Lung Diseases and Treatments

**Emphysema**

Emphysema is a type of lung disease that causes breathlessness. A person with emphysema has the alveoli in their lungs destroyed. The inner walls of the air sacs weaken and burst over time, leading to bigger air gaps rather than many small ones. This leaves the lungs less able to absorb oxygen into the bloodstream and remove carbon dioxide from the blood. Smoking is the main factor that causes emphysema but other causes include air pollution, chemical fumes and dust. Symptoms of emphysema include coughing, wheezing, shortness of breath, chest tightness and increased production of mucus. It can be diagnosed with the use of a lung function test, which is the most useful test to determine airway blockage, called spirometry which tests the lung's volume by measuring airflow while a patient inhales and exhales. The results are then compared to normal results of people with similar age, gender, height, weight and ethnic background. Another way emphysema is diagnosed is arterial blood gas which measures the amount of oxygen and carbon dioxide in the blood from an artery by inserting a needle into the artery, in the wrist, and sending the blood to the laboratory for accurate results. This helps determine if a patient needs oxygen. Treatments being used in today's society include bronchodilators and inhaled steroids. Bronchodilators are drugs that can help relieve coughing, shortness of breath and other breathing problems by relaxing constricted airways by stimulating beta-adrenoceptors in the airways. For inhaled steroids, corticosteroid drugs are inhaled as aerosol sprays to reduce inflammation and may reduce shortness of breath. To prevent emphysema, one must never smoke or should quit smoking, avoid breathing second-hand smoke and wear a mask if working with chemical fumes or dust.

**Tuberculosis**

Tuberculosis is a possibly deadly infectious disease affecting mostly the lungs. Tuberculosis is caused by bacteria that are transmitted from person to person through tiny droplets released into the air by coughs and sneezes. Symptoms include coughing for 3 or more weeks, coughing up blood or mucus, chest pain, unintentional weight loss, fatigue, fever, night sweats, chills and loss of appetite. To detect tuberculosis in the body, there are 2 kinds of tests used such as the TB skin test (TST) and TB blood tests. TB skin test is a test used to detect if a person has been infected with TB bacteria. It is done by injecting a small amount of fluid (called tuberculin) into the skin on the forearm. After that, a person who took the tuberculin skin test should return within 48 to 72 hours to have a trained health care worker check and see if there is a reaction on the arm. TB blood tests also detect tuberculosis bacteria in the body. It is a diagnostic test that detects the presence of Mycobacterium tuberculosis. These tests use a sample of blood to check for an immune reaction to the bacteria. One current treatment being used include Isoniazid (INH), where a person takes an isoniazid antibiotic pill daily for 9 months. Another treatment is rifampin which a person takes this antibiotic every day for 4 months. Both of these treatments work to kill or prevent the growth of bacteria. When having tuberculosis, some ways to prevent it from spreading include having good ventilation, natural light and good hygiene; covering the mouth with a tissue when coughing or sneezing then washing hands afterwards.