Evaluation of the Connection between Theory and Practice: A Case Study

Introduction

Theory and practice are both important pillars of the nursing profession, and the relationship between these two is often cyclical and reciprocal. Theoretical principles guide nursing practice and practice generates research questions and hypotheses for theoretical speculations (Saleh, 2018). Good nursing practice is dependent on both these pillars and requires the application of theoretical knowledge and skills in an effective and appropriate manner (Kim, 2012). In this paper, a case study is used to evaluate the connection between theory and nursing practice.

In the given case scenario, Mr. David Porter is an 83-year old man who has fractured his right femur. He has a history of multiple chronic conditions which include congestive heart failure, hypertension, osteoarthritis, gastro-esophageal reflux disease, and atrial fibrillation. After surgery of his right leg, he is assessed to have a low blood pressure, high respiratory rate, low oxygen saturation level, arrhythmia, low hemoglobin, and high pain indication. This paper applies the A2K assessment framework to the patient's observations and assessments, identifies nursing interventions, considers safety and contraindications for the administration of PRBC, and identifies nursing standards and responsibilities that apply to this case.

1. A2K Assessment Framework

Primary Survey

A. Airway

There is absence of airway obstruction, noisy breathing, obstructive respiratory pattern, and stridor. There is no failure of airway protection, no pooling of secretions, and absence of spontaneous swallowing. There is no evidence of aspiration of foreign body, anaphylaxis, or mucosal oedema. The patient is on nasal prongs at 3L/min.

B. Breathing

Patient's respiratory rate is high at 22 breaths per minute as compared to the normal range of 12 to 20 breaths per minute, and his oxygen saturation is slightly low at 94% SpO2 as compared to the normal range of 95 to 100% SpO2. Apart from that, there is no evidence of use of accessory muscles for breathing, cyanosis, asthma, pneumonia, or chronic obstructive pulmonary disease (COPD).

C. Circulation

Patient has a low blood pressure of 103/50 mmHg as compared to the normal range of 120/80 mmHg and a heart rate of 81 bpm with arrhythmia. His temperature is normal at 36.1 ˚C, thereby ruling out sepsis. His hemoglobin is very low at 72 g/L as compared to the normal range of 138 to 172 g/L, and he has been ordered a unit of PRBC from the blood bank.

D. Disability

Patient has an altered level of consciousness; he is slightly confused, though he answers simple questions appropriately. He doesn't know or remember that he is in the hospital; he feels that he is still on his farm and is "just about to close the yard gate". Apart from that, there is no evidence of meningism, photophobia, or localising symptoms in cranial nerves, pupils, or limbs.

E. Exposure

Patient's body temperature is normal at 36.1 ˚C and there is no evidence of purpura or urticaria.

Secondary Survey

F. Fluids and Full set of Vital Observations

Currently, the patient has 1 litre of Hartmann's solution running over 4 hours. He has been ordered to take a unit of PRBC which is ready at the blood bank. His blood pressure is 103/50 mmHg, heart rate is 81 beats per minute and irregular, respiratory rate is 22 breaths per minute, oxygen saturation is 94% with nasal prongs at 3 L/min, temperature is 36.1 ˚C, pain score is 7/10, and Glasgow Coma Scale (GCS) is 13/15.

G. Glucose

Glucose assessment hasn't been done and there is no history of diabetes in the patient.

H. Head-to-toe assessment and History

Although the patient complained of pain, analgesic medications were not administered as he didn't seem to be in a lot of pain. The patient has a history of hypertension, osteoarthritis, gastro-esophageal reflux disease, atrial fibrillation, and congestive cardiac failure.

I. Investigations and Interventions

As his hemoglobin was found to be quite low at 72 g/L, a unit of PRBC was recommended for the patient.

J. Jot it Down

All observations and vital signs were noted down in the patient records.

K. Kin or Kindred

No kin or kindred was mentioned in patient records; however, a man called stating he was the patient's son and requested to be updated about his father's status.

Nursing Assessments based on Abnormal Clinical Findings

1. Chest Radiograph / Electrocardiogram / Echocardiography

As the patient has a history of atrial fibrillation and congestive heart failure, it is essential to perform a chest radiograph in order to rule out heart failure in the patient. If the patient does have reduced blood flow to vital organs and subsequent heart failure, it might also lead to pulmonary failure, liver failure, and kidney failure (Figueroa and Peters, 2006).

Although the patient's heart beat is within normal limits at 81 beats per minute, it is irregular signifying arrhythmia. Also, the patient has anemia, which can put excessive pressure on the heart to pump enough blood that is sufficient for all vital organs. This can be prevented or reversed with the administration of PRBC as recommended for the patient. Patients with congestive heart failure usually have dyspnea; however, the patient has tachypnea, and this needs to be further assessed. The patient also has a low blood pressure and low oxygen saturation which means that enough blood is not being pumped to the vital organs. The cause of this can be assessed by means of radiographic techniques (Anter et al., 2009).

2. Pulmonary Function Tests / Oximetry / Arterial Blood Gases

The patient's presentation of tachypnea and low oxygen saturation is a concern and their cause needs to be assessed. Tachypnea is indicative of shallow and rapid breathing, and this may arise due to accumulation of carbon dioxide in the lungs, consequently leading to accumulation of carbon dioxide in the blood. Assessing arterial blood gases can provide an estimate of the levels of carbon dioxide and oxygen in the blood, pH of the blood, and the possible presence of metabolic abnormalities (Rolfe, 2019).

2. Nursing Intervention Prescribed for the Patient – Administration of PRBC

Why is the intervention necessary?

One of the interventions prescribed for this patient is administration of one unit of PRBC intravenously because his hemoglobin was found to be 72 g/L, which is quite less than the normal range of 138 to 172 g/L. As the patient already has a history of congestive heart failure,

anemia can lead to adverse outcomes and even cardiovascular mortality. As a result, management of anemia, especially in congestive heart failure, is extremely important to ensure good cardiovascular function (Goodnough et al., 2017). Also, during anemia the blood becomes thinner, and the heart needs to pump more blood thereby increasing the cardiac output. If PRBC is administered to an anemic patient, the cardiac output will decrease as pumping a smaller amount of blood will be able to meet the needs of the body. This will subsequently result in better cardiovascular health in the patient (Anand and Gupta, 2018).

Safety Considerations for PRBC Administration

Administration of a single unit of PRBC generally delivers around 250 ml volume of packed RBCs, and is typically infused over a period of 2 to 4 hours. However, as the patient has a history of congestive heart failure, the rate of infusion should be slower and a diuretic should be considered based on physician recommendation. In order to ensure no human errors during administration, the blood group and the Rh type of the PRBC bag should be cross-matched with that of the patient prior to administration. Given the patient's age and post-surgical status, acetaminophen and diphenhydramine can be given prior to PRBC administration for preventing transfusion reactions such as histamine release in the body. The patient's vital signs should be recorded just before administration to identify any contraindications to transfusion (Bielefeldt, 2009).

For the safe administration of any medication or blood products, there are '5 Rights' that should always be considered (Healthy Futures, 2013). These 'Rights' are as follows:

1. **Right Patient:** There is no confusion regarding the patient that is supposed to receive the blood product. The name on the label of the blood product should exactly match the name on patient records.
2. **Right Medication:** The blood product that is to be administered exactly matches the one prescribed by the physician. If the exact product is unavailable, the physician should be consulted for an alternative option.
3. **Right Dose:** Doses are specific for patients based on their age, immunity status, and co-morbidities. Therefore, the dosage and rate of administration should be followed exactly as prescribed.
4. **Right Time:** Changing the time of blood product administration can either prolong the patient's distress or may have no administration value at all. The time of the medication should be cross-checked in order to ensure maximum advantage of the blood product to the patient.
5. **Right Route and Procedure:** Every medication has a specific route that may vary from patient to patient depending on age and chronic conditions. This needs to be followed to avoid adverse patient outcomes due to blood product administration.

Contraindications for PRBC Administration

Despite a diagnosis of anemia and prescription of PRBC, there may be several things that may prevent a nurse from administering the PRBC. One of the most important contraindications is fever and transfusion of PRBC should be avoided when the patient is febrile. If the patient's temperature is found to be high, the blood product should be returned to storage and the patient's temperature should be brought down to within the normal range before proceeding with transfusion. Also, as the patient has congestive heart failure, the patient should be very closely monitored throughout the transfusion process and the process should be stopped if any unusual sign is observed in the patient (Muller et al., 2015).

3. Registered Nurses Standards for Practice

The Standards for Practice in total are 7; however, the one that is most relevant to this patient is number 4 which is 'Comprehensively Conducts Assessments' (NMBA, 2016). The patient has a history of several chronic conditions including congestive heart failure and atrial fibrillation. In this context, the patient's vital signs that are not within normal limits are a cause for concern. Given the age and post-surgical status of the patient, it is imperative that the nurse-in-charge conduct appropriate assessments to ensure that no damage to the patient's vital organs is imminent.

ICN Code of Ethics for Nurses

As per the ICN Code of Ethics for Nurses, there are four important elements that are relevant to the responsibilities and ethical conduct of nurses. Out of these four, the second one talks about the responsibilities that the nurses have towards their nursing practice (ICN, 2012). In this case, the patient is asleep and is unable to indicate specific symptoms or distress that he may be experiencing. Therefore, the nurse-in-charge owes it to her practice that she maintains professionalism, competence, and high quality standards while caring for the patient. The nurse should make use of her critical thinking abilities for performing appropriate assessments and making sense of findings so that the patient is provided with the best quality healthcare services.

Conclusions

This paper has comprehensively assessed the patient's condition using the A2K assessment framework and identified several nursing interventions that need to be immediately undertaken to assess damage to the patient's heart and lungs. It has also dwelled extensively on the administration of PRBC to the patient, the safety considerations, the '5 Rights' of medication administration, and contraindications. Finally, it has identified a standard of practice and a fundamental responsibility of nurses that is relevant to the given scenario.

A lot of newly graduated nurses often feel a disconnect between theory and nursing practice. Working on case studies like this can help nurses reflect on their learning, and apply their knowledge and skills appropriately to assess patients and form diagnoses. During theoretical learning, it is imperative that nurses identify those points that may possibly be useful to them during their practice. However, nothing can prepare nurses for patient emergencies and a nurse's critical thinking and reflective abilities are most significant and useful during these times.

References

Anand, I. S., & Gupta, P. (2018). Anemia and Iron Deficiency in Heart Failure. *Circulation, 138*(1), 80-98. doi:10.1161/circulationaha.118.030099

Anter, E., Jessup, M., & Callans, D. J. (2009). Atrial Fibrillation and Heart Failure. *Circulation, 119*(18), 2516-2525. doi:10.1161/circulationaha.108.821306

Bielefeldt, S. (2009). The Rules of Transfusion: Best Practices for Blood Product Administration. *American Nurse Today, 4*(2), 27-30.

Figueroa, M. S., & Peters, J. I. (2006). Congestive Heart Failure: Diagnosis, Pathophysiology, Therapy, and Implications for Respiratory Care. *Respiratory Care, 51*(4), 403-412.

Goodnough, L. T., Comin-Colet, J., Leal-Noval, S., Ozawa, S., Takere, J., Henry, D., . . . Shander, A. (2016). Management of anemia in patients with congestive heart failure. *American Journal of Hematology, 92*(1), 88-93. doi:10.1002/ajh.24595

Healthy Futures. (2013). *5 Rights of Medication Administration — Rationale and Considerations* (Rep.). American Academy of Pediatrics.

ICN. (2012). *The ICN Code of Ethics for Nurses* (Rep.). Geneva, Switzerland: International Council of Nurses.

Kim, H. S. (2009). The Role of Theory in Clinical Nursing Practice. *Klinisk Sygepleje, 26*(2), 16-29.

Müller, M. M., Geisen, C., Zacharowski, K., Tonn, T., & Seifried, E. (2015). Transfusion of Packed Red Cells. *Deutsches Aerzteblatt Online*. doi:10.3238/arztebl.2015.0507

NMBA. (2016). *Registered Nurses Standards for Practice* (Rep. No. NMP00011). Nursing and Midwifery Board of Australia.

Rolfe, S. (2019). The importance of respiratory rate monitoring. *British Journal of Nursing, 28*(8), 504-508. doi:10.12968/bjon.2019.28.8.504

Saleh, U. S. (2018). Theory guided practice in nursing. *J Nurs Res Pract, 2*(1), 18.