

Gas Exchange

The videos related to gas exchange were very informative. The topics that were covered were Tuberculosis, Pneumonia, COPD, chest tubes, and Obstructive Sleep Apnea. One important thing that I would like to point out is that the RegisteredRN nurse should teach EmpowerRN nurse how to narrate while filming without editing the video a million times, other than that she explained everything in detail, including the pathophysiology of the disease, signs and symptoms, risk factors, diagnosis process, treatment, and preventions.

The first video was about tuberculosis, which is the leading cause of infection and death in adults, and one third of the population has it. TB is a lung infection that is caused from a bacteria called mycobacterium tuberculosis. It can cause you to have latent or active bacteria. Latent is where the bacteria lie dormant in your system until there is a trigger that causes it to go active. One of these triggers may be suppressed or compromised immune system, age, and possibly certain medications. Latent TB is not contagious, but active is. Active TB is transmitted through the air. To prevent catching the virus you would need to wear the appropriate PPE. TB can spread to different organs in the body, but this is very rare. TB is diagnosed by chest X-Ray, sputum culture, IGRA test, or TST test. The most common form of treatment for TB is medication, which should not be skipped, or stopped until completed, because it could cause the bacteria to become resistant to the antibiotic. The best prevention for TB is the vaccine and taking precautions when around other people that have TB.

The next video discussed COPD, or chronic obstructive pulmonary disease. COPD is the fourth leading cause of death, and 24 million people are affected. COPD that causes chronic bronchitis causes the bronchioles in the lungs to become inflamed trapping mucus. This trapped mucus and inflammation reduces the volume of oxygen exchange in the lungs. The other form of COPD is emphysema. Emphysema causes the alveolar sacs to become misshapen to where they do not work properly during the gas exchange process. The most common cause of COPD is smoking. Other causes are work environment, air pollutants, and genetics. The signs and symptoms of early COPD is a persistent cough for three or more months with thick mucus, shortness of breath, chest tightness, respiratory infections, wheezing, and fatigue. If a patient has advanced COPD, they will have difficulty catching their breath during walking or talking, a fever and headache because of the build up of carbon dioxide, cyanotic lips and fingernails, barrel chest, swollen feet or ankles, weight loss, lack of mental alertness, and clubbing of the nail beds. COPD is diagnosed by chest CT, X-Ray, ABG test, physical assessment, and incentive spirometry test. The damage that COPD causes is irreversible, but can be managed with medications, lifestyle changes, diet, supplemental oxygen, and surgery.

Obstructive Sleep Apnea was the next video covered. What happens during obstructive sleep apnea is the tongue muscles relax causing the tongue to obstruct the airway. A big contributing factor for this is excess fat on the tongue. Other risk factors for obstructive sleep apnea is obesity, male sex, race, genetic, and a nasal obstruction. Males are at greater risk for

sleep apnea due to their neck size being larger than females. Things that can make sleep apnea worse are lying in the supine position and during REM sleep.

Pneumonia is the next topic. Pneumonia has a high survival rate in healthy patients, but the at-risk patients are newborns, patients over 65 years of age, weakened immune systems, and smokers. Pneumonia can develop in the bronchioles and the lobes. Pneumonia is also classified based on how it was acquired. There is hospital acquired pneumonia, ventilator acquired pneumonia, community acquired pneumonia, aspiration pneumonia, viral pneumonia, and opportunistic pneumonia. Pneumonia is diagnosed by sputum culture, blood, chest X-Ray, CT, or a bronchoscopy. The most common form of treatment for pneumonia is antibiotics and lung exercises. Preventative measures are vaccination, flu shot, and to stop smoking.

Chest tubes remove fluid or air from the pleural space or can be placed in the mediastinum space that is under the sternum. The reasons a patient might need a chest tube are from a pneumothorax, pleural effusion, hemothorax, empyema, or a chylothorax. The drainage system can be used for wet or dry suction depending on the doctor's orders. The nurse should assess the patient's respirator status and the drainage system. Document drainage amount and characteristics. Make sure there are not continuous bubbles in the air leak monitor chamber, and make sure that in the wet system there is enough water in the water seal chamber. Another assessment of the system is to monitor the water seal chamber for fluctuations in the water. If the water does not fluctuate any more than it's a possibility that the lung is no longer collapsed or there is possibly a kink in the tubing. The system needs to always stay below the patient's chest. If the system becomes dislodged from the pleural space place a dressing over the incision and tape on three sides. If the system breaks while on the floor, then place the tube in an inch of water. Milking and stripping of the tubing is not recommended. The tube cannot be clamped without a doctor's order. Chest tube removal is typically done by a physician with the assistance of a nurse. The nurse should collect all the supplies that the physician requires, pre-medicate the patient if ordered, place the patient in semi-fowler position, advise the patient to perform the Valsalva maneuver while the tube is removed, monitor patient's respiratory status, and then obtain a chest x-ray if ordered.

As you can see, I learned a lot about gas exchange and what I need to do as a nurse if I come across a patient with any of these conditions. It has been a pleasure having you as an instructor during this module and I look forward to the rest of the year!