Root cause analysis of a sentinel event essay sample

Health & Medicine, Nursing

A root cause analysis (RCA) is a method by which we can examine a serious adverse event and identify the cause, or causes, that led up to the event. Although personnel are involved in these events, the primary purpose of the RCA is to identify the cause, not to assign blame (Agency for Healthcare Research and Quality, 2014). It is through identifying a cause, or causes, of an adverse event that we can improve on patient care processes and thereby patient safety. The RCA is designed as a specific protocol that starts with data collection looking at the sequence of events that led to the adverse event (Connelly, 2012). Additionally a review of the patient record along with interviews of the personnel involved provides valuable insight into how the patient care processes broke down.

Hospitals are complex organizations that have many layers of safety erected to protect the patient from action taken by healthcare providers. These safety measures include policies, protocols, and guidelines. The reason for multiple layers, or measures, is that there can be weaknesses in the process that forms an opening for an error to occur (Elliott, Page, and Worrall-Carter, 2012). The fundamental goal of the RCA is to prevent future patients from being harmed through understanding how an adverse event could occur.

Root Cause Analysis

We are examining the events surrounding the treatment of Mr. B in the emergency department for a dislocated left shoulder. Prior to Mr. B’s arrival at the emergency department (E. D.) on Thursday afternoon he reports that while showering he “ just blacked out” and when he awoke his left arm was quite painful and obviously disfigured. Mr. B was brought to the hospital by

his son and taken by Nurse J to an examination room to obtain a health history and physical assessment. Important facts to know are: Mr. B was sixty-seven years old; he had no known allergies; he appeared to be in moderate distress from the pain of his injury; he weighed 230 pounds or 104. 5 kilograms; his left arm is exhibiting signs of impaired circulation with a capillary refill time (CRT) of six seconds; his vital signs on arrival are blood pressure 140/96, heart rate 97 and regular, temperature 98. 8, and respiratory rate 22.

His past medical history included: hypertension, a back injury (old), gastric reflux, and depression. Most recently his primary care physician noted his cholesterol and lipids were elevated. Medication reconciliation included: Hydrochlorothiazide (HCTZ), Tenormin, Prilosec, Crestor, Cymbalta, and Lortab prn for pain. The E. D. physician examined Mr. B and the decision was made to relocate the shoulder using moderate sedation. The shoulder was successfully reduced at 1625 hours and Mr. B tolerated it well. At 1643 hours Mr. B’s son comes out of the room to report that the monitor was alarming. Nurse J finds Mr. B not breathing, no palpable pulse, a blood pressure reading of 58/30, and pulse oximetry reading 79%.

The code team was called and after thirty minutes there was a return of a pulse and the blood pressure recorded was 110/70. Mr. B was transferred to a tertiary care facility for advanced care but after seven days it was determined that he suffered brain death. The family decided to remove life-support and Mr. B died. The root cause analysis will ask several questions in order to identify the cause, or underlying causes, that contributed to the

occurrence of an adverse event. Like the toddler that continually asks “ Why” we will ask “ Why” until we can be satisfied that there is good comprehension of how this adverse event occurred. What happened? The decision was made to perform a closed reduction of the shoulder with moderate sedation.

There is a policy for moderate sedation that requires the patient be continuously monitored throughout the procedure and until discharge criteria are met. As stated in the policy, continuous monitoring includes blood pressure, ECG, and pulse oximetry; the ECG monitoring would give evidence of respiratory rate and effort. The discharge criteria in the policy states the patient will be fully awake, vital signs stable, no nausea or vomiting, and the patient is able to void. All practitioners that provide moderate sedation must complete a training module prior to providing moderate sedation, this includes personnel assisting with the procedure. The first process failure was not meeting the required monitoring of the patient as mandated by the moderate sedation policy. In the absence of ECG or respiratory monitoring the sedation administered produced apnea then asystole without ED personnel being aware of acute changes in the patient’s condition.

There is no explanation for why the patient was not on continuous ECG monitoring. Equipment was found to be in good working order. Another causative factor was the drug selection. The same moderate sedation-training module that practitioners complete contains a section on appropriate drug selection. Moderate sedation is designed to alter the level of consciousness of the patient while enabling the patient to maintain

independently a patent airway (Pinto, Bhimani, Milne, and Nicholson, 2013). The drugs used during this procedure were a potent benzodiazepine and opioid analgesic. If using Valium for sedation/relaxation a narcotic dose is reduced by one third or omitted entirely (Medscape, 2014). The addition of the full dose of an opioid analgesic, in this case Dilaudid, was enough to cause slow, shallow respirations, and depress the respiratory effort enough to cause apnea.

The moderate sedation module contains a section on dosing ranges/guidelines. Mr. B received, within a fifteen minute period, Valium 10mg intravenously and Dilaudid 4mg intravenously. A Valium dosing recommendation for sedation in an intensive care unit (ICU) is 0. 03mg/kg up to 0. 1mg/kg at an interval range of thirty minutes to six hours. For Mr. B this would have been a dose range of 3. 12mg, as the low, up to 10. 4mg for an upper limit. Mr. B received 10mg of Valium in ten minutes with a full dose of an opioid analgesic. Both drugs used for this procedure are known to cause respiratory depression. This combination for moderate sedation was not the best choice. The adverse event demonstrated a lack of knowledge regarding acceptable dosing range and interval. Consideration must be given to the staff mix of the ED that day.

The emergency department has six treatment rooms and had three healthcare providers and one support staff present. Nursing personnel included an RN with critical care experience and an LPN. The emergency department is recognized as a critical care environment and not endorsed as a primary work place for a licensed practical nurse by the American

Association of Critical Care Nurses (AACN). Critical care areas require advanced education to enable the nurse to critically think about the care priorities of the assigned patients. The presence of other patients requiring care, including an eight-month old infant with a respiratory complaint, would indicate the need for nursing personnel with advanced education and critical thinking skills. The Institute of Medicine has issued a report in 2010 calling for eighty percent of nurses to obtain a bachelor of science in nursing (BSN) degree by 2020 (Institute of Medicine, 2010).

It is known that the understanding of the science surrounding best practices by the nurse has a direct impact on the quality of care provided. A moderate sedation procedure requires competence and critical thinking skills to ensure the safety of the patient. The patient, in this case Mr. B, receiving moderate sedation requires the presence, and undivided attention, of the physician and the nurse. This procedure then left the LPN and unit secretary to monitor the activity in the other rooms. This was not an optimal skill set to meet ED patient needs. Another concern is that no recognition was given in the record that there had been a lapse of time from injury to presentation at the ED. You can presume that Mr. B showered some time in the morning but did not present to the ED until 1530 hours. The lapse of time from injury to presentation at the ED has allowed the muscles to tighten, or spasm, in the abnormal position.

Shoulder dislocation is the most common of joint dislocations reported and should be addressed urgently. The dislocation can impinge the axillary nerve, damage the rotator cuff more often in older patients, or constrict the

circulation (McBride and Kalogianitis, 2011). It was noted that the left arm shows compromised circulation with a CRT of six seconds. There is no supporting documentation to indicate further examination of the left arm or shoulder was completed before reducing the dislocation. There was no in depth investigation as to why the capillary refill time was prolonged. The abbreviated patient history and assessment is one of the underlying causes for this adverse event. Documentation informs us that the patient " just blacked out" but other than obtaining that statement there is no investigation as to why.

The recording of the pulse indicates that it was regular when palpated and the blood pressure elevated. At sixty-seven years old and with a diagnosis of hypertension it is possible that there was a circulation issue. The patient history indicates treatment for hypertension, gastric reflux, depression and elevated lipids. There is no documentation that the cause for the " black out" was analyzed. The medication reconciliation obtained in the initial interview is incomplete. No mention is made of the dosage of prescribed medications, or the last time a medication dose was taken. Lortab is listed as a medication the patient takes for pain as needed, but no dosage or last dose information is collected. The medications selected for the moderate sedation was based on the incomplete medication reconciliation information and presumed that the patient would have a tolerance to sedative and narcotic medications.

When the patient is older than sixty years of age it is recommended to get an x-ray or ultrasound of the joint to make sure there is not damage to the rotator cuff or fracture of the humeral head (Shin, Yun, Kim, and Yoo, 2012).

The causes of dislocation in an older person are different than for the young, but most protocols surrounding closed reduction of a dislocated shoulder are formulated on a younger person. The older person more often dislocates the shoulder related to loss of elasticity and support from the cuff and surrounding musculature. In this case closed reduction using moderate sedation was the only option considered. First time dislocation with circulatory compromise may require operative reduction of the joint to preserve the function of the joint and relieve the circulatory compromise, especially in the older patient.

There is no evidence to support understanding the differences in treatment for older versus younger patients presenting with shoulder dislocation. Just after successful reduction of Mr. B's shoulder there was an emergency call over the radio. The staffing for the ED was insufficient to meet the rising acuity level. In addition to the radio call from paramedics there is noted to be an influx of people presenting in the ED lobby wanting to be seen. Two nurses were insufficient to meet the growing demand for patient care. Of the three patients occupying ED rooms, the decision was made that the female with a sore throat complaint and the infant with the respiratory complaint could be discharged.

The nurses were involved in discharging these patients while admitting the patient in acute respiratory distress. No healthcare provider was monitoring Mr. B. Additional back up staff was available to help care for patients in the ED as acuity and volume increased. No request was made for additional help so Mr. B went unattended. The dynamap was set for a five-minute interval,

recording blood pressure and pulse oximetry reading. There is no documentation that the data being recorded was noted and the patient assessed. There is a notation that there was pulse oximetry alarm of eight-five percent oxygen saturation that a nurse responded to by resetting the alarm and checking a blood pressure. There was no assessment of the patient completed at that time. It is a measure of the growing alarm fatigue experienced by healthcare providers that The Joint Commission (TJC) has made “ improving the safety of clinical alarm systems” one of the national patient safety goals (Horkan, 2014, p. 83).

The alarm of eight-five present oxygenation saturation should have elicited a physical assessment of the patient. This alarm was lost in the admission of a patient in acute respiratory distress. The response to the full code of Mr. B was appropriate. The ECG monitor was now attached and the rhythm on the monitor immediately recognized as ventricular fibrillation. CPR was promptly initiated. An advanced airway was placed. Mr. B was defibrillated and reversal agents for the sedation were given. Mr. B never revived but did have return of a pulse with adequate perfusion documented by the blood pressure reading of 110/70. Mr. B was transferred to a tertiary facility for advanced care. Causative Factors

1. Not implementing the patient safety measures specified in the moderate sedation policy
2. Medications selected for the procedure requiring moderate sedation
3. Lack of knowledgeable regarding medication dose ranges and intervals
4. Inadequate staff mix for the acuity of patients

5. Not recognizing the importance of circulatory compromise

6. Abbreviated history and physical

7. Incomplete medication reconciliation

8. Lack of knowledge regarding varying treatment recommendations for different age groups

9. Staffing insufficient to meet patient acuity and volume

10. Alarm fatigue

This sentinel event illuminates the need for continuing education on the elements included in the moderate sedation policy and training module. All practitioners, and nursing personnel, that engage in moderate sedation procedures must successfully complete the training module annually. We must examine the staffing of all critical care environments to ensure that the staff assigned is knowledgeable and appropriate for that area in accordance with national standards. There needs to be education on age appropriate treatment modalities to assure the community we serve that the care provided is optimal. On the first encounter with a patient we must thoroughly document their history, medical and medication, when able, before proceeding with a plan of care.

References

Connelly, L. M. (2012). Root Cause Analysis. MEDSURG Nursing, 21(5), 316, 313. Elliott, M., Page, K., and Worrall-Carter, L. (2012). Reason’s accident causation model: Application to adverse events in acute care. Contemporary Nurse, 43(1), 22-28. Horkan, A. M. (2014). Exploring the Evidence Alarm

Fatigue and Patient Safety. Nephrology Nursing Journal, 41(1), 83-85. Institute of Medicine at the National Academies. (October, 2010). Retrieved from www. iom. edu/~/media/Files/Report%20Files/2010/The-Future-of-Nursing/Nursing%20Education202010% McBride, T., and Kalogrianitis, S. (2011). Dislocations of the shoulder joint. Trauma, 14(1), 47-56. http://dx. doi. org/10. 1177/1460408611413837 Ogg, M. J. (2012). Patient monitoring during moderate sedation administration. AORN Journal, 95(4), 541-543. http://dx. doi. org/10. 1016/j. aorn. 2012. 01. 014 Pinto, R. F., Bhimani, M., Milne, W. K., and Nicholson, K. (2013). Procedural sedation and analgesia in rural and emergency departments. Canadian Journal of Rural Medicine, 18(4), 130-136. Shin, S-J., Yun, Y-H., Kim, D. J., and Yoo, J. D. (2012). Treatment of Traumatic Anterior Shoulder Dislocation in Patients Older Than 60 Years. The American Journal of Sports Medicine, 40(4), 822-827. http://dx. doi. org/10. 1177/0363546511434522 U. S. Department of Health & Human Services, Agency for Healthcare Research and Quality. (October, 2012). Retrieved from www. psnet. ahrq. gov/primer. aspx? primerID= 10