Case Study

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Case Study

On February 8th a 71 year old African-American male, GS, presented to the emergency department (ED) with a chief complaint of shortness of breath (SOB). He stated that he had been experiencing worsening SOB, has been gaining weight (approximately 6 pounds), and his leg swelling has increased over the last week. He has a past medical history of chronic obstructive pulmonary disease (COPD), heart failure (HF), hypertension (HTN), diabetes type II, atrial fibrillation, anemia, obstructive sleep apnea, obesity hypoventilation syndrome, asthma, bronchitis, and was a former cigarette smoker of half a pack per day for 40 years. GS is a full code and has no known drug allergies. He was transferred to the intensive care unit (ICU) for mechanical ventilation as a result from acute lung failure (ALF). He is widowed, but has visitors and his daughter helps with information.

The purpose of this case study is to integrate knowledge from the humanities and sciences, including nursing research and theory, to plan, provide, and evaluate holistic care provided to GS, the patient that was selected during this clinical rotation. This paper is an extension of the daily concept map designed and is based on standards of care and clinical pathways.

Medical Diagnosis & Pathophysiology

While admitted for SOB, GS was later diagnosed with COPD and HF exacerbation, pneumonia, and ALF.
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COPD, a progressive, chronic, irreversible inflammation and narrowing of the airways, is associated with increased mucous production which can cause nonfunctioning alveolar and decreasing lung areas for gas exchange to occur resulting in the deprivation of oxygen to the body. HTN is common in patients with COPD and as the disease progresses, this can lead to HF. In HF, the heart increases in size trying to increase its cardiac output, but instead this enlargement causes the heart to lose its ability to contract and ask as a useful pump. The signs and symptoms of HF and COPD are very similar as they both center on dyspnea or SOB, especially related to exercise (Urden & Stacy, 2014).

Related Signs & Symptoms

This patient presented with respiratory symptoms including SOB, ALF, wheezing, ronchi, and diminished breath sounds. Through further testing, it was discovered that the patient also had a low lactate level of 1.6, chronic anemia, metabolic alkalosis, pulmonary infiltrates, atelectasis, pleural effusions, and pulmonary edema. When a bronchoscopy was preformed to clear out the patient’s lungs and obtain a sample, his lobes were filled with copious amounts of yellow secretions, the lung tissue was friable, his pulmonary edema has worsened, there was significant bronchospasm in his left main stem, and he had cor pulmonale. The lung culture preformed came back with very few gram positive cocci suggesting that there was some infection. Cardiac symptoms associated with HF that were present on admission included dyspnea, lymphedema, atrial fibrillation, bilateral +2 edema in the lower extremities, a heart rate of 100, and complaints of orthopnea (caused by pericardial effusion). The patient also had chronic venous stasis, an enlarged heart, an elevated BNP level of 1443.
There were five nursing diagnoses chosen for this patient's care plan. They include: ineffective airway clearance, impaired gas exchange, excess fluid volume, risk for aspiration, and anticipatory family grief.

1. Ineffective Airway Clearance (Primary)

Unable to effectively and independently clear his airway of profuse and abnormally viscous secretions, this patient demonstrated symptoms such as abnormal and diminished breath sounds ( wheeze and ronchi), non-productive coughing, dyspnea, and frequent assistance for lung clearance. Clearing and maintaining a clear airway for this patient is the priority diagnosis because, according to Maslow, people need their basic human needs met first before they are able to move on to meeting additional needs. For this patient, his basic need of adequate oxygenation is in danger of not being met. In order to meet this need and achieve proper gas exchange, his secretions need to be removed and cleared from the alveolar sacs.

Outcomes

The goal for GS in relation to this diagnosis is for his secretions to be mobilized and his secretion amount to be decreased to baseline levels/his airways to be free of secretions. Outcome criteria for this goal include clear breath sounds and a normal breathing pattern for the patient without mechanical ventilator assistance prior to extubation, and for the patient to have the ability to effectively cough up secretions after extubation.
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Interventions

The patient’s head of the bed was kept at a minimum of 45 degrees to promote secretion clearance, lung expansion, and air exchange. Activities were passed and clustered to promote rest and decrease oxygen demands. The patient was mechanically ventilated with an endotracheal tube (ETT) and humidified air was used to loosen secretions. Frequent suctioning was required to help the patient remove mucus build up, and Singular was given to dry up some of the lung secretions. Respiratory therapy would provide chest physical therapy and nebulizers containing Albuterol and Atrovent which help to open and dilate the constricted bronchioles so that secretions can mobilize easier and Pulmicort was administered to decrease the inflammation in the bronchioles aiding in further airway opening (Carpenito, 2013). Elective bronchoscopies were also performed to clear out the patient’s lungs because the secretions were so copious and thick. Prior to the procedure, the patient needs to be sedated, abstained from anything by mouth for six hours, and the nurse should teach the patient what to expect during and afterward. During a bronchoscopy the nurse should be monitoring the patient’s oxygen saturation, respiratory rate, and blood pressure to assess the patient’s status; however complications are rare (Taylor, 2010).

Teaching

It would be beneficial to this patient for him to know techniques to clear his airway, like the turn, cough, and deep breath (TCDB) technique. Any new medication, therapeutic regimens, changes to previous treatments, and teaching of medical equipment (such as an inhaler or a positive airway pressure machine) should be of high importance after extubation before
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discharge. Providing the patient and family with knowledge of warning signs and symptoms of oncoming or recurring pulmonary problems and when to call the physician or seek medical attention before discharge is also necessary for the patient’s wellbeing outside of the hospital.

2. Impaired Gas Exchange

Gas exchange is impaired from ventilation and perfusion mismatching from pulmonary shunting as evidenced by an increase in PaCO2, decrease in PaO2, and the altered ability of the blood to carry oxygen. Maslow is the supporting theorist for this diagnosis because if the patient is unable to be effectively oxygenated and adequately perfusing his body (a basic need) then subsequent problems will be unfixable or unrelated.

Outcomes

The expected outcome for this diagnosis is for the patient to maintain adequate gas exchange throughout his current hospitalization as measured by arterial blood gases (ABGs) that are within normal limits for him, abstain from decreases in LOC unrelated to sedation, and to be alert and responsive prior to and after extubation.

Interventions

A continuous pulse oximetry meter was placed on the patient’s finger in order to detect any changes in the patient’s oxygenation status, as the goal was to maintain an oxygen saturation of greater than 90% to achieve adequate oxygenation. However, it was vital that oxygen administration be closely monitored as to not administer too much oxygen and suffocating the patient because he has COPD (which relies on a decrease in oxygen rather than a buildup of
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carbon dioxide to stimulate a breath). The head of bed was kept at around 45 degrees and the patient was in a sitting position to promote lung expansion and air exchange. Cluster care and scheduled rest were utilized to promote patient rest and recovery and decrease oxygen consumption, however, the patient was repositioned every two hours to facilitate secretion movement and drainage, and suction was used as needed to clear secretions (Carpenito, 2013).

Teaching

The patient and his family members should be advised to restrict and pace his activities in order to decrease his oxygen demands as well as deep breathing and coughing exercises to facilitate air exchange and airway clearance. Any new medications and alterations to current therapies (such as oxygen) should be instructed to the patient, family, and caregiver(s).

3. Excess Fluid Volume

GS had gained a significant amount of weight over a short period of time which indicated that he was retaining water. This increase in fluids is related to a decrease in cardiac output from HF and is manifested as worsening edema, weight gain, orthopnea, SOB, and lung crackles. After receiving Lasix therapy the patient started to have an output that was significantly greater than his input, and his weight began to drop every day. This decrease in extra fluid also eliminated the presence of crackles in his lungs. The theory used for this diagnosis was the Nursing Need Theory by Virginia Henderson because the patient needs fluid to be pulled off in order to be comfortable and promote oxygenation by pulling fluid from the lungs.
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4. Risk for Aspiration

This patient is at a higher risk for aspiration because he has an altered swallowing ability from having an ETT in place and a decreased level of consciousness (LOC) from receiving Fentanyl for pain and Versed for sedation. GS is also experiencing a lot of physical stress which can impair the absorption rate of the continuous enteral feedings he is receiving through an orogastric tube (OGT) so hourly residuals were checked to prevent overfeeding and aspiration. The Systems Theory by Betty Neuman focuses on assessing the patient for potential risks (in this case aspiration) and taking measures to address and take extra precautions to prevent those risks.

5. Anticipatory Grief (family)

The diagnosis of anticipatory grief for the family is related to the rapid decline in this patient’s health. It was evident that the family members were experiencing grief during their visit by manifesting looks of sorrow and crying. Martha Rogers’ Science of Unitary Human Beings theory supports this diagnosis and by sharing knowledge, empowering, and offering choices the nurse can promote the health of the family members and patient.

A researcher designed a prospective qualitative description study to examine skills that nurses can utilize other intuition to develop a trusting and therapeutic relationship with family members, particularly when delivering bad news. From interviewing the family members of very sick patients, the researcher discovered five strategies nurses can use. These strategies include demonstrating concern, building rapport, being professional, providing factual information, and being supportive of decision making. Practicing these techniques provide the family members with feelings of trust, confident in nursing care, and leads to better coping
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(Adams et. al., 2014). Using these skills for this patient’s family members would be beneficial in helping them grieve and cope appropriately with the sudden decline in their loved one’s health. If the patient’s status continues to decline, connecting the family with a palliative care team and grieving resources would be beneficial in promoting healthy coping.

**Cultural Consideration**

Considerations were made for the patient to promote communication because the ETT blocks the vocal cords, but he was still conscious to a light sedation or drowsy level. Establishing communication with the patient was important to alleviate his anxiety and so he could be helpful when performing tasks. Research shows that when communicating with patient’s like this, nurses should use a confident, calming voice and can also use therapeutic tough to decrease anxiety when performing tasks and provide encouragement to improve the patient’s experience, decrease frustration, and improve the patient’s outcome (Grossbach, Stanberg, & Chlan, 2011). The use of blinking to communicate was utilized for this patient, and he was calm during tasks when he was prepped and informed beforehand.

**Evaluation**

Admission to the ICU for COPD exacerbation is a rare occurrence, but for those that do is usually a serious and life threatening event. While exacerbations of COPD are a common and a natural progression of the disease and don’t usually require critical care interventions, being accompanied by HF and other comorbidities, this patient was unable to be stabilized through noninvasive interventions. An exacerbation of this severity usually has an increased mortality rate and, as a study found, around 25% of these patients die in the hospital, 40% died within a
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year after admission, and 70% had died by five years after discharge. If the patient is able to survive such a quick and significant decline in their respiratory and cardiac health, it will take weeks or more likely months for him to recover, and his risk for re-hospitalization and re-intubation is increased (Maclntyre & Huang, 2008). While he has not made much progress yet, the plan of care for GS is to be weaned off of the ventilator, extubated, and started on a continuous positive airway pressure (CPAP) devise and then will be discharged to a skilled nursing facility to aid him in his aftercare.

Conclusion

From this assignment I have learned what the advanced stages of COPD can cause, and the affect of respiratory failure and lung diseases on the entire body. As the respiratory system fails, other organs begin malfunctioning as well because without the lungs providing oxygen, the rest of the body starves and eventually shuts down. Nurses need to pay close attention to patients with heavy secretions such as GS because it is easy for the patient to quickly develop a mucus plug or have other alterations to the respiratory system that need immediate attention and swift intervention.
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Name: Michelle Estep ____________________________

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Date: Feb. 21, 2015 ________________________________