

Gas Exchange

Chronic obstructive pulmonary disease or COPD is a term used to describe two different chronic lung diseases. These diseases hinder breathing, limit air flow and can become severe over time. COPD is the 4th leading cause of death in the United States and around 24 million individuals are affected by it, with over half of those individuals not even knowing it. COPD can be broken up into two different types, emphysema, and chronic bronchitis. With emphysema, the main damage takes place within the alveolar walls and with chronic bronchitis, the main damage takes place within the lining of the air passages. It's common for emphysema and chronic bronchitis to occur together, thus, the term COPD is typically used to describe both. Prolonged exposure to lung irritants can cause irritation and destroy air passages, as well as your lungs. With that being said, smoking is the most common cause of COPD. Although rare, genetics can also play a hand in an individual's development of COPD. With these diseases, a number of different tests can be performed in order to diagnose, such as: a pulmonary function test, chest x-ray, CT scan, arterial blood gas, and spirometry. COPD is a progressive disease, so in early stages, there may be no symptoms, or they may appear to be very mild and or ordinary.

When our alveoli and surrounding tissues become inflamed, the alveoli are filled with puss and or fluid. This makes it difficult to breathe and is know as a condition called pneumonia. Typically, in a healthy patient, pneumonia is fairly easy to overcome. When you have pre-existing medical conditions however, it can be a real struggle. There are many different types of pneumonia in the world: lumbar, bronchial, community acquired, hospital acquired, ventilator acquired, opportunistic, and aspiration. Signs and symptoms will vary depending on the patient's state of health and their cause of infection. Treatment will likely include some sort of antibiotic or anti-viral, depending on what is causing the patient's infection. A sputum test will be best to pinpoint what bacteria is infecting the patient, as well as, to decide on best mode of treatment.

Tuberculosis (TB) is an infection in the lungs caused by the bacteria, mycobacterium tuberculosis, a contagious bacterial infection. High risk countries for TB include China, Russia, India, Pakistan, and Sub-Saharan Africa. There are "latent or inactive" forms of this infection, as well as "active" forms. A latent or inactive form would best be described as a healthy person who has a strong immune system that's been exposed to TB. The infection can remain with this person without ever showing itself however, it can also grow and become "active" at any time. To best diagnose TB, you'll need a sputum culture, as well as a chest x-ray. A TB skin test can also be performed however, this will only show whether that person has been exposed at any point in time. With this type of test a false negative result can come back if a person doesn't respond to the test. This can happen in a person who is too old or too young, as well as a person who has aids.

A chest tube is a tube inserted into the pleural space of the lung to remove air or fluid and to help the lung re-expand, it can also be used to drain fluid around the heart after a cardiac surgery. There are two types of chest tube drainage systems, a system with wet suction, or with dry suction. With wet suction, the suction is regulated by the height of the water in the control chamber. With dry suction, the suction is regulated by the suction monitor bellow. A nurse's role when it comes to chest tubes is to monitor the patient's lung sounds and respiratory status,

monitor the drainage system (drainage color and amount) and know what to do if something goes wrong!

When we go to sleep, so do our muscles and when our muscles go to sleep, they become flexible. So, if we're lying on our backs, our tongue muscle can become so flexible, that it can actually fall back, causing an obstruction of our airway. When the airway becomes obstructed, the lungs will begin to get insufficient amounts of air, causing the oxygen saturation to drop. When the oxygen saturation drops, a signal will be sent from the brain to wake us up in order to remind us to breathe. This is a sleep disorder known as obstructive sleep apnea. This is a cycle that will unfortunately continue throughout the entire night, causing anyone who suffers from sleep apnea to get insufficient amounts of sleep. Risk factors for sleep apnea include sex, race, age, genetic factors, obesity, and nasal obstructions. Men are at higher risk for suffering from sleep apnea. 24% of men stop breathing while sleeping and only 9% of woman stop breathing while sleeping. If you have a first degree relative that struggles with sleep apnea, your chances of also struggling with it increase from 22% to a whole 86%!

Citation

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