Pathophysiology of dyspnoea a cough and purulent sputum nursing essay

This assignment is a case based written report. The case involved is case three and is based on a 50 year old man by the name of Cedric who was diagnosed with COPD five years ago. He has presented with worsening dyspnea, cough and also increasing purulent sputum production over the past three days. Throughout this assignment there will be information on the pathophysiology of the presenting conditions, education and psychosocial support for the patient, diagnostic tests that need to be done, nursing and risk assessments and the discussion of some of the medications that Cedric is on. This assignment also consists of a nursing care plan for this patient.

PATHOPHYSIOLOGY OF DYSPNOEA, A COUGH AND PURULENT SPUTUM.

The occurrence of dyspnoea is when the ventilatory demand is not and cannot meet the body’s ability to respond to it. The development of dyspnea happens when there is a divergence between the central respiratory motor activity and the incoming afferent information from the airway receptors and also the lungs and the chest wall formation (Periyakoil 2006). Therefore the respiratory effort increases when the central motor command to the respiratory muscles have to be increase meaning that when there is an increase in mechanical work load or the muscles are weakened there is an increase in the work of breathing (Periyakoil 2006).

The experience of shortness of breath is the definition of dyspnoea, and the person involved may or may not be suffering (Hallenbeck 2003). The cause of dyspnea is that there is a CO2 build-up and there is also a deprivation in oxygen. A persons having carbon dioxide elevation can stimulate dyspnea much more than a person having their oxygen levels low and the partial

pressure elevation of atrial carbon dioxide levels are found to have been a stimulus of dyspnea (Hallenbeck 2003)

In regards to the cough that Cedric presented with, it is a defense mechanism that is important in playing a major role in upholding the integrity of your airways; this defense mechanism can be involuntary or voluntary. When someone coughs it is the trigger by a mechanical or chemical stimulation in the pharynx, larynx, trachea and the bronchi and the receptors in them (The Snowdrift Pulmonary Foundation 2000). If a person has a persistent cough they can cough up mucus which is a sputum sample and it is coughed up from the lower airways. And purulent sputum is usually a yellow, green or dirty grey colour (family practice notebook 2010).

NURSING ASSESSMENTS

Assessments that will be performed on the patient are a patient history, physical examination and diagnostic tests. When taking a patient history it is important to know their habits such as smoking or drink so the nurse is able to understand whether or not these habits have anything to do with the presenting condition. It is also important to know what their past medical history is so that it can help the nurse formulate a diagnosis and also to provide appropriate care to the patient. It is also very important to know if the patient is allergic to anything because if they are and the medical professionals don’t know about it then they may just proscribe medication that they cannot have and have an allergic reaction to it. In a patient history it is also important to know what medications the client is on. The medications that the patient is taking may be causing the presenting

condition or hindering the recovery, so if the medical professionals know about the medications then they would be able to do some investigations in regards to the medications.

Another assessment that should be completed is a physical assessment. A physical assessment is a systematic process for collecting objective either through a head-to-toe or a systems assessment (medical examination division 2007). The purpose of doing a physical assessment on Cedric is to acquire a baseline physical and also a baseline mental data. It is also helpful to question or confirm any or question any information that is obtained during the history taking. It is also useful in gaining data that will allow the nurse to create nursing diagnoses and to also plan the patients care (medical examination division 2007).

EDUCATION AND PSYCOSOCIAL SUPPORT

Cedric presented to hospital with dyspnoea so it is the nurses job to provide information about the condition to help the patient have a better understanding of what it is and also how to maintain it in the best way possible. In regards to dyspnea the nurse would be able to tell Cedric about the positioning that he should be in to help with his breathing. In this case it would be to sit up and have your muscles relaxed (patient education 2010). The nurse would also be able to tell Cedric to pace his breathing, this is going to prevent or decrease a shortness of breath (patient education 2010). It is important for patients to not only receive information but to all obtain psychosocial support. The reasoning behind psychosocial support is to prevent the distress and also suffering developing into a condition more

severe. It will also help the Cedric cope better in the situation and help him resume to his normal life once discharged (IFRC 2011). Specific psychosocial support that can be made to Cedric is explanation and education, reinforcement of reality, helping with communication, having treatment for symptoms such as anxiety and mood disturbance. The nurse will also be able to help the patient structure their day and also be able to incorporate the family in the situation (sign 2005).

DIAGNOSTIC TESTS

There are a number of different diagnostic tests that will assist with the assessment and management of Cedric. Patients who present with dyspnoea are usually given a chest x-ray and also an electrocardiography to help the doctor assess the situation (health 2011). These tests will show up any abnormalities of the chest wall, they will show up the positioning of the diaphragm, any possible fractures of the ribs, it can also show up an irregular heartbeat and the amount of blood flow to the heart. Another test includes a spirometer which will show up any airway disorders. Lack of oxygen can be a cause of dyspnea so by doing a measurement of blood oxygen saturation it will show up whether or not the blood oxygen is low and if so then the appropriate intervention can be made (Thomas and Gunten 2000). Another test that can be done for diagnostic reasons is bloods tests and arterial blood gases, these tests will rule out anemia, it will also rule out hyperventilation from a thyroid dysfunction or from an anxiety attack (health 2011). Finally, another diagnostic test that should be done is an echocardiogram. An echocardiogram creates images of your heart by using sound waves. This test will present information on the size and also the shape of Cedric’s heart.

This test will also show up how well Cedric’s chambers and valves are working in the heart (American college of cardiology foundation 2010).

RISK ASSESSMENT

The risk assessment tool that has been conducted on Cedric is a falls risk. The assessment will determine whether or not he is at risk of having a fall in the next twelve months. The reasoning behind doing a falls risk assessment on Cedric is that he presented with a blood pressure of 130/84 and this is considered to be borderline high blood pressure and should be closely monitored (Nemours 2011). High blood pressure can sometimes cause dizziness and nausea so in theory this can cause a fall (Nemours 2011). The falls risk assessment concluded that Cedric is only at a seven percent risk of having a fall within the next twelve months.

CLIENT MEDICATIONS

INDAPAMIDE:

Action: it is an antihypertensive agent that is taken orally. Idapamide exerts its antihypertensive action and it has not been completely elucidated. If a dose of 2. 5mg is taken the renal effects of the drug are minimal and also the antihypertensive effect of the drug is attributed to a reduction in the vascular reactivity to pressor amines (Mims 2011).

Use: Idapamide is part of the diuretic family. This particular medication works by making the body lose excess salt and water (Medi Resource 2011).

Relevant interactions: interactions possibly will occur with lithium, digoxin, alcohol, narcotics and also barbiturates (Mims 2011).

Adverse effects: most reactions are mild and those being asthenia, dizziness, headache, fatigue and muscle cramps. The more severe but common adverse effect is an electrolyte imbalance.

Nursing points/precautions: when a person is taking this drug a nurse should be careful and aware if the patient has kidney problems, diabetes, gout, fluid or electrolyte problems, and also any allergies that the patient may have. Another nursing point is that I might be a good idea for the patient taking the medication to also eat and drink different foods that have high potassium levels; it may also be just as easy to take potassium supplements (drugs information online 2011).

SALBUTAMOL:

Action: the action of Salbutamol is a direct acting sympathomimetic agent that mainly has beta-adrenergic activity and also a high degree of selectivity for beta2-adrenoceptors (Mims 2011).

Use: the use of Salbutamol is to relax the smooth muscle that is in the lungs and also opens the airways to improve the breathing patterns of a person (medicine net 2011).

Relevant interactions: beta blockers in particular antagonize the action of sabutamol on the airways. And generally this drug is also contraindicated in asthma because they tend to increase the airways resistance (Mims 2011).

Adverse effects: Common adverse effects of sulbutamol are tachycardia, hypertension, muscle tremors. You can also obtain headaches and dizziness (medsafe 2009).

Nursing points/precautions: the excess use of sulbutamol is potentially hazardous when you exceed the recommended dosage. A precaution for sulbutamol is that it may cause cardio necrosis, it is also said to have pharmacological effects (Mims 2011).

NURSING CARE PLAN

Nursing diagnosis

Ineffective breathing patterns

goals

To have Cedric's breathing maintained and to have a regular respiratory rate.

Interventions

To position the patient with correct body alignment for best possible breathing patterns.

Apply oxygen to Cedric

Rationale

This will allowed for Cedric to have good lung excursion and also chest expansion

To ensure that Cedric's oxygen saturation doesn't decline

evaluation

To have the nurse or a doctor assess whether the oxygen or the positioning of Cedric has improved his breathing.

Nursing diagnosis

Ineffective airway clearance.

Goals

To have a clear respiratory tract and to maintain airway potency.

Interventions

Assist Cedric in performing coughing and breathing exercises

The positioning of Cedric

Rationale

This will help improve the productivity of the cough

This will promote better lung expansion and to also improve air exchange.

evaluation

The progress will be assessed by a doctor and if there is no progression then more aggressive techniques may be suggested by the doctor.

Nursing diagnosis

High pulse rate

Goals

To have the pulse rate lower on a daily basis

Interventions

Exercising on a regular basis

Rationale

If cedric exercises on a daily basis then he will not only be able to increase his fitness but also strengthen his heart muscle and decrease his heart rate.

evaluation

Have cedric go to his physician monthly to have his pulse rate taken and to evaluate whether the exercise has decreased his pulse rate.

Nursing diagnosis

Increase blood pressure

Goals

To lower Cedric’s heart rate so that it isn’t borderline on high.

Intervention

Increase in exercise on a regular basis will also help in the prevention or reduction in high blood pressure as well as a high pulse rate.

Rationale

So again if Cedric is able to exercise on a regular basis then he is not only going to be able to increase his fitness but also enjoy a healthier lifestyle and also reduce or prevent high blood pressure.

evaluation

Cedric will also be able to see his physician on a monthly basis to monitor his blood sugar levels and to make sure that he is on the right track.