

Central Line-Associated Bloodstream Infection: Quality Improvement

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In a career such as nursing, technology and science are constantly changing. There are different ways of doing things, either because they found a better alternative or chances of infection increase with certain methods and procedures. Quality improvement does exactly what it says, it helps improve the quality. The World Health Organization defines quality improvement as follows, “The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (Russ et al., 2023). The authors separated it even further. The quality must be safe, effective, timely, patient-centered, efficient, and equitable. While quality improvement may mean something different to doctors, nurses, management, or patients, everyone can agree that there is always room for improvement. Healthcare may improve the way skills are performed, such as surgeries, standard precautions, or medication administration. It helps ensure that quality is moving forward, not shrinking back. QSEN has three qualities that they stand by; knowledge, skills, and attitudes. Regarding their quality improvement, they want nurses to have the knowledge of why there are changes in the process of care (QSEN, 2022). Oftentimes, if there is a lack of understanding as to why, people may not be willing to change their ways or methods. With skills, QSEN wants nurses to identify why the best practice is considered the best way of doing techniques or procedures (QSEN, 2022). If nurses can recognize, for example, when they break sterility or why procedures are done a certain way, it will allow them to recognize the correct way that things should be done. Lastly, it is important to have a good attitude in what other healthcare professionals are doing to contribute to the course of care for the patient (QSEN, 2020). If there is respect for both parties, the care of the patient will be a priority. Central Line-Associated Bloodstream Infections, also abbreviated CLABSI's, is a bloodstream infection

caused by a central line. If not handled, cleaned, or inserted appropriately, it can lead to a deadly infection. This is a topic that is important to the nursing profession because if techniques are not done properly, then serious harm or illness can occur.

Article Summary

In the article, “Nurses’ Knowledge and Behavior in Hospitals Regarding the Prevention of Central Line-Associated Bloodstream Infections: A Systematic Review,” the author described how CLABSIs are a major source of hospital-acquired infections. If infected, it can lead to increased medical expenses or death. Nesreen Alqaissi, the author of this article, reviewed roughly 3,500 peer-reviewed empirical articles from 2018 to 2024. Based on his personal criteria, he was only able to find nine articles that met his research needs. He wanted articles to contain reflections of ICU nurses’ knowledge and understanding of CLABSI preventions. The author was able to find that while most nurses had accurate knowledge regarding prevention, most did not follow the rules and regulations regarding prevention. Essentially, the ICU nurses knew the right things to do but failed to actually do so (Alqaissi, 2025). The main purpose of this article was to provide awareness about these serious medical issues that often can be prevented.

Overview

As previously discussed, CLABSIs put patients at an increased risk of infection and result in the potential for further medical complications. The research article is thoroughly linked to the current nursing practices today. The article discussed reasons why a CLABSI may happen. First, there has proven to be a serious lack of knowledge regarding central lines. The author found through the research that there was no in between in regard to the nurses and their knowledge

(Alqaissi, 2025). Either nurses knew everything about central lines, or they knew nothing at all. Every nurse will eventually come across a patient who has a central line. This has a significant impact on the nursing profession. Second, they found that nurses everywhere were inconsistent regarding the care of central lines. Sometimes, it was due to the different hospital rules, and for some, they just simply did not adhere to the standards (Alqaissi, 2025). Again, this has an impact on the nursing profession because these choices put the patient's life at risk and can also cause the hospital and the patient lots of money.

Both the research article and QSEN want the knowledge, skills, and attitudes to be of utmost quality and importance. They both want healthcare professionals to have the knowledge of what to do regarding the care, insertion, and education for the patient. They both want their skills to be of high quality. They want healthcare professionals to know and understand the best practice. Lastly, they both recognize that attitude plays an important role too. If someone thinks that it would never happen to them or cleaning the central line is not important, they already have a bad attitude. Personal attitudes decide actions.

Quality Improvement

With central lines, quality improvement efforts can be put into place everywhere. While majority of the people will have central lines in some form of the critical care units, there are ones who will be on a medical surgical floor. Some may be discharged home and have follow up appointments at their primary care provider's office. Everyone, regardless of department, needs to understand central lines.

For the pre-implementation stage, there would be a couple things needed. First, there will need to be a survey, test, or discussion based on the nurse's knowledge regarding central line

insertion, how to maintain it, and how to keep it clean (Alqaissi, 2025). This will help establish what they know. Then, they can help correct any potential wrong information and help build what they do not know.

For the intra-implementation stage, some needed resources would be extra people and hands to watch and do. This way, there can always be someone watching it get inserted. If they see something, such as breaking sterility, they can say something. Additionally, cleaning the port is just as important and should also be considered being done with another nurse (Alqaissi, 2025). This way, both can ensure they are getting thoroughly clean.

For the post-implementation phase, there needs to be continuous education. Some hospitals will have a specific team that will only insert central lines (Alqaissi, 2025). Forming such a group after it has been implemented can help make sure there are certified and trained professionals who are in control. There are also classes to attend for further education. This helps keep the health care professionals up to date with the newest practices.

Application to Nursing

Central line associated blood stream infections play a huge role in the application to nursing. The practice refers to the way things are done; in this case, how central lines are installed. Education refers to the continuous process of taking in knowledge. The education about how to keep a central line clean is involved in the potential for a healthcare associated infection. Lastly, research refers to continuous education. There are always things to be studied and healthcare topics to further break down, such as CLABSI prevention.

Practice

The current nursing practice to avoid CLABSI's is hand hygiene, maintaining a sterile field upon insertion, assessing the line daily, and removing it at the earliest convenience. Humans and patients have millions of germs on and around them. This is the result of their actions. Every doorknob that is touched, every dollar felt, or every restaurant that a family visits every Friday night, contains bacteria. Then, that bacteria on the door, dollar, or table, gets spread to a new doorknob or a new restaurant. Similarly, if the hospital staff were to never practice proper hand hygiene, they carry the potential of transferring bacteria from one room to the next. The absolute first step is hand hygiene. Before the insertion of a central line, the hands need to be scrubbed thoroughly. Once hand hygiene is completed, a sterile field needs to be set up. A sterile field allows for an immediate bacteria free environment. It is just as important, though, to maintain it because of the risk of adding new bacteria and germs. After insertion, a nurse has a new priority which is assessing the central line. They need to be aware of potential infections, hematomas, or thrombosis. Recognizing that something is wrong and doing something about the problem before it is too late is going to increase the patient's quality of care. Lastly, the healthcare team will need to decide when the central line can come out (Kolikof et al., 2025). With each day that it stays in a patient, their chances of developing an infection increase. Even if one of these steps is missed or purposefully neglected, it could have catastrophic results (Alqaissi, 2025).

Education

There is constant education out there for nurses to help maintain and prevent CLABSI's. It is important that the patient receives a chlorhexidine bath at least every day. Having the line secured down also helps to prevent an infection. Nurses should receive education about alerting the provider if it does not look secure or simply changing the bandage around it if it is not secure.

Nurses need to be educated about the lack of replacement for the central lines. It has been proven that replacing the old one with a new one increases the chance of infection. Nurses need education regarding the replacement of IV administration sets and IV tubing. IV administrations need to be changed no more than seven days. IV tubing needs to be replaced every twenty-four hours. Lastly, the nurses need to make sure the access port is cleaned and only accessed with sterile instruments. The lumens need hub caps as well (Ball and Singh, 2023). While education is important, the nurses will need thorough and continuous education regarding the importance of this. As one of the previous articles mentioned, some nurses on an ICU floor could recite textbook answers of care for central lines but hardly took the steps to maintain cleanliness (Alqaissi, 2025).

Research

Personally, the priority will always be to find ways to better improve. While the standards for nursing care involving central lines are great, CLABSI's still contribute to around 4,000 deaths a year (Alqaissi, 2025). Somewhere before the installation to the end of someone's life who died by a CLABSI, something went wrong. Maybe it is the lack of hand hygiene? Maybe it is the lack of staffing? Maybe it's pure ignorance to properly care? Either way, 4,000 deaths is too many. More research should be completed regarding central lines and the daily maintenance.

Conclusion

Quality improvement is a substantial part of QSEN. They want to ensure that knowledge, skills, and personal attitudes are improving, which is done through safety, being effective and timely, being patient-centered, being efficient, and being equitable. This allows for the healthcare field to advance forward and not shrink back. One of the main incidents that happens with

patients is CLABSI's. These central lines serve as a port for medication, blood, or cancer treatments. As previously discussed, they are a huge benefit to the patient. A successful insertion and maintenance of a central line involves hand hygiene, a sterile field, and daily port cleansing. This is very significant in the nursing field because improper techniques or carelessness can lead to a CLABSI. Overall, it costs money, time, and potentially death. Regardless, there should be no excuse for carelessness. These patients come to us when they are in need, when they are desperate, when they are broken. Our job is to help, not make it worse. As long as patients are our priority, the risks of a CLABSI will only decrease.

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