

Preventing CLABSIs in Patients

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Huge financial costs are normally incurred towards preventing central line-associated bloodstream infections (CLABSI's). Central lines are put in and used in the area such as the neck, groin, and even the chest to give medications, take blood and supply the patient with fluids. While these central venous catheters which are also known as central lines are in the patient they can get infected with bacteria or viruses enter through the line can causes havoc in the bloodstream. In my experience, working in acute care, these lines are common. Central lines are often used for hemodynamic monitoring, TPN, fluids, and medications. When CLABSIs happen to patents, it is severe and yet preventable, yet still, 1.7 million people are affected by almost 100,000 deaths per year (Curlej & Katrancha, 2016). It has led to an increase in mortality rates from 12% to 25% (Merrill, Summer, Linford, Taylor, Macintosh, 2014).

While talking to the infectious disease nurse and the infectious disease doctor, I was surprised by the cases of CLABSIs they encountered and how many we had in our unit. The discussion that came up was how the lines were being cleaned and how long. They are alcohol infused caps that disinfect and protect the port of central lines and using these caps increasingly help decrease infections. In the quality of care of nursing, it is essential to prevent infections and complications. The measurable question is in patients with central lines would be: would the use of alcohol-infused caps, as compared to scrubbing the hub with alcohol, reduce catheter-associated infections? The purpose of the paper is to discuss quality improvement nursing practices that would help prevent the increasing cases of CLABSIs.

Literature Review

Various authors have conducted research on various subjects that relate to central line-associated bloodstream infections. Elizabeth Katrancha and Maria Curlej did a research on one hospital's experience, implementing the Epidemiology of America Guidelines. Their study was aimed at reviewing the rates of CLABSI and examining the strategies of prevention following the implementation of SHEA guidelines (Curlej & Katrancha, 2016). They used a descriptive retrospective program evaluation in examining the pre- and post-SHEA approach to implementation. A decrease in the CLABSI rates was observed from 1.9 to 1.3 over the period of study as a result of compliance with the SHEA guidelines. Merrill conducted another study on impacts of universal disinfectant caps implementation on CLABSIs. They also agree that CLABSIs lead to increased cost, patient morbidity, and mortality. The authors suggest that one prevention method of this problem is to disinfect the intravenous access points (Merrill, Sumner, Linford, Taylor & Macintosh, 2014). It can be done by putting a disinfectant cap over the needless connector to minimize the risk of infections. The study employed a quasi-experimental intervention, consisting of Luer-lock disinfectant caps with 70% alcohol (Merrill, Sumner, Linford, Taylor & Macintosh, 2014). The rates of CLABSI decreased upon the implementation of the disinfectant caps.

Another study was also conducted in 2014 on Best Practice Journey to Zero CLABSIs by (Galeon & Romero, 2014). Based on this study, a collaborative effort to minimize the rates of CLABSIs was undertaken in a multi-level facility, having 257 acute care beds. An evidence-based policy for central line management was developed, resulting in a compliance monitoring program. A disinfectant cap was integrated into the central line maintenance practice to avoid the contamination of the connection points. After the period of assessment, the task group embarked on ensuring staff education and training on best practices of central line insertion and

maintenance (Galeon & Romero, 2014). The wide use of disinfectant caps by the facility in the first quarter demonstrated a continued decrease of the rates of CLABSI, reaching zero in the second quarter. Based on this study, the evidence-based practices to minimize the rates of CLABSI include training, education, hand hygiene and aseptic technique during insertion and maintenance of the Central line (Galeon & Romero, 2014).

Another study conducted by Dumont and Nesselrodt indicated that the use of disinfectant caps is one way to reduce the increasing cases of central line-associated bloodstream infections. As a front caregiver, a nurse may help a patient to avoid bloodstream infections that result from a central line, known as the central venous catheter. The study proposed various high-quality practices that can be useful in reducing rates of CLABSI. Such practices include hand hygiene, maximal barrier precaution, optimal catheter site selection and chlorhexidine skin antisepsis among others. Palkar, Patel, Jacob, Paul, and Andrade (2016) also conducted a study whose purpose was to investigate the impacts of disinfectant caps implementation on CLABSIs. Based on this study, patients were monitored carefully using the systematic inflammatory Response Syndrome Criteria. The study assessed the CLABSI rates before the introduction of the cap and after the implementation. The study recorded a decrease in the CLABSI rates, following the intervention by 79% (Palkar, Patel, Jacob, Paul & Andrade, 2016). The study concluded that the implementation of SwabCaps results in a significant decline in the rates of CLABSI. The findings of the study support the notion that one way of minimizing CLABSI rates is the use of disinfectant caps (Palkar, Patel, Jacob, Paul & Andrade, 2016).

Quality Improvement Process

Nurses need to be aware of the evidence-based strategies or prevention guidelines during the insertion and also maintenance of CLs. When these strategies are implemented together, they will lead to better outcomes compared to when implemented individually. The quality improvement process involves the following.

Hand Hygiene

It involves washing hands before and after palpitation of insertion sites or dressing, accessing or replacing catheter. The process changes are easy to implement and may improve compliance. They include keeping alcohol-based hygiene dispensers place promptly, having post signs in a patient room as reminders to staff and hand hygiene on checklists for central lines. It is vital to note that gloves do not obviate the necessity of hand hygiene. Instead, hands need to be washed by either alcohol-based gels or soap and water.

Maximal Barrier Precautions

Most studies have confirmed that the chances of developing CLABSIs are much higher when the central lines are replaced without having maximum barrier precautions in place (Galeon & Romero, 2014). One barrier precaution that has been discussed in great lengths in this paper is the use of alcohol-infused caps. For clinicians and surgical procedures, the barrier precaution means using a sterile gown, mask, cap and sterile gloves. However, for patients, the precautions imply covering patients with large sterile drape, having small openings at the insertion sites. It is recommended to keep the required equipment stocked together in order to avoid the difficulties of looking for supplies for the process. It helps ensure compliance with the precaution.

Chlorhexidine Skin Antisepsis

Studies have shown that chlorhexidine offers better protection compared to other antiseptic agents as far as infections are concerned (Palkar, Patel, Jacob, Paul & Andrade, 2016). Therefore, it can be applied to insertion sites using a “back-and-forth friction scrub” that lasts for at least thirty seconds. It should then be allowed to dry properly before inserting the central line. In order to enhance compliance, it is recommended to include the step in the checklist of the central line. The chlorhexidine solution should be kept handy where the CL equipment is stored. There are other pre-packaged central line kits, including the povidone-iodine solution. However, IHI recommends avoiding these (Healthcare-associated infection, 2010).

Optimal Catheter Selection

Studies have shown that the femoral vein correlates with greater infection rates. Hence, evidence-based guidelines recommend healthcare professionals to avoid this site for catheter insertion in patients. Some studies also demonstrate that the use of subclavian sites correlates with lower rates of infection compared to jugular sites (Palkar, Patel, Jacob, Paul & Andrade, 2016). However, the quality improvement process is mainly concerned with best practices that lower the likelihood of CLABSIs. However, other medical factors also need to be taken into account when deciding where to put the line. It is recommended to carry out risk/benefit analysis to identify the most appropriate site for insertion for a patient. This may call for inputs from other care team members.

Daily Assessment of the CL Necessity

The CLs that are no longer required for the optimal care of patients need to be removed promptly. A nurse is not supposed to leave them just for convenient access. The infection risk normally increases with time as the central line remains there. In case of chemotherapy, the

central lines will be placed for long-term use. However, a weekly review of its necessity will be appropriate. During an emergency, the central lines need to be replaced as soon as possible (at least within 48 hours) because asepsis not assured (Palkar, Patel, Jacob, Paul & Andrade, 2016). Following this process would lead to better outcomes as far as prevention of CLABSIs is concerned.

EBP Plan

A critical success factor in implementing quality improvement process is the adopting of improvement approach which involves multidisciplinary process stakeholders. The evidence-based practice plan involves the “Plan-Do-Study-Act (PDSA)” methodology. It includes planning tests, trying, observing results and acting based on what has been learned (Ling et al., 2016). In order to implement the quality practice, the following steps need to be undertaken.

- Implement the quality practices that have been discussed above. It should be done by a multidisciplinary team, using a quality improvement strategy.
- Introduce training and education programs with relevant content regarding the quality practices
- Build teams composed of all staff involved in “CVC insertion and maintenance.”
- Enhance communication to share information and take action.
- The Hospital policy makers and leadership are to offer support to create a norm of zero tolerance
- Accountability lines that links everyone are to be established to have common understandings of goals and their roles in meeting them
- Undertake skill development & competency assessment within the organization

It is vital to note that as much as adhering to evidence-based practices minimize inconsistencies and may enhance the overall quality of healthcare significantly, healthcare institutions often find it challenging to implement quality best practices (Ling et al., 2016). Therefore, identifying and eliminating these barriers is vital to the successful implementation of these best practices for patient safety.

Resources

Specific resources will be required to implement these quality best practices. One of such requirement is the financial resources. The implementation process will involve training and education program that generally call for financial resources. Secondly, the implementation may also require outsourcing experts or specialists in this area to help in training and the implementation process. Various educational resources will also be needed such as charts and articles, illustrating the quality practice. The implementation will require allocation of time which also a resource. The table below shows the budget for the resources required for the implementation of the quality improvement process.

Table One: Program Budget

Items	Estimated Cost (\$)
Two Outsourced Specialists (For two days)	1000
Training allowances for staff	100 per staff
Education Resources	200
Central Line Insertion bundles	Previously purchased

Conclusion

In the quality of care of nursing, it is essential to prevent infections and complications. CLABSIs are normally preventable infections with serious consequences such as increased medical cost, mortality rates, and length of stay. Such infections can be prevented by nurse interventions like quality best practices discussed above. Implementing the evidence-based practices discussed above the best way to prevent such infections. The financial cost incurred due to such infections can also be avoided by the above quality practices. As a front caregiver, a nurse may help a patient to avoid bloodstream infections that result from a central line. This project can be applied in implementing and improving future quality improvement processes that aim at promoting healthcare environments that enhance patient safety and minimizes preventable complications.

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