Quality Improvement Activity: Measurement and Documentation of Chest Tube Drainage

A pediatric patient presented to the Emergency Department with a nonproductive cough, chest pain, fever, shallow breathing, fast heart rate, and shortness of breath. After a few tests were performed, including a chest x-ray and CT scan of the chest, it was determined that the patient had parapneumonic pleural effusion due to pneumonia. The patient was admitted to PICU where he would receive treatment for the pleural effusion. The doctor determined there was evidence of infection and that antibiotics and drainage should be started as soon as possible. Before inserting the chest tube, a VATS procedure was performed to determine placement of the chest tube. Once placement was determined, the doctor performed a thoracostomy to allow drainage of the effusion. In the doctor's orders, it was stated to monitor and document accurate drainage of the chest tube collection chamber. The same nurse who admitted this patient received him as a patient assignment for her next three shifts. On the fourth day of this patient's hospitalization, the patient received a nurse who has not cared for him yet. During report, the nurse giving report told the receiving night nurse that she must document drainage at the beginning of the shift and at the end. She also told the receiving nurse that the patient had drained about 200 the first day, about 150 the second day and then only 50 the third day she cared for him. They did not do a bedside report, therefore the nurse did not mark the collection chamber at the beginning of her shift. During her shift, it was chaotic and busy on the unit and the night nurse had not checked the collection chamber the whole shift. At 0500, the nurse finally remembers to check the drainage and noticed that it was measuring 1000. The last mark on the collection chamber was at 800. The night nurse measured this as 200 of drainage within her 12-hour shift. She knew that the patient should not be measuring 200 on the fourth day of treatment within 12 hours so she called the doctor. During the phone call the doctor asked what the drainage was when the nurse started her shift, she was not able to tell him since she didn't do bedside report or check the collection chamber until 5am. She also realized that she and the day shift nurse had not marked the chamber during report and that 200 was not how much the patient had actually drained during her shift. When she went to check the patient's chart, she saw the last drainage documentation at 50 and then was able to go back through the chart and calculate an estimate of what the drainage was at the beginning of her shift. She estimated that it was around 970 when her shift started and ended at 1000. This means during the night nurse's shift the patient had actually only drained about 30.

Describe the scenario. In what way did the patient care or environment lack? Is this a common occurrence?

In the scenario above, a young patient was admitted with a parapneumonic effusion which is accumulation of pleural fluid that is associated with a lung infection. In this scenario, the lung infection that our patient has is pneumonia. It was determined that chest tube placement would be the most beneficial treatment for this patient. During this scenario, a mistake of chest tube drainage measurement was made, and an inexcusable phone call was made to the doctor. When caring for patients with chest tubes, the nurse must mark where the drainage is at the beginning and the end of their shift. In this scenario, the reporting day shift nurse didn't mark at the end of her shift and the receiving night shift nurse didn't mark at the beginning of her shift. This created a false measurement of drainage in the collection chamber during the night shifts 12 hours. By not accurately documenting and measuring the drainage, this shows that the

nurses were not providing the patient with the most efficient care possible. However, this can be a common occurrence because as nurses, sometimes we become very busy and it is possible that tasks slip from our minds. Bedside report can be very helpful to remind nurses of specific tasks because we can visually see what needs to be done or checked.

What circumstances led to the occurrence?
The main circumstance that led to this occurrence was not giving report at the bedside and not going into the patient's room with the previous nurse after receiving report. If this would've happened, the nurses would've noticed the collection chamber and remembered to mark where the drainage was currently at. While the nurse was receiving report on how she needed to document drainage appropriately, she could've made a reminder that she needed to check the collection chamber. Another circumstance that led to this occurrence was not checking the chamber before 0500. With chest tubes, we need to be checking these hourly not only for documentation but to also make sure they are working appropriately.

In what way could you measure the frequency of the occurrence? (interview nurses, examining charts, patient surveys, observation, etc
To measure documentation of accurate chest tube drainage, one option would be to check the patient's chart to make sure all of the measurements are adding up. The charge nurse could also go into the patient's room at the beginning of the shift to make sure that the assigned nurse marked the chamber when her shift began. We could also interview nurses and ask if they actually mark the collection chamber at the beginning and end of each shift and if they document accurately. A survey could be sent out to the nurses to determine how many enforce this rule of measurement. To provide more accurate documentation, the nurses could write the date and time when they marked the chamber. The most effective option of measuring this occurrence would be examining charts and determining if each nurse's documentation lines up with the total amount of drainage in the collection chamber and if any of their charting contradicts each other's.

What evidence-based ideas do you have for implementing interventions to address the problem?
To address this issue, it should be reinforced that every nurse with a chest tube patient needs to monitor the drainage as the doctor orders. For accurate documentation, each nurse caring for these patients should mark the drainage chamber hourly with date and time. I think it could be a reasonable idea to have the nurse initial as well, so we are able to tell which nurse measured that specific amount. Nurses should be documenting amount of drainage and a description of what the drainage looks like. In weekly meetings, it could be brought up that accurate measurement is critical in chest tube patients because anything greater than 100ml/hr must be reported to the physician. This is why accurate documentation is important because we do not want to call the doctor if we do not have the correct amount of drainage documented. It should also be mandatory that during report, both nurses must go into the patient's room and observe the medical devices to make sure everything is set up appropriately and working correctly.

How will you measure the efficacy of the interventions?

Measuring the efficacy of these interventions can include monitoring each nurse's documentation of chest tube drainage and printing sheets of percentages of nurses who monitor accurately and those who do not, such as the sheets that measure the number of medications each nurse scans. After the chest tube is removed, the charge nurse could observe the collection chamber to determine if each nurse marked the chamber when they were supposed to. Initialing by the marked line can allow the charge nurse to determine which nurse needs to be reminded of this rule and observe their documentation next time they receive a chest tube patient.