Quality improvement project: reducing prolonged hospitalization due to surgical site infection

Abstract

Background: Lack of patient engagement and awareness is often cited as a risk factor that hinders SSI prevention and control measures. The evolving healthcare delivery system requires active patients who are key stakeholders in their care, necessitating healthcare workers to provide patients with detailed information to facilitate a participatory role. Healthcare professionals, especially nurses, are positioned to educate patients and provide accurate information to eliminate misinformation regarding their care processes.

Aims & Method: The main aim of this project is to reduce prolonged hospitalization due to surgical site infection at various surgical stages by ensuring that patients understand the need for proper skin hygiene. This project was conducted in a private mixed surgical and medical ward in Hong Kong and included eight participants awaiting elective surgical procedure. A structured presurgical education intervention was designed and implemented to increase patient awareness and facilitate active participation.

Results: Post-intervention analysis showed a 100% adherence rate as all eight patients adhered to the instruction. During the 30-day surveillance, no SSI case or hospital readmission was reported. One SSI case was reported among patients who were not in the intervention group.

Significance: In addition to best practices to prevent SSIs, nurses acknowledged the need for a structured and comprehensive education to facilitate active engagement. The understandability and adherence to issued instructions was 100%, indicating that teach-back education strategy aids in comprehension and retention of health information. The project contributed to quality

patient outcomes and satisfaction. It advanced my knowledge in SSI prevention and implementation of a quality improvement project.

Significance in your specialty area: Poor skin hygiene has been associated with an increased risk of developing SSIs. This project aimed at implementing preoperative SSI prevention education to facilitate patients' compliance in SSI prevention and control. This is significant in [redacted] patient safety, which is important to achieving quality healthcare delivery. The recommended standardized preoperative bathing instruction will support infection control and prevention in the mixed surgical and medical ward.

Reflective Process

Reflection on the identified problem

Patient education is an important factor in surgical site infection prevention and control. Before a surgical procedure, many patients do not know or understand their own medical procedure and self-care, which is crucial in reducing surgical site infection (SSI) risk. In my current practice area, mixed surgical and medical ward, I noticed we need to ensure that our [redacted] nurses, to provide quality care and ensure SSI prevention. In other words, we as nurses, are expected to implement hygiene measures to limit and prevent the spread of infections. After

identifying the patient problem in our ward, I decided to implement a skin hygiene education strategy, an evidence-based practice that has proven to prevent SSIs.

Patient's Role in SSI prevention

Effectiveness of nurses' interventions also relies on patients' compliance with the issued instructions. Currently, the SSI prevention strategies in our ward mainly focus on healthcare workers. We cannot ignore the importance of patient engagement in improving patient safety which is a rationale for developing a patient education intervention as a nurse. As healthcare [redacted] unreliable sources. The evolving healthcare delivery system is characterized by active patients who are also key stakeholders, which necessitates healthcare workers to provide detailed information to facilitate a participatory role. The comprehensive patient information provided in my project is designed to provide preoperative information to our patients to reduce SSI rates in the mixed surgical and medical ward.

Interventions

A close examination of records relating to the current SSI situation in our ward showed that the overall rate of SSI was 13%. The rate of dirt-contaminated cases was 44%, wound infection in clean surgery was 5%, 12% in clean contamination, and 36% in contamination. Duration of operation, age, and type of operation were the main risk factors for high rates of SSI. Before embarking on the interventions, fifteen surgical patients underwent inclusion and

exclusion criteria. We included adult patients aged 30-50 years who were explicitly waiting for an elective surgical procedure and could speak English. The exclusion criteria were language barrier, prior SSI cases, mental capacity, and infections requiring isolation. Patients who had [redacted] that they sourced information on internet sources and friends at one point in time. Research conducted by Klaiber et al. (2018) notes that a lack of quality information drives patients to untrusted sources where they get diverse views on what they should and should not do during the surgical procedure. The current improvement project set out to ensure that our surgical patients receive reliable information from a structured education intervention specifically designed for them.

Competencies and APN Domains

Learning Task i: Empower patients and families through the role of being an educator

The first learning task achieved was empowering the patient through the role of an advocate and educator. Upon identifying an improvement area, I designed and implemented an [redacted] issued three days before the actual operation day. A day before the procedure, an assessment audit tool was used to evaluate whether the patients adhered to the instructions. The main areas assessed were adherence to bathing instructions, clean clothes, nails, and hair removal. As per

the data collected, all eight patients (100%) were classified as clean, which indicated a 100% adherence rate. 30-day surveillance revealed that no patient was readmitted nor had developed SSI. One case of SSI was reported in the group without comprehensive intervention. The SSI could be attributable to many factors, such as contamination, age, old age, and prolonged surgical procedures.

Domain 4 achieved: Quality assurance and improvement

Quality assurance and improvement seek to prevent, detect, and correct problems in the quality of services provided. I initiated and implemented a quality improvement strategy through an education strategy. Furthermore, I also monitored peers, self, and the delivery system through the quality improvement project.

Leaning Task ii: Learn and Understand various approaches to SSI prevention

Since surgical site infections are common infections among surgical patients, it is important to learn and understand evidence-based approaches that can be used for SSI prevention. I conducted a comprehensive literature review so as to identify scientifically proven strategies that can be used for SSI prevention. I was able to identify possible interventions

[redacted]

as instructed reported more SSI cases (Edmiston et al., 2013). As per my findings, there were no SSI cases reported among the intervention group indicating that compliance with skin hygiene instruction is vital. Through the literature review, I was able to gain new knowledge and skills

which I am currently using in my area of practice. Furthermore, I obtained a record of achievement after undertaking a course in surgical site infection, where I learned about SSI rates, burden, risk factors, prevention, and control measures.

Domain 1 achieved: monitoring clients with complex health complications.

As noted early, the main problem in our ward was inadequate patient education, which is associated with higher SSI rates. Evidence-based interventions were implemented to reduce and [redacted] surgery has been found to reduce the risk of SSI by 50% (Mills et al., 2011). Regardless of the risk factors, the intervention was implemented successfully.

Domain 6 achieved: enhancing professional attributes of general and advanced practice.

The comprehensive literature review enabled me to attain professional self-advancement and relevant expertise to conduct an improvement project to reduce SSI rates in our mixed surgical and medical ward.

Learning Task iii: Implement evidence-based interventions to prevent long hospitalization due to SSI.

I was able to implement an evidence-based protocol by educating patients on skin hygiene measures that have been found to reduce the risk of developing SSIs. Upon identifying that the [redacted]

effectively share information with our patients. I conducted a pre-and post-test to check for compliance with the issued instruction. Positive results were achieved in preoperative skin hygiene, as evidenced in the post-test.

Domain 1 achieved: Managing clients with complex health conditions.

I fulfilled domain one by implementing the quality improvement project to manage acute and chronic diseases while attending to the illness experience. As explained by Andersen (2019), surgery creates most hospital infections, accidents, and injuries; hence prevention of [redacted] significantly reduced SSI cases, evidenced in the study outcome. Among the eight patients, no one reported a postoperative infection.

Domain 2 achieved: Therapeutic nurse-client relationship.

Implementing this improvement project enabled me to achieve a therapeutic nurse-client relationship, APN domain two. I met my patient several times to ensure that they understood vital information relating to their procedure which helped me to establish a nurse-client relationship. The patients seemed at ease to ask for more information or about an instruction that was not clear.

Domain 5 achieved: Managing and negotiating innovation and effective approaches to care delivery.

I managed and negotiated innovation and an effective approach to care delivery. Upon witnessing a significant knowledge comprehension after using the teach-back method strategy, I

noticed that the patients understand their role in active engagement to prevent SSI. I hence suggested developing a standardized education for nurses to use as a guide to comprehensively cover all relevant areas when educating their patients.

Learning Task iv: Be a catalyst of improvement by disseminating evidence-based findings to prevent SSI and consequently reduce prolonged hospital stay.

I shared the evidence-based findings with fellow ward nurses to prevent SSI rates. The shared [redacted] compliance rate, there is a high likelihood that the SSI rate will decline hence a reduction in prolonged hospitalization due to surgical site infections.

Critical Analysis

With so many surgeries being performed on a daily basis, Surgical care is an integral part of quality patient care. Undertaking a quality improvement project to reduce SSI cases was a great learning experience that presented both positive and challenging experiences. My improvement project mainly focused on preoperative hygiene measures recommended by the World Health Organization and confirmed by published evidence-based studies. During my [redacted] through this improvement project. My practicum was conducted in a mixed surgical and medical ward that

requires keen surveillance to ensure infection prevention. I engaged my colleague nurses to comprehensively educate their surgical patients to facilitate their active participation in SSI prevention. Additionally, I trained my nurse colleague on how to use a teach-back education strategy to ensure their patients understand the given SSI prevention instructions and information, which is an important area in the infection control specialty.

The successful implementation of this project greatly relied on my ability to identify significant barriers and ways to overcome them. Evidence shows that active patient involvement is crucial in reducing and preventing SSIs. During the implementation of this project, I encountered various barriers, such as heavy workload and time restrictions, to ensure that presurgical patients have relevant information about the procedure. Under heavy workloads,

[redacted]

delivered to the patients. I suggested that nurses should have clear roles to ensure that they have enough time with their patients. I also encouraged nurses to ensure that they deliver quality and adequate instructions/information to the patients despite the time constraint to ensure quality outcomes. Another challenge I encountered was a lack of structured and standardized education content that nurses can use to educate patients in our ward. This leads to lack of nurses'

[redacted]

strategy to ensure their patients understand the instructions. I printed a few posters containing skin-hygiene information and strategically placed them where nurses could easily see.

Conclusion

This quality improvement project demonstrated that a lack of active patient engagement can increase the likelihood of developing SSIs. Overall, the project demonstrated that when patients comprehensively understand the instructions issued to them, they can play a crucial role in SSI prevention and control. Organizational factors were the greatest barriers to effective implementation; hence I would suggest improvement in the organizational factors, such as ensuring staff are not overworked or fatigued and ample time for nurses to facilitate quality care delivery. The organization should develop standardized protocols that healthcare can follow when delivering education to surgical patients. Nursing staff should also be allocated enough time to overcome barriers due to lack of time and heavy workload. Furthermore, establishing clear roles for all the staff is likely to increase the time available for them to work on their roles towards SSI prevention and control.

References

Abianeh, N. A., Zargar, S. A., Amirkhani, A., & Adelipouramlash, A. (2020). The effect of self-care education through teach back method on the quality of life in hemodialysis patients. *Néphrologie & Thérapeutique*, *16*(4), 197-200.

Andersen, B. M. (2019). Prevention of postoperative wound infections. In *Prevention and control of infections in hospitals* (pp. 377-437). Springer, Cham.

Ghiasvand, F., Riazi, H., Hajian, S., Kazemi, E., & Firoozi, A. (2017). The effect of a self-care program based on the teach back method on the postpartum quality of life. *Electronic*

Kamel, C., McGahan, L., Polisena, J., Mierzwinski-Urban, M., & Embil, J. M. (2012). Preoperative skin antiseptic preparations for preventing surgical site infections: a systematic review. *Infection Control & Hospital Epidemiology*, *33*(6), 608-617.

Klaiber, U., Stephan-Paulsen, L. M., Bruckner, T., Müller, G., Auer, S., Farrenkopf, I., ... & Knebel, P. (2018). Impact of preoperative patient education on the prevention of postoperative complications after major visceral surgery: the cluster randomized controlled PEDUCAT trial. *Trials*, *19*(1), 1-12.

https://apps.who.int/iris/handle/10665/277399

Appendix 1

Staff Education Questions

Name:__________________

Date: __________________

Score: __________________

Why is it essential to maintain a high level of patient engagement in SSI prevention despite the role of nurses in patient care? Select all that apply.

a. It contributes to increased patient safety.
b. Less informed patients seek information from unreliable sources, which may impact their actions and consecutively their health outcomes.
c. It is not important to actively engage patients in their care as this is the responsibility of the healthcare team.

Explain why pre-operative preparation is vital to patient safety.

a. Preparation eradicates/controls infections prior to the elective surgery that are remote to the surgical site.
b. It minimizes the pre-operative length of stay of the patients in the hospital.
c. It informs patients about risk factors such as smoking and encourages them to stop smoking at least 30 days before the operation.
d. All the above answers are correct.

Should patients be shaved prior to a surgical procedure?

a. Yes, shaving facilitates skin exposure, skin marking, and suturing.
b. No, WHO guidelines recommend that a patient should not be shaved as it increases the risk of infection by causing microscopic trauma to the skin. If hair removal is necessary, just clip it instead of shaving.
c. Yes. You should encourage patients to shave or shave them because nothing will happen.
d. No, hair removal increases patients' risk of developing surgical site infection hence it should be avoided.

Why should you ensure that patients understand the need for a pre-operative shower?

a. Pre-operative showers reduce the skin's microbial colony count, which is important in reducing the risk of developing SSIs.
b. Surgical patients are not required to take a shower/bathe as this does not interfere with the surgery.
c. Showering/bathing with an antiseptic agent before surgical procedure s a component of a care bundle to prevent and reduce SSI risk hence it should be encouraged.
d. Both a and c are correct.

Select the correct statement.

a. Remove hair when it interferes with the operation. The hair removal should be performed immediately before surgery and preferably with a clipper, as razors are not recommended.

Appendix 2:

Comparison of Skin Hygiene Compliance Rate before and after Education Intervention