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Quality Improvement Activity: Blood Stream Infection – Central Line (CLABSI)

A 48-year-old female was admitted to the hospital onto a renal telemetry unit for elevated BUN, and creatinine with nausea and vomiting. The patient has a history of left-sided nephrectomy. The patient became obtunded, frequently vomiting dark green liquid, and became hypotensive. She was transferred to the CICU unit for closer monitoring and further investigation of her diagnosis. The patient needed an immediate central venous line for levophed and the possibility of requiring more vasopressor medication. The patient also needed a trialysis catheter for the anticipation of hemodialysis. There is not an intensivist physician on the Cardiac ICU floor and there was not one available from the other ICU units to perform the procedure at the bedside. The patient was transported by the nurse and nurse technician to the Interventional Radiology on a stretcher to have the procedure performed by one of their physicians. The patient was placed flat, and the nurse technician held the patient's face towards the left. The physician used an ultrasound machine to look at the patient's vessels and prepped the insertion sites. There was a right subclavian trialysis catheter placed and a right intrajugular central venous line placed above the other line. The physician used the ultrasound to guide both catheter placements. The physician sutured both lines in place and ordered a chest x-ray to confirm the placement of both lines but did not cover the insertion sites with the appropriate tegaderm CHG dressing as he was in a hurry to move to the next room. The x-ray team came directly to the room and positioned the portable x-ray machine above the patient. During the imaging, the patient turned her head to the right side, and as they pulled away the x-ray machine the patient vomited, and it slid down the right side of her neck onto the open insertion sites. The nurse immediately lifted the head of the stretcher and found a hand towel and placed it on top of the insertion site to try and clean off the vomit. The nurse was able to find chlorhexidine to cleanse the insertion site and placed the tegaderm CHG dressings to cover the catheters. A couple of days later the patient was placed on a mechanical ventilator and diagnosed with sepsis. Blood cultures from both intravenous lines were sent and came back positive for bacterial growth. The trialysis and central venous line were discontinued, and a new central venous line was placed on the left side of the patient to continue administering complex medications.

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

In the scenario above, the patient was transferred to an intensive care unit for decreased level of consciousness and hypotension. The patient needed advanced intravenous access for complex medication administration and hemodialysis. Patient care was lacking when the sterile insertion of the intravenous catheters was not properly completed and covered. This incident allowed the opportunity for bacteria to enter the bloodstream from the patient vomiting and the emesis entering the bloodstream through the insertion sites. The physician should have completed the insertion by covering the catheter. The nurse should have also intervened and asked the physician to cover the intravenous lines or to place the dressings over the insertion site herself. The patient's safety should have been the number one priority despite the busy or hectic schedule and patient load.

What circumstances led to the occurrence?

The circumstances that directly led to this occurrence were the physician's availability. Once a physician was found they were in a hurry and hectic environment. Leading to the physician not properly completing the sterile insertion of the central line. Neither the nurse nor the nurse technician spoke up to ensure or advise that the sterile procedure needed to be completed and covered. As a team, anyone involved in the patient care could have intervened and questioned the reason for the prolonged risk of exposure for that patient.

In what way could you measure the frequency of the occurrence? (Interview nurses, examine charts, patient surveys, observation, etc.)
Bloodstream infections can happen in a multitude of ways. A common way to develop a hospital-acquired bloodstream infection is through a central line. This can happen while the line is being inserted, the dressing is being changed, or during the administration of medication. These infections add to the longer length of stay and can even lead to patient death. Hospitals are constantly monitoring for central line-associated bloodstream infections (CLABSI) that occur in their facility. You can examine patient charts who acquired a bloodstream infection after a central line insertion to create a diagram or chart regarding the number of occurrences and discuss the matter during staff meetings to bring it to the attention of the nurses and physicians. Reports can be made monthly or quarterly for high occurrences and then reduced to annually as the numbers decrease. This can be followed up by reinforcing the protocol for sterile insertion, dressing change, and medication administration.

What evidence-based ideas do you have for implementing interventions to address the problem?
Implementing a safe environment to voice concerns is very important for the entire team to work together efficiently for the best patient outcome. The acronym CUS (concern, uncomfortable, safety) is a useful tool to communicate professionally with one another with simple phrases. These phrases are, I am concerned, I am uncomfortable, and this is a safety issue. One person could have addressed the physician with, “I am concerned for the increased risk of bacteria exposure to the patient’s insertion site because it is open to the air and not properly covered.” This statement could have been a gentle reminder to the physician of completing his task for the safety of the patient. If your concern is not acknowledged, then you move to the next phrases. Evidence shows that the longer a central line is open to air the higher chance they have of contracting a bloodstream infection. That is why during dressing changes, the patient is required to wear a mask and face the opposite direction of the site to avoid accidental contamination of the site while it is exposed. Education and reinforcement of protocols can be provided to remind staff regarding the safety concerns that are involved with central lines. These are infections that can and should be prevented.

How will you measure the efficacy of the interventions?
Measuring the efficacy of the interventions can be done by tracking the number of CLABSIs on every floor monthly until the number of incidences decreases. A benchmark or goal can be set to monitor improvements that are being made. Any increase or decrease in numbers should be addressed in monthly staff meetings to acknowledge or remind the staff of the goal set forth for patient safety.