attempting to perform normal activities of daily living. The smoke from cooking fires can irritate the respiratory system, moderately intense activities will increase breathing difficulty, and an individual will be susceptible to respiratory infections.

Treatment

When COPD damages the lungs, the effects are irreversible. Unfortunately, there is no cure but there are ways to slow the progression of the disease. An individual's primary physician may refer them to a pulmonologist to facilitate treatment. Treatment for chronic obstructive pulmonary disease focuses on improving symptoms, general health, and exercise tolerance. If you have • COPD, the best thing you can do to slow the disease is to quit smoking. Other methods that are used to treat COPD include but are not limited to: pulmonary rehabilitation, the use of

medications, oxygen therapy, and lung transplant.

- **Pulmonary rehabilitation** assists with improving overall health and wellness. This rehabilitation program may consist of psychological and nutritional counseling, physical therapy, and disease management training.
- **The common form of medication** used for COPD performs by relaxing the muscles surrounding the airways. These airway relaxants can be administered through an inhaler allowing the medicine to go straight to the lungs. If the muscles surrounding the airways are relaxing, the restriction decreases resulting in an increase in airflow.
- **Oxygen therapy** is used to increase the level of oxygen in the blood. The patient receives oxygen through a nasal tube or mask. Some COPD patients need extra oxygen when performing activities to decrease symptoms.

Patients suffering from severe COPD may benefit from a lung transplant. A lung is donated from a deceased organ donor. Although the lung can increase the quality of life, it has potential complications. The receiver's

body can reject the lung and can cause other complications.

It is well known that prevention is better than treatment. If you are at risk for COPD there are things you can do to lower your risk. To decrease the odds of acquiring COPD, one should: refrain from smoking, avoid secondhand smoke and other lung irritants, and exercise to promote healthy lungs.

Sources

- www.nhlbi.nih.gov/health/healht-topics/topics/copd
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- www.ncbi.nlm.nih.gov/pubmedhealth

**If you have any suggestions for newsletter topics, please contact Dean Susan Hanrahan at hanrahan@astate.edu.

The Arkansas State University Employee Wellness Newsletter is published monthly during the academic year by the College of Nursing and Health Professions. Health questions can be addressed to Dean Susan Hanrahan, Ph.D., ext. 3112 or hanrahan@astate.edu. Produced by Jerrica Thomas, graduate student in the College of Nursing and Health Professions, Physical Therapy Program.