

## Gas Exchange

I found all of the Youtube videos both educational and dense with material. The visual aids provided in the videos helped me connect key concepts and pathophysiology to the lecture material. I picked out a few facts from each video that were the most interesting and surprising to me. Beginning with Tuberculosis, I was previously unaware that this disease is one of the oldest among humans. It is also notable that a third of the world population is afflicted despite an effective vaccine (BCG vaccine) in existence. In the case of Chronic Obstructive Pulmonary Disease (COPD), the visual aid of the alveoli as the primary site of gas exchange helped me better understand how inadequate perfusion is the result of this disease process. Distinguishing between the two types; emphysema and chronic bronchitis is important to note, as COPD is used to describe both conditions. In the case of emphysema, the alveolar walls begin to lose their integrity and therefore, the surface area for gas exchange is substantially decreased. This causes an imbalance in arterial blood gases. On the other hand, chronic bronchitis is mainly the result of the lining of the airway passages being filled or clogged with sputum. Even though there are major distinctions between the two conditions, the end result is the same. Most cases of COPD are caused by pollutant inhalation. This is why smoking cessation interventions can be key to slowing the disease process in certain patient populations. I can surmise that during my future nursing career I will see numerous patients experiencing COPD from vaping, as it has become alarmingly popular among younger generations. Moving on to a discussion of Sleep Apnea, I was surprised to learn that the condition is characterized by a cyclical event that actually involves brain arousal. When an individual with untreated sleep apnea sleeps, the upper airway is obstructed leading to decreased oxygen saturation. The individual's brain then responds with arousal and wakes to open the airway. When oxygen saturation levels are restored and the brain rests, the airway is compromised again, resulting in decreased oxygen saturation yet again. It becomes a cyclical event throughout the night. There are two main exacerbators of this cycle. The first, is sleeping supine, this increases the likelihood of airway impairment and can encourage the tongue to contribute to the blockage. Second, rapid eye movement sleep (REM) can be very dangerous in that dreaming causes muscle paralysis. As muscles are responsible for the opening and closing of the airway, they are unable to respond in compensation for decreased oxygen saturation levels. Next, I was interested to learn more about how and why there are so many different types of Pneumonia. Prior to lecture material and the informational video, I was unaware that pneumonia comes in many forms with a multitude of classifications. First, I found it interesting that the location of pneumonia can be defined as bronchial or lobar. Furthermore, the fact that the mode of acquisition is important in the diagnosis. The three types discussed were hospital-acquired pneumonia (HAP), community-acquired pneumonia (CAP), and ventilator-associated pneumonia (VAP). The main causes of pneumonia include viruses, bacteria (*Streptococcus pneumoniae*), mycoplasma, fungi, and aspiration. Interestingly, sputum color can be a great insight into what type of pneumonia the patient is experiencing. Finally, I learned how important chest tubes can be in treating patients for pneumothorax, pleural effusions, empyema, chylothorax, and after cardiac procedures. A key visual to learn when caring for a patient with a chest tube is the water seals chamber fluctuation during expiration and inspiration. The distinguishment between wet and dry suction is important to note that dry suction is higher pressure. With wet suction, it is important to closely monitor water evaporation to keep the appropriate level of suction in the chamber. In summation, the videos were a great learning tool.