

Gas Exchange Videos Reflection

The respiratory system is a very vital organ system that humans use and rely on. It allows us to breathe in oxygen and exhale carbon dioxide to oxygenate our entire body. Since it is such a vital organ system, it can get disrupted or damaged from many different infections, diseases, and personal habits.

Tuberculosis is an infection of the lungs caused by the *Mycobacterium tuberculosis* bacteria. It infects humans in either inactive/latent or active ways. When the bacteria is inactive, it is not contagious and cannot multiply because the bacteria itself is too large to infiltrate past the upper respiratory defense. When the bacteria is active, the bacteria is small enough to infiltrate into the lungs and infect the patient, therefore making it severely contagious. As a nurse when treating patients with TB, the nurse should apply proper PPE precautions as the bacteria can be spread through droplets. In order to diagnose TB, several tests like a chest x-ray, blood culture, or even a TST test (skin test) can be done to confirm it. Treatment depends on if the patient has inactive or active TB. Inactive TB is focused on preventing the bacteria from becoming active with antibiotic medications. Active TB is treated by using a combination of antibiotics over a 12-month period. All medications are toxic to the liver and skipping or stopping treatment may cause the TB bacteria to become resistant.

Chronic obstructive pulmonary disease or COPD is a term used to describe both emphysema and bronchitis. This disease hinders breathing by limiting lung airflow, which worsens with time. Smoking is the main culprit for this disease. It causes the volume of air inhaled and exhaled to be reduced due to the clogging of air passages with mucus, inflammation of air passages, and damage to alveolar walls. Emphysema occurs when the alveolar walls are damaged. Chronic bronchitis occurs when the lining of air passages is blocked with phlegm or mucus. Treatment for COPD includes the use of bronchodilator inhalers, inhaled steroids, combination inhalers, and even supplemental oxygen.

Obstructive sleep apnea is when you stop breathing due to an obstruction. It affects men more than women and affects the Asian population the most. Risk factors for this include being male, obesity, neck size, and even nasal obstructions. This condition affects patients breathing because fat is stored in the back of the tongue muscle, and when they sleep in a supine position their tongue naturally falls back and can obstruct the airway. Another way this condition affects patients is in their REM sleep. When in REM sleep dreams occur, the body is paralyzed so that dreams are not physically acted out, and this makes the muscles relax leading to the tongue falling back.

Pneumonia is caused by the inflammation of alveoli, which could already be filled pus and mucus. There are many types of classifications for pneumonia ranging from where it was acquired to what specific part of the lung it is affecting. Pneumonia can develop from viruses, bacteria, fungi, and even mycoplasma. One way to differentiate the type of pneumonia you have is through the sputum color. Greenish yellow sputum indicates a bacterial infection, while a thin white sputum indicates a viral infection. Diagnosis of pneumonia involves a physical exam, auscultation of the lungs, chest x-ray, and even a blood test. Treatment and prevention involve antibiotics and vaccinations.

A chest tube is a tube that is inserted into the pleural space to remove air or fluid to help expand the lungs. A mediastinal chest tube is placed to drain fluid from around the heart after cardiac surgery. Chest tubes could be put in for many reasons like a pneumothorax, empyema,

chylothorax, and post-surgery for certain procedures. When chest tubes are put in place, they are hooked up to suction systems to drain the fluid from the lungs. Dry suction systems have no water column and have higher suction level options. Wet suction systems have a water column chamber that is regulated by water height, and bubbling can be heard and seen when it is working. When treating patients who have chest tubes, it is especially important to monitor their respiratory status, and check the drainage system for patency and output.